

Connecting dots.  
Providing solutions.

**servotecnica**

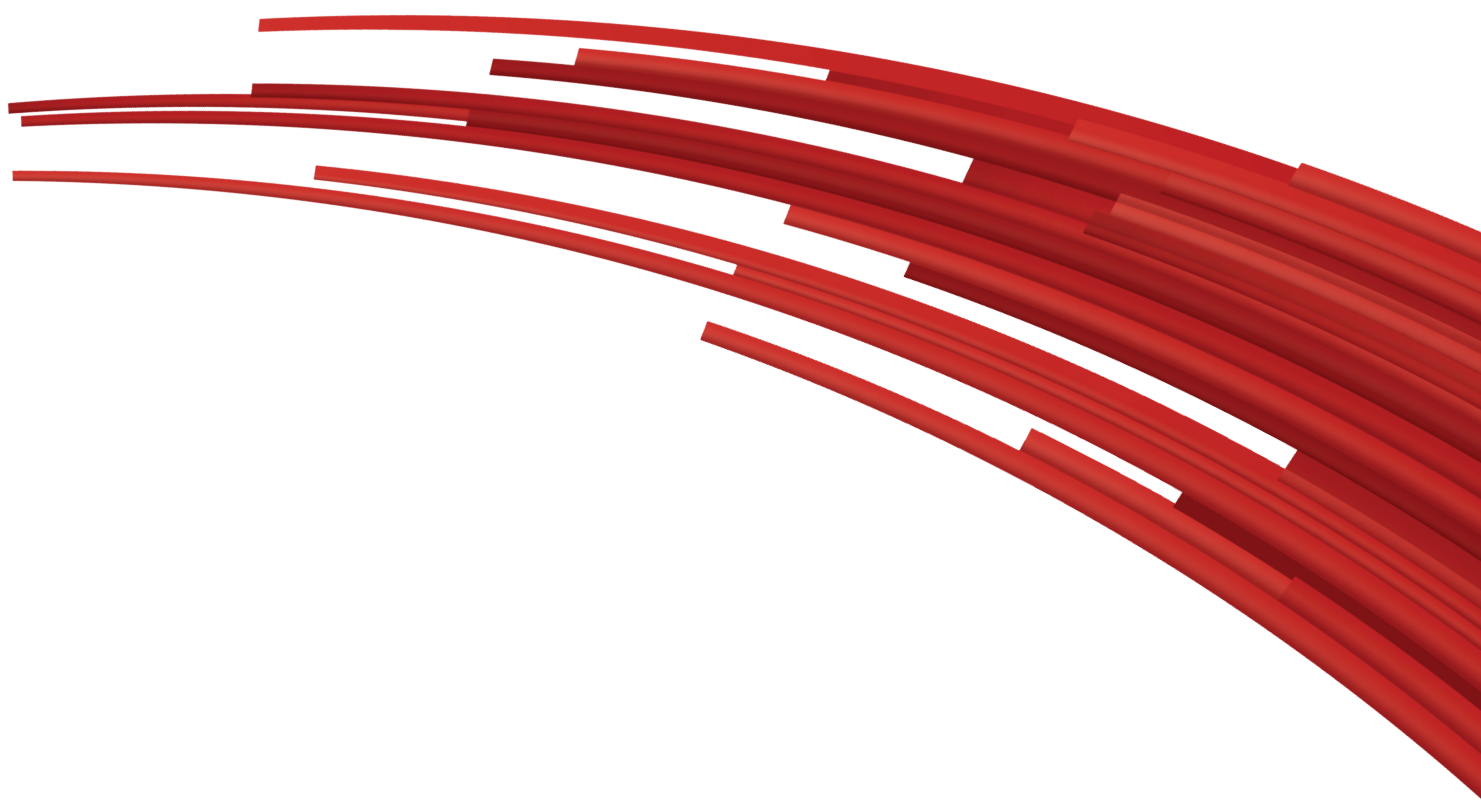
Product catalog

V 3

# Micromotors



Connecting dots.  
Providing Solutions.







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## Expertise at your service

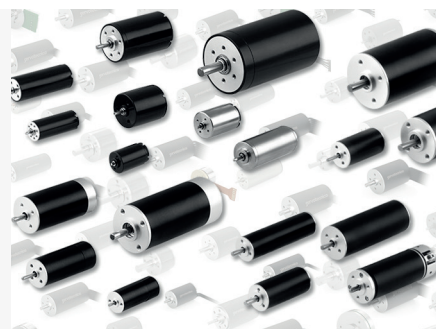
All-around services and solutions. A product selection and software development are the best proposal for specific applications.

In the automation and motion control industry since 1980, Servotecnica manufactures and proposes unique products based on cutting-edge technologies developed by leading global manufacturers.

The concernment of giving a wide range of products guarantees its presence in all sectors of the industry requiring high performances, skilled engineers, reducing machine developing time and offering a service support which grants a reliable partner for your applications.

### Wide Range & Cost Effectiveness

A wide range of Micromotors supported by a 35+ years experience will translate into a proficient product selection and design, reducing time-to-market and increasing your competitiveness.



### Custom

Thanks to our lean and flexible production, we can deliver specifically designed samples in accordance to the requirements of any of your applications in a very short time, thus to provide you with the best solution.



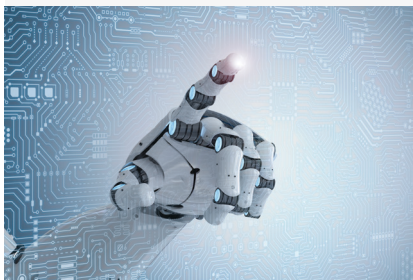
# Industries

## Medical & Lab



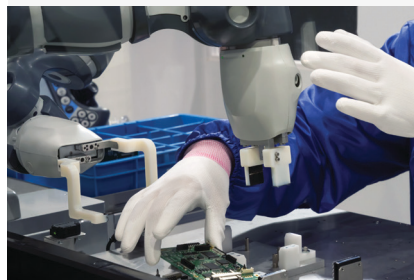
Dental devices  
Surgical robots  
Insulin pumps  
Diagnosis

## Robotics



Electric grippers  
Humanoid robots  
Inspection robots  
Service robots

## Automation



Packaging machines  
Cobots  
Welding equipments  
Miniaturized pumps  
Security lockers

## Instruments



Calibration systems  
Laser leveling systems

## Automotive



Fuel injection pumps  
Adjustable shock absorbers  
Electric vehicles  
Driver-assisted systems  
Power steering

## Aerospace



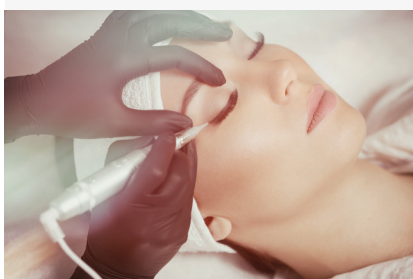
Radar systems  
Flap adjustments  
Seat and display adjustments

## Video Systems



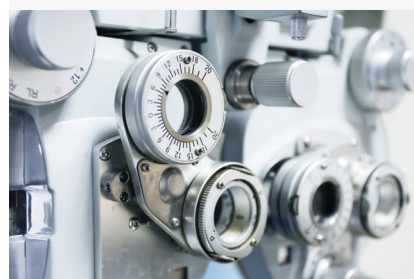
Seurveillance cameras  
Mobile inspection systems  
Professional cameras

## Consumer Applications



Tattoo Machines  
Permanent make-up  
Massage Chairs  
Bicycle shift systems  
Moving head projectors

## Optics



Automatic focus  
Lasers  
Ophthalmology  
Microscopes

# **ATOM EC Series**

## **SVTN A 01**

Coreless BLDC motors  
2 Pole Brushless DC Motors



# Contents

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| SVTN A 01-1230 | up to 15  | 12     | 13   |
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| SVTN A 01-1636 | up to 21  | 16     | 15   |
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| SVTN A 01-2232 | up to 20  | 22     | 17   |
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| SVTN A 01-3670 | up to 250 | 36     | 30   |
| SVTN A 01-4058 | up to 150 | 40     | 31   |
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|                |           |        |      |
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# ATOM EC Series

## SVTN A 01

### Coreless BLDC motors

2 Pole Brushless DC Motors



Cost effective



High power density



High efficiency



The benefits of this new technology are torque and high-speed when compared to same sizing. The lack of cogging, a reduced ripple torque, a linear correlation between speed and torque, low inertia bring performance to greater level in terms of power, dynamics by means of reduced weights and reduced dimensions.

Servotecnica's brushless motors apply hall sensors as a standard option, in addition to having the magnetic encoder option. Thanks to the sensors it is possible to control rotation speed, and, thanks to the lack of cogging, provide high performance and accuracy.

## Benefits

|                       |                           |
|-----------------------|---------------------------|
| High power density    | Long operational lifetime |
| High efficiency       | No cogging                |
| High reliability      | Low inertia               |
| Low noise             | Robust                    |
| Low inductance        | Cost-effective            |
| Good heat dissipation |                           |

## Product code

SVTN A 01 - ○○◇◇ - □□ - ◇ - ◇☆☆

A Series

01 Brushless DC Motors

○ Diameter

◇ Length

□ Nominal Voltage

◇ Shaft  
Single shaft - standard [S]; Double shaft [D]

◇ Sensor  
Sensorless [0]; Hall sensor [H]\*

☆☆ Customizations

\* Standard option from SVTN A 01 1630 onwards.

## Features

|                              |                                                                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Winding                      | 3 phase                                                                                                                                                       |
| Operating temperature        | -30° +100° C                                                                                                                                                  |
| Connectors                   | JST PHR-8<br>1630; 1636; 2040; 2232; 2240; 2248; 2260; 2446; 2453; 2845; 2854; 2864<br><br>MOLEX 39-01-2080<br>3242; 3260; 3270; 3660; 3670; 4058; 4070; 4088 |
| Magnets                      | Neodymium                                                                                                                                                     |
| Construction technology      | Coreless winding system                                                                                                                                       |
| Estimated operating lifetime | Lifetime depends on motor working conditions. It can reach 20.000 work hours under optimal conditions (almost 100 hours under extreme conditions).            |

## Feedback

Hall Sensor (standard)

Magnetic encoder\*\* 3 channels, from 25 to 1024 ppr

## Customizations

Hall Sensor (standard)

|           |                                           |
|-----------|-------------------------------------------|
| Shaft     | Length/Diameter/D-Cut/double shaft        |
| Leadwire  | PVC/Silicon/Teflon/UL No/Dimension/length |
| Connector | JST/MOLEX                                 |

\*\*See page 115 for more information

# Explanation of the performance diagram

The performance diagram shows the range of possible operating points of a drive at an ambient temperature of 25°C and includes both the operation in the thermally insulated and in the cooled state. The possible speed ranges are shown in dependence on the shaft torque.

The sector shown dashed describes potential operating points in which the drive can be engaged in intermittent operation or with increased cooling.

## Nominal torque [mNm]

Describes the max. continuous torque in the steady state at nominal voltage and with a thermal reduction of the  $R_{th2}$  value by 50 %. The continuous speed decreases linearly vis-a-vis the continuous torque. In the case of slotted flat brushless motors, this point is indicated with the motor mounted on a metal flange and is the same as MN. The continuous torque is independent of the continuous output power and can be exceeded if the motor is operated intermittently, for example, in S2 operation and/or if more cooling is applied.

## Nominal output power [W]

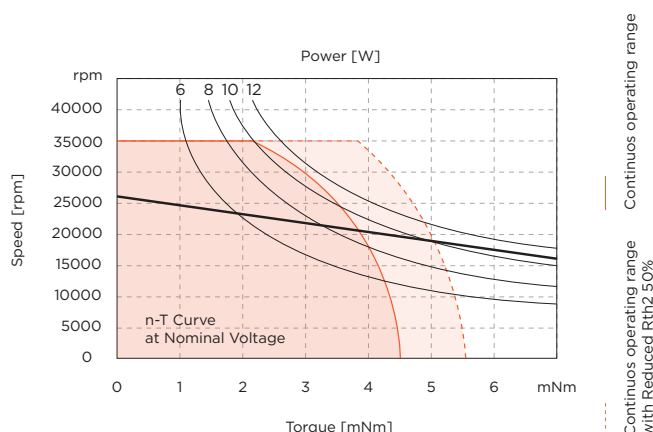
Describes the max. possible output power in continuous operation in steady state with a thermal reduction of the  $R_{th2}$  value by 50 %. The value is independent of the continuous torque, responds linearly to the cooling factor and can be exceeded if the motor is operated intermittently, for example, in S2 operation and/or if more cooling is applied.

## Nominal voltage curve [V]

The nominal voltage curve describes the operating points at  $U_N$  in the uncooled and cooled state. In steady state, the starting point corresponds to the no-load speed  $n_0$  the drive. Operating points above this curve can be attained by an increase, operating points below by a reduction of the nominal voltage.

Additional Information for Slotted Brushless Motors The performance curves for slotted motors with a housing will be significantly different than the diagrams of the motors without housing. Typically motors without a housing will have a higher performance due to the effects of ambient air flow cooling.

\*The diagram based on ambient temperature of 25°.



Example: Power diagram for rated values at continuous operation.

## Table explanation

### 1 Nominal voltage

It is the applied voltage between two powered phases in block commutation. All nominal data (lines 2 – 9) refer to this voltage. Lower and higher voltages are permissible, provided that limits are not exceeded.

### 2 No load speed

It is the speed at which the unloaded motor runs with the nominal voltage applied. It is proportional to the applied voltage.

### 3 No load current

This is the typical current that the unloaded motor draws when operating at nominal voltage. No load friction depends heavily on temperature. It decreases in extended operation and increases at lower temperatures.

### 4 Nominal speed

It is the speed set for operation at nominal voltage and nominal torque at a motor temperature of 25°C.

### 5 Nominal torque

It is the torque generated for operation at nominal voltage and nominal current at a motor temperature of 25°C. It is at the limit of the motor's continuous operation range. Higher torques heat up the winding too much.

### 6 Nominal current

It is the current in the active phase the nominal torque at the given nominal speed (= max. permissible continuous load current). The maximum winding temperature is reached at 25°C ambient temperature in continuous operation with Nominal current.

### 7 Stall torque

It is the linearly calculated load torque for motors that causes the shaft to stall at nominal voltage. This torque often cannot be achieved due to saturation effects.

### 8 Stall current

It is the quotient from nominal voltage and the motor's terminal resistance. Stall current is equivalent to stall torque. With larger motors, Stall current cannot be reached due to the amplifier's current limits.

### 9 Max. efficiency

It is the optimal relationship between input and output power at nominal voltage. Contact factory for more detail.

### 10 Terminal resistance

It is determined by the resistance at 25 °C between two motor phase.

### 11 Terminal inductance

It is the winding inductance between two motor phase.

### 12 Torque constant

Represents the quotient from generated torque and applicable current.

### 13 Speed constant

It indicates the theoretical no load speed per volt of applied voltage, disregarding friction losses.

### 14 Speed/torque gradient

The speed/torque gradient is an indicator of the motor's performance. It is based on the quotient of ideal no load speed and ideal stall torque (tolerance  $\pm 20\%$ ).

### 15 Mechanical time constant

It is the time required for the rotor to accelerate from standstill to 63% of its no load speed.

### 16 Rotor inertia

It is the mass moment of inertia of the rotor.

### 17 Thermal resistance housing-ambient

Characteristic values of thermal contact resistance without additional heat sinking. Lines 17 and 18 combined define the maximum heating at a given power loss (load). Thermal resistance Rth2 on motors with metal flanges can decrease by up to 80% if the motor is coupled directly to a good heat-conducting.

### 18 Thermal resistance winding-housing

Characteristic values of thermal contact resistance without additional heat sinking. Lines 17 and 18 combined define the maximum heating at a given power loss (load). Thermal resistance Rth2 on motors with metal flanges can decrease by up to 80% if the motor is coupled directly to a good heat-conducting.

### 19 Thermal time constant winding

These are the typical reaction times for a temperature change of winding and motor. It can be seen that the motor reacts much more sluggishly in thermal terms than the winding. The values are calculated from the product of thermal capacity and given heat resistances.

### 20 Thermal time constant motor

These are the typical reaction times for a temperature change of winding and motor. It can be seen that the motor reacts much more sluggishly in thermal terms than the winding. The values are calculated from the product of thermal capacity and given heat resistances.

### 21 Ambient temperature

Operating temperature range. This derives from the heat reliability of the materials.

### 22 Max. permissible winding temperature

Maximum permissible winding temperature.

### 23 Max. permissible speed

It is the maximum recommended speed based on thermal and mechanical perspectives. A reduced service life can be expected at higher speeds.

### 24 Radial play

Radial play is the bearing's radial movement

### 25 Max. axial load (dynamics)

Dynamic: axial loading permissible in operation. If different values apply for traction and thrust, the smaller value is given.

### 26 Max force for press fits (static)

Maximum axial force applying to the shaft at standstill if the force is not input at the other shaft end. This is not possible for motors with only one shaft end.

### 27 Max. radial load

The value is given for a typical distance from the front flange. As the distance increases, this value decreases.

### 28 Number of pole pairs

Number of north poles of the permanent magnet. The phase streams and commutation signals pass through per revolution p cycles. Servo-controllers require the correct details of the number of pole pairs.

### 29 Number of phases

All motors have three phases.

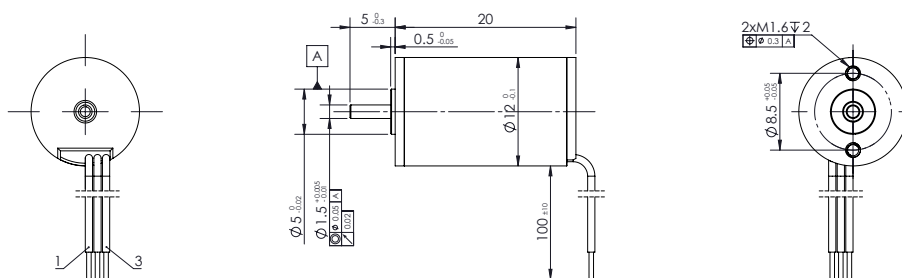
### 30 Weight





# ATOM EC Series SVTN A 01-1220

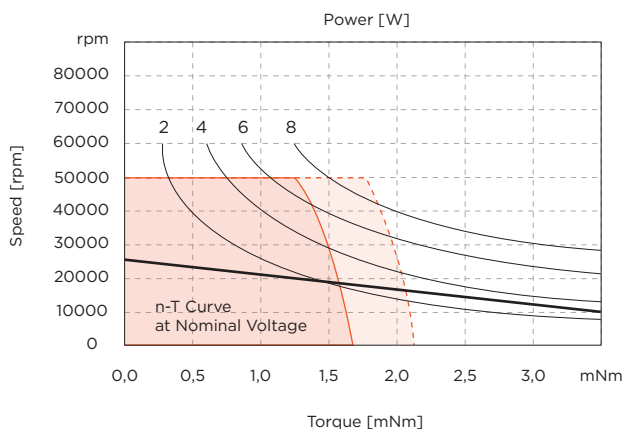
8 Watt



V 3

| Values                                  | Unit             | SVTN A 01<br>1220-06.. | 1220-09.. |
|-----------------------------------------|------------------|------------------------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |
| 1 Nominal voltage                       | V                | 6                      | 9         |
| 2 No load speed                         | rpm              | 25000                  | 36890     |
| 3 No load current                       | mA               | 69                     | 83        |
| 4 Nominal speed                         | rpm              | 16536                  | 29888     |
| 5 Nominal torque                        | mNm              | 1,5                    | 1,3       |
| 6 Nominal current                       | A                | 0,75                   | 0,66      |
| 7 Stall torque                          | mNm              | 4,43                   | 6,85      |
| 8 Stall current                         | A                | 2,07                   | 3,1       |
| 9 Max. efficiency                       | %                | 66,8                   | 70        |
| <b>Characteristics</b>                  |                  |                        |           |
| 10 Terminal resistance*                 | $\Omega$         | 2,9                    | 2,9       |
| 11 Terminal inductance*                 | mH               | 0,19                   | 0,19      |
| 12 Torque constant                      | mNm/A            | 2,22                   | 2,27      |
| 13 Speed constant                       | rpm/V            | 4310                   | 4212      |
| 14 Speed/torque gradient                | rpm/mNm          | 5642                   | 5386      |
| 15 Mechanical time constant             | ms               | 10                     | 9,6       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,17                   | 0,17      |
| <b>Mechanical data</b>                  |                  |                        |           |
| 17 Thermal resistance housing-ambient   | 38.3 K/W         |                        |           |
| 18 Thermal resistance winding-housing   | 9.6 K/W          |                        |           |
| 19 Thermal time constant winding        | 5 s              |                        |           |
| 20 Thermal time constant motor          | 196 s            |                        |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |
| 22 Max. permissible winding temperature | +125°C           |                        |           |
| 23 Max. permissible speed               | 50000 rpm        |                        |           |
| 24 Radial play                          | preloaded        |                        |           |
| 25 Max. axial load (dynamic)            | 0,3              |                        |           |
| 26 Max. force for press fits (static)   | 11N              |                        |           |
| 27 Max. radial load, 5mm from flange    | 4.3 N            |                        |           |
| <b>Other specifications</b>             |                  |                        |           |
| 28 Number of poles                      | 2                |                        |           |
| 29 Number of phases                     | 3                |                        |           |
| 30 Weight                               | 9,8g             |                        |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range  
with Reduced Rth2 50%

## Connection

| Connection | (Sensorless)     | PVC   |        |
|------------|------------------|-------|--------|
| Pin 1      | Motor winding MA | AWG28 | yellow |
| Pin 2      | Motor winding MB | AWG28 | green  |
| Pin 3      | Motor winding MC | AWG28 | blue   |

## Gearbox combinations

SVTG A 10\*  
SVTG A 12\*

\*On request

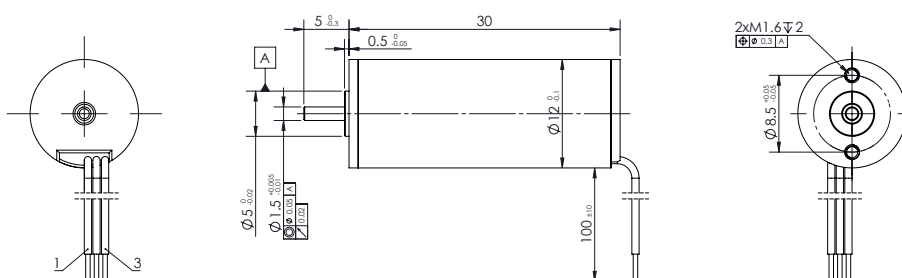


# ATOM EC Series SVTN A 01-1230

15 Watt



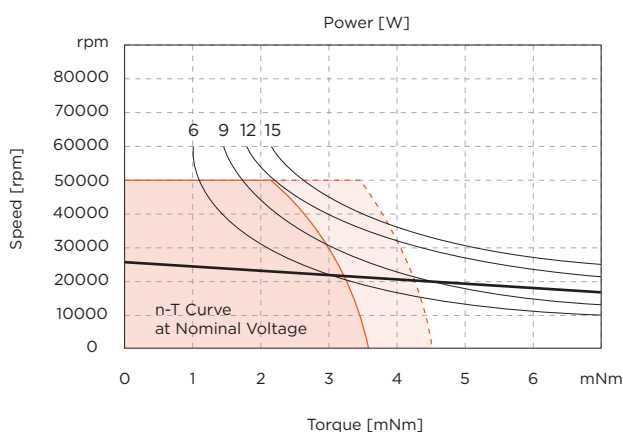
servotecnica

CORELESS  
BRUSHLESS

V 3

| Values                                  | Unit             | SVTN A 01<br>1230-06.. | 1230-09.. | 1230-12.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |
| 1 Nominal voltage                       | V                | 6                      | 9         | 12        |
| 2 No load speed                         | rpm              | 25310                  | 25100     | 24930     |
| 3 No load current                       | mA               | 122                    | 90        | 72        |
| 4 Nominal speed                         | rpm              | 20719                  | 20565     | 20449     |
| 5 Nominal torque                        | mNm              | 3                      | 3         | 3         |
| 6 Nominal current                       | A                | 1,47                   | 0,98      | 0,74      |
| 7 Stall torque                          | mNm              | 16,5                   | 16,6      | 16,7      |
| 8 Stall current                         | A                | 7,55                   | 5,03      | 3,77      |
| 9 Max. efficiency                       | %                | 76,2                   | 75        | 74,3      |
| <b>Characteristics</b>                  |                  |                        |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,8                    | 1,79      | 3,18      |
| 11 Terminal inductance*                 | mH               | 0,02                   | 0,04      | 0,08      |
| 12 Torque constant                      | mNm/A            | 2,23                   | 3,36      | 4,51      |
| 13 Speed constant                       | rpm/V            | 4288                   | 2840      | 2118      |
| 14 Speed/torque gradient                | rpm/mNm          | 1530                   | 1512      | 1494      |
| 15 Mechanical time constant             | ms               | 5,1                    | 5,1       | 5         |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,32                   | 0,32      | 0,32      |
| <b>Mechanical data</b>                  |                  |                        |           |           |
| 17 Thermal resistance housing-ambient   |                  | 28.4 K/W               |           |           |
| 18 Thermal resistance winding-housing   |                  | 7.1 K/W                |           |           |
| 19 Thermal time constant winding        | s                | 4 s                    |           |           |
| 20 Thermal time constant motor          | s                | 240 s                  |           |           |
| 21 Ambient temperature                  |                  | -30...+100°C           |           |           |
| 22 Max. permissible winding temperature |                  | +125°C                 |           |           |
| 23 Max. permissible speed               |                  | 50000 rpm              |           |           |
| 24 Radial play                          |                  | preloaded              |           |           |
| 25 Max. axial load (dynamic)            |                  | 0,3                    |           |           |
| 26 Max. force for press fits (static)   |                  | 11N                    |           |           |
| 27 Max. radial load, 5mm from flange    |                  | 4.3 N                  |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |
| 28 Number of poles                      |                  | 2                      |           |           |
| 29 Number of phases                     |                  | 3                      |           |           |
| 30 Weight                               |                  | 16.3 g                 |           |           |

\*The diagram based on ambient temperature of 25°.

**Connection**

|              |                  |              |
|--------------|------------------|--------------|
| Connection 0 | (Sensorless)     | PVC          |
| Pin 1        | Motor winding MA | AWG28 yellow |
| Pin 2        | Motor winding MB | AWG28 green  |
| Pin 3        | Motor winding MC | AWG28 blue   |

**Gearbox combinations**

SVTG A 10\*

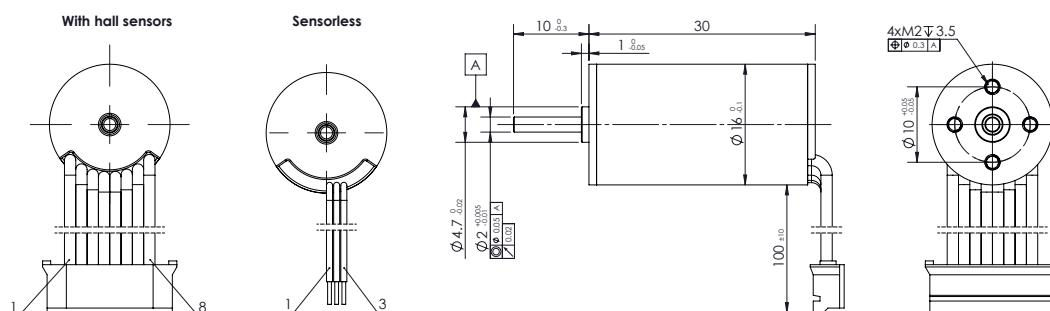
SVTG A 12\*

\*On request



# ATOM EC Series SVTN A 01-1630

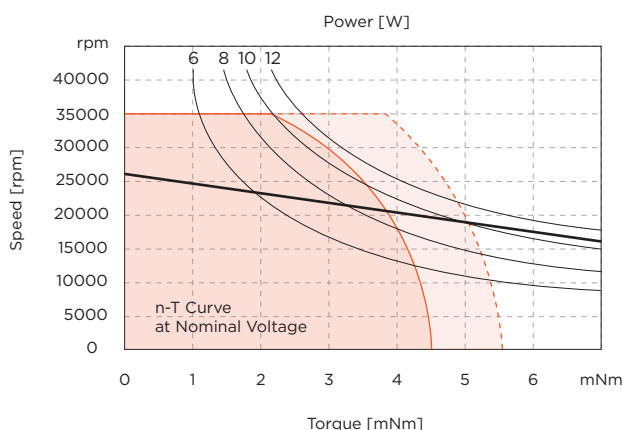
12 Watt



V 3

| Values                                  | Unit             | SVTN A 01 |           |           |
|-----------------------------------------|------------------|-----------|-----------|-----------|
|                                         |                  | 1630-12.. | 1630-18.. | 1630-24.. |
| <b>Motor Data</b>                       |                  |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 18        | 24        |
| 2 No load speed                         | rpm              | 23220     | 23511     | 23760     |
| 3 No load current                       | mA               | 210       | 150       | 100       |
| 4 Nominal speed                         | rpm              | 19138     | 19506     | 19203     |
| 5 Nominal torque                        | mNm              | 3,5       | 3,5       | 3,5       |
| 6 Nominal current                       | A                | 0,95      | 0,65      | 0,48      |
| 7 Stall torque                          | mNm              | 19,9      | 20,5      | 18,2      |
| 8 Stall current                         | A                | 4,44      | 3,1       | 2,09      |
| 9 Max. efficiency                       | %                | 61,3      | 60,9      | 61        |
| <b>Characteristics</b>                  |                  |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 2,7       | 5,8       | 11,5      |
| 11 Terminal inductance*                 | mH               | 0,08      | 0,17      | 0,33      |
| 12 Torque constant                      | mNm/A            | 4,7       | 6,96      | 9,18      |
| 13 Speed constant                       | rpm/V            | 2031      | 1373      | 1040      |
| 14 Speed/torque gradient                | rpm/mNm          | 1166      | 1144      | 1302      |
| 15 Mechanical time constant             | ms               | 5,8       | 5,7       | 6,5       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,48      | 0,48      | 0,48      |
| <b>Mechanical data</b>                  |                  |           |           |           |
| 17 Thermal resistance housing-ambient   | 20.0 K/W         |           |           |           |
| 18 Thermal resistance winding-housing   | 8.8 K/W          |           |           |           |
| 19 Thermal time constant winding        | 8 s              |           |           |           |
| 20 Thermal time constant motor          | 236 s            |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |
| 23 Max. permissible speed               | 35000 rpm        |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |
| 25 Max. axial load (dynamic)            | 1.3 N            |           |           |           |
| 26 Max. force for press fits (static)   | 15 N             |           |           |           |
| 27 Max. radial load, 5mm from flange    | 5 N              |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |
| 30 Weight                               | 25 g             |           |           |           |

\*The diagram based on ambient temperature of 25°.

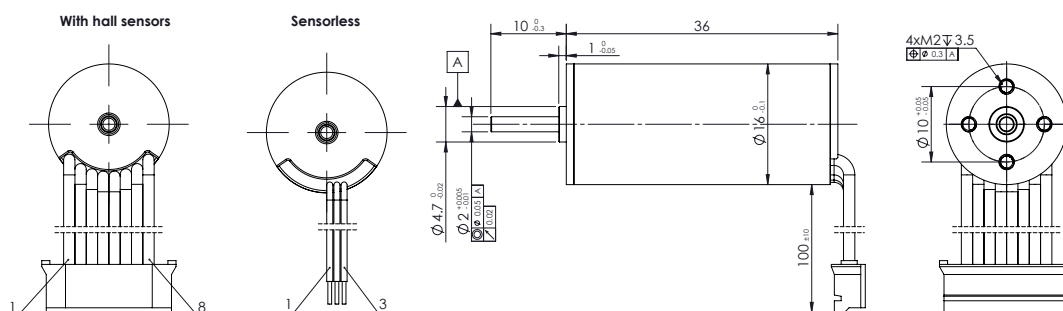
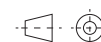


## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    | JST              | PHR-8 |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                             |                |
|-----------------------------|----------------|
| <b>Hall sensor</b>          | <b>Encoder</b> |
| SVTE-A-E40                  | SVTE-A-E45     |
| SVTE-A-E50                  | SVTE-A-E55     |
| <b>Encoder combinations</b> |                |
| EN 16A                      | EN 16AL        |
| <b>Gearbox combinations</b> |                |
| SVTG A 16                   |                |



V.3

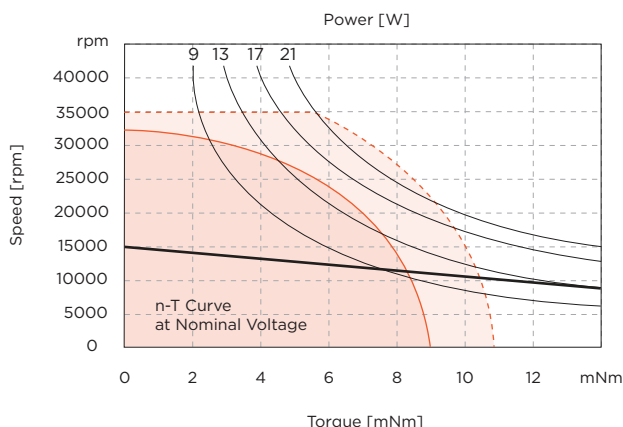
| Values                      | Unit                                 | SVTN A 01        | 1636-06.. | 1636-09.. | 1636-12.. | 1636-24.. |
|-----------------------------|--------------------------------------|------------------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>           |                                      |                  |           |           |           |           |
| 1                           | Nominal voltage                      | V                | 6         | 9         | 12        | 24        |
| 2                           | No load speed                        | rpm              | 13835     | 14533     | 14460     | 14668     |
| 3                           | No load current                      | mA               | 150       | 110       | 70        | 50        |
| 4                           | Nominal speed                        | rpm              | 11412     | 11930     | 11615     | 12005     |
| 5                           | Nominal torque                       | mNm              | 6         | 6         | 6         | 6         |
| 6                           | Nominal current                      | A                | 1,62      | 1,14      | 0,84      | 0,44      |
| 7                           | Stall torque                         | mNm              | 34,3      | 33,5      | 30,5      | 33        |
| 8                           | Stall current                        | A                | 8,57      | 5,88      | 3,99      | 2,21      |
| 9                           | Max. efficiency                      | %                | 75,3      | 74,5      | 75,3      | 72,2      |
| <b>Characteristics</b>      |                                      |                  |           |           |           |           |
| 10                          | Terminal resistance*                 | Ω                | 0,7       | 1,53      | 3,01      | 10,8      |
| 11                          | Terminal inductance*                 | mH               | 0,04      | 0,08      | 0,15      | 0,81      |
| 12                          | Torque constant                      | mNm/A            | 4,07      | 5,8       | 7,79      | 15,3      |
| 13                          | Speed constant                       | rpm/V            | 2347      | 1646      | 1227      | 625       |
| 14                          | Speed/torque gradient                | rpm/mNm          | 404       | 434       | 474       | 444       |
| 15                          | Mechanical time constant             | ms               | 2,6       | 2,8       | 3,1       | 2,9       |
| 16                          | Rotor inertia                        | gcm <sup>2</sup> | 0,62      | 0,62      | 0,62      | 0,62      |
| <b>Mechanical data</b>      |                                      |                  |           |           |           |           |
| 17                          | Thermal resistance housing-ambient   | 17,1 K/W         |           |           |           |           |
| 18                          | Thermal resistance winding-housing   | 5,3 K/W          |           |           |           |           |
| 19                          | Thermal time constant winding        | 6 s              |           |           |           |           |
| 20                          | Thermal time constant motor          | 252 s            |           |           |           |           |
| 21                          | Ambient temperature                  | -30...+100°C     |           |           |           |           |
| 22                          | Max. permissible winding temperature | +150°C           |           |           |           |           |
| 23                          | Max. permissible speed               | 35000 rpm        |           |           |           |           |
| 24                          | Radial play                          | preloaded        |           |           |           |           |
| 25                          | Max. axial load (dynamic)            | 1,3 N            |           |           |           |           |
| 26                          | Max. force for press fits (static)   | 15 N             |           |           |           |           |
| 27                          | Max. radial load, 5mm from flange    | 5 N              |           |           |           |           |
| <b>Other specifications</b> |                                      |                  |           |           |           |           |
| 28                          | Number of poles                      | 2                |           |           |           |           |
| 29                          | Number of phases                     | 3                |           |           |           |           |
| 30                          | Weight                               | 32 g             |           |           |           |           |

\*The diagram based on ambient temperature of 25°.

The graph plots Speed [rpm] on the y-axis (0 to 40,000) against Power [W] on the x-axis (0 to 35). Four solid curves represent nominal voltage n-T characteristics for 9V, 13V, 17V, and 21V. A red dashed line indicates the maximum permissible speed of 35,000 rpm. A shaded orange region represents the continuous operating range, bounded by a solid line at lower speeds and a dashed line at higher speeds. The text 'n-T Curve at Nominal Voltage' is present in the lower left of the graph area.

Continuous operating range

\*The diagram based on ambient temperature of 25°.



| Continuous operating range with Reduced Rth2 50%                                                                                                                                                                                                               | Continuous operating range                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Graph showing continuous operating range with reduced Rth2 50%. The x-axis is Power (W) from 0 to 100. The y-axis is Temperature (°C) from 0 to 150. The curve shows a linear increase in temperature with power, reaching approximately 125°C at 100W.</p> | <p>Graph showing continuous operating range. The x-axis is Power (W) from 0 to 100. The y-axis is Temperature (°C) from 0 to 150. The curve shows a linear increase in temperature with power, reaching approximately 150°C at 100W.</p> |

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

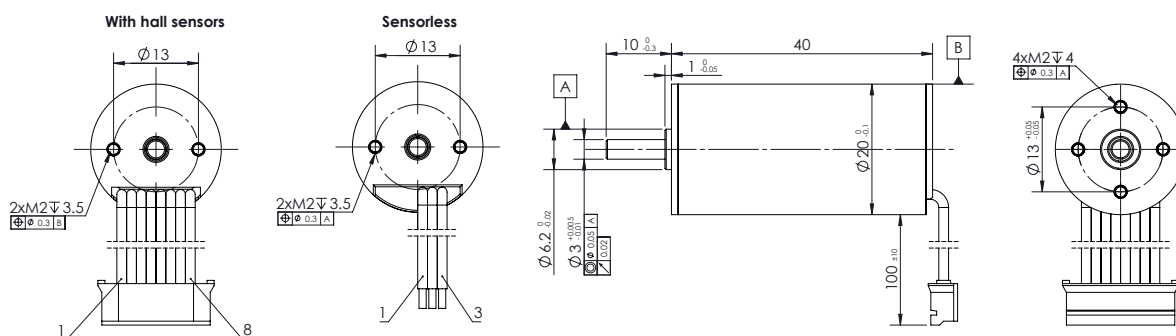
## Drive combinations

|                             |                |
|-----------------------------|----------------|
| <b>Hall sensor</b>          | <b>Encoder</b> |
| SVTE-A-E40                  | SVTE-A-E45     |
| SVTE-A-E50                  | SVTE-A-E55     |
| <b>Encoder combinations</b> |                |
| EN 16A                      | EN 16AL        |
| <b>Gearbox combinations</b> |                |
| SVTG A 16                   |                |



# ATOM EC Series SVTN A 01-2040

32 Watt



V 3

| Values               | Unit                                 | SVTN A 01<br>2040-12.. | 2040-18.. | 2040-24.. | 2040-36.. |       |
|----------------------|--------------------------------------|------------------------|-----------|-----------|-----------|-------|
| Motor Data           |                                      |                        |           |           |           |       |
| 1                    | Nominal voltage                      | V                      | 12        | 18        | 24        | 36    |
| 2                    | No load speed                        | rpm                    | 17780     | 18360     | 18500     | 18880 |
| 3                    | No load current                      | mA                     | 149       | 137       | 105       | 83    |
| 4                    | Nominal speed                        | rpm                    | 15083     | 16171     | 16042     | 16164 |
| 5                    | Nominal torque                       | mNm                    | 10        | 10        | 10        | 10    |
| 6                    | Nominal current                      | A                      | 1,72      | 1,22      | 0,93      | 0,64  |
| 7                    | Stall torque                         | mNm                    | 65,9      | 83,9      | 75,3      | 69,5  |
| 8                    | Stall current                        | A                      | 10,5      | 9,23      | 6,28      | 3,98  |
| 9                    | Max. efficiency                      | %                      | 77,6      | 77,1      | 75,8      | 73,2  |
| Characteristics      |                                      |                        |           |           |           |       |
| 10                   | Terminal resistance*                 | Ω                      | 1,14      | 1,95      | 3,82      | 9,04  |
| 11                   | Terminal inductance*                 | mH                     | 0,08      | 0,17      | 0,3       | 0,62  |
| 12                   | Torque constant                      | mNm/A                  | 6,35      | 9,22      | 12,18     | 17,83 |
| 13                   | Speed constant                       | rpm/V                  | 1503      | 1035      | 784       | 536   |
| 14                   | Speed/torque gradient                | rpm/mNm                | 270       | 219       | 246       | 272   |
| 15                   | Mechanical time constant             | ms                     | 6,4       | 5,2       | 5,8       | 6,4   |
| 16                   | Rotor inertia                        | gcm²                   | 2,3       | 2,3       | 2,3       | 2,3   |
| Mechanical data      |                                      |                        |           |           |           |       |
| 17                   | Thermal resistance housing-ambient   | 13.8 K/W               |           |           |           |       |
| 18                   | Thermal resistance winding-housing   | 4.3 K/W                |           |           |           |       |
| 19                   | Thermal time constant winding        | 8 s                    |           |           |           |       |
| 20                   | Thermal time constant motor          | 366 s                  |           |           |           |       |
| 21                   | Ambient temperature                  | -30...+100°C           |           |           |           |       |
| 22                   | Max. permissible winding temperature | +150°C                 |           |           |           |       |
| 23                   | Max. permissible speed               | 35000 rpm              |           |           |           |       |
| 24                   | Radial play                          | preloaded              |           |           |           |       |
| 25                   | Max. axial load (dynamic)            | 3.5 N                  |           |           |           |       |
| 26                   | Max. force for press fits (static)   | 44 N                   |           |           |           |       |
| 27                   | Max. radial load, 5mm from flange    | 15 N                   |           |           |           |       |
| Other specifications |                                      |                        |           |           |           |       |
| 28                   | Number of poles                      | 2                      |           |           |           |       |
| 29                   | Number of phases                     | 3                      |           |           |           |       |
| 30                   | Weight                               | 56 g                   |           |           |           |       |

\*The diagram based on ambient temperature of 25°.

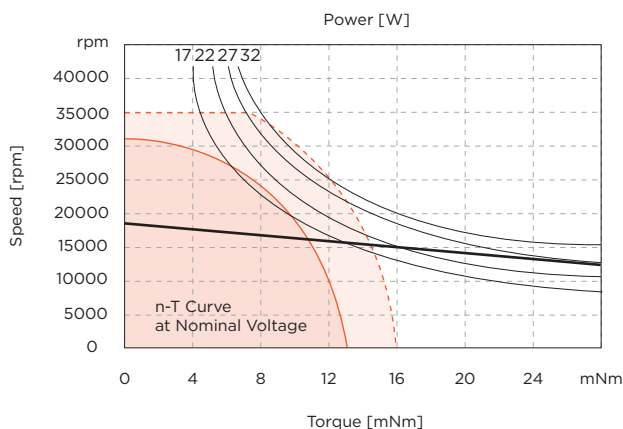
The graph plots Speed [rpm] on the y-axis (0 to 40,000) against Power [W] on the x-axis (0 to 100). It shows four n-T curves for nominal voltages of 12V, 18V, 24V, and 36V. The 12V curve is the leftmost, followed by 18V, 24V, and 36V. A red shaded region indicates the continuous operating range, and a dashed red line indicates the maximum permissible speed. The curves show that as power increases, the speed decreases, and higher nominal voltages result in higher speeds for the same power.

| Power [W] | 12V Speed [rpm] | 18V Speed [rpm] | 24V Speed [rpm] | 36V Speed [rpm] |
|-----------|-----------------|-----------------|-----------------|-----------------|
| 0         | 17780           | 18360           | 18500           | 18880           |
| 10        | 15083           | 16171           | 16042           | 16164           |
| 20        | 12500           | 13500           | 13000           | 13200           |
| 30        | 10000           | 10800           | 10500           | 10800           |
| 40        | 8000            | 8600            | 8400            | 8600            |
| 50        | 6500            | 7000            | 6800            | 7000            |
| 60        | 5500            | 6000            | 5800            | 6000            |
| 70        | 4800            | 5200            | 5000            | 5200            |
| 80        | 4200            | 4500            | 4400            | 4500            |
| 90        | 3800            | 4000            | 4000            | 4000            |
| 100       | 3500            | 3800            | 3800            | 3800            |

continuous operating range

operating range

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    | JST              | PHR-8 |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                             |                |
|-----------------------------|----------------|
| <b>Hall sensor</b>          | <b>Encoder</b> |
| SVTE-A-E40                  | SVTE-A-E45     |
| SVTE-A-E50                  | SVTE-A-E55     |
| <b>Encoder combinations</b> |                |
| EN 22A                      | EN 22AL        |
| <b>Gearbox combinations</b> |                |
| SVTG B 22                   |                |

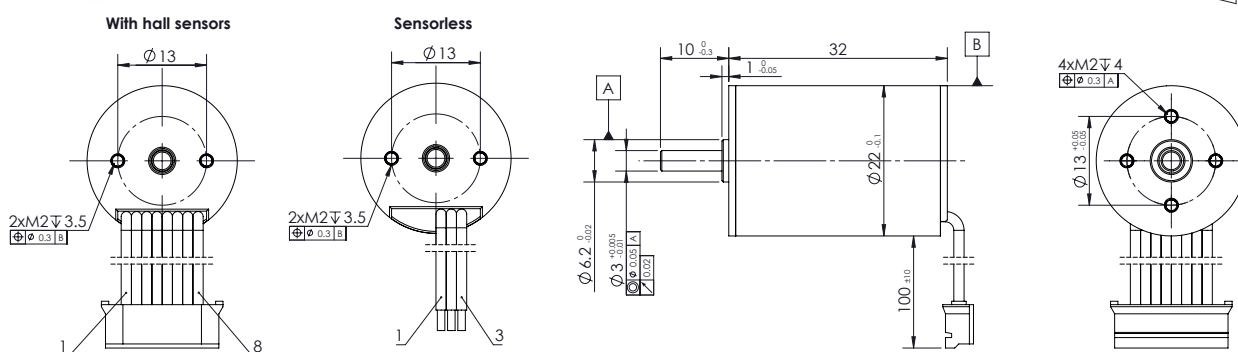


# ATOM EC Series SVTN A 01-2232

20 Watt



servotecnica  
CORELESS  
BRUSHLESS



V 3

| Values               | Unit                                 | SVTN A 01<br>2232-06.. | 2232-12.. | 2232-18.. | 2232-24.. |       |
|----------------------|--------------------------------------|------------------------|-----------|-----------|-----------|-------|
| Motor Data           |                                      |                        |           |           |           |       |
| 1                    | Nominal voltage                      | V                      | 6         | 12        | 18        | 24    |
| 2                    | No load speed                        | rpm                    | 11700     | 11184     | 12080     | 12164 |
| 3                    | No load current                      | mA                     | 230       | 150       | 86        | 60    |
| 4                    | Nominal speed                        | rpm                    | 9585      | 9023      | 9937      | 9358  |
| 5                    | Nominal torque                       | mNm                    | 6         | 6         | 6         | 6     |
| 6                    | Nominal current                      | A                      | 1.5       | 0.76      | 0.52      | 0.39  |
| 7                    | Stall torque                         | mNm                    | 33.2      | 31.1      | 33.8      | 26    |
| 8                    | Stall current                        | A                      | 7.23      | 3.32      | 2.55      | 1.5   |
| 9                    | Max. efficiency                      | %                      | 67.5      | 62        | 66.6      | 64    |
| Characteristics      |                                      |                        |           |           |           |       |
| 10                   | Terminal resistance*                 | Ω                      | 0.83      | 3.61      | 7.07      | 16    |
| 11                   | Terminal inductance*                 | mH                     | 0.08      | 0.28      | 0.66      | 1.72  |
| 12                   | Torque constant                      | mNm/A                  | 4.74      | 9.78      | 13.7      | 18.1  |
| 13                   | Speed constant                       | rpm/V                  | 2014      | 976       | 695       | 528   |
| 14                   | Speed/torque gradient                | rpm/mNm                | 353       | 360       | 357       | 468   |
| 15                   | Mechanical time constant             | ms                     | 5.5       | 5.6       | 5.6       | 7.3   |
| 16                   | Rotor inertia                        | gcm²                   | 1.5       | 1.5       | 1.5       | 1.5   |
| Mechanical data      |                                      |                        |           |           |           |       |
| 17                   | Thermal resistance housing-ambient   | 15.2 K/W               |           |           |           |       |
| 18                   | Thermal resistance winding-housing   | 6.0 K/W                |           |           |           |       |
| 19                   | Thermal time constant winding        | 11 s                   |           |           |           |       |
| 20                   | Thermal time constant motor          | 383 s                  |           |           |           |       |
| 21                   | Ambient temperature                  | -30...+100°C           |           |           |           |       |
| 22                   | Max. permissible winding temperature | +150°C                 |           |           |           |       |
| 23                   | Max. permissible speed               | 35000 rpm              |           |           |           |       |
| 24                   | Radial play                          | preloaded              |           |           |           |       |
| 25                   | Max. axial load (dynamic)            | 3.5 N                  |           |           |           |       |
| 26                   | Max. force for press fits (static)   | 44 N                   |           |           |           |       |
| 27                   | Max. radial load, 5mm from flange    | 15 N                   |           |           |           |       |
| Other specifications |                                      |                        |           |           |           |       |
| 28                   | Number of poles                      | 2                      |           |           |           |       |
| 29                   | Number of phases                     | 3                      |           |           |           |       |
| 30                   | Weight                               | 48 g                   |           |           |           |       |

\*The diagram based on ambient temperature of 25°.

Speed [rpm]

Power [W]

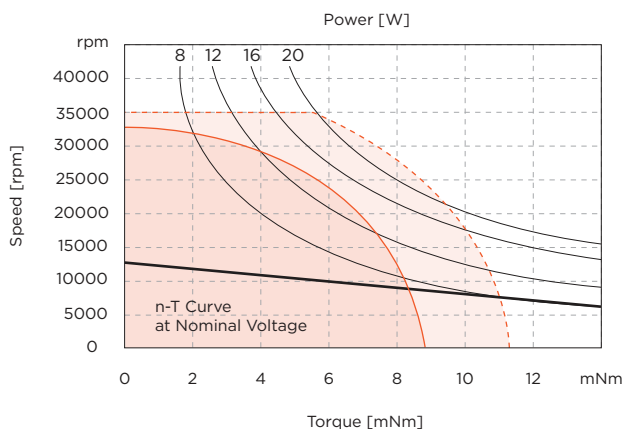
8 12 16 20

n-T Curve at Nominal Voltage

Continuos operating range

operating range

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

| Connection H | (Sensor)         | PVC   |        |
|--------------|------------------|-------|--------|
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

| Hall sensors | Encoder    |
|--------------|------------|
| SVTE-A-E40   | SVTE-A-E45 |
| SVTE-A-E50   | SVTE-A-E55 |

## Encoder combinations

EN 22A  
EN 22AL

## Gearbox combinations

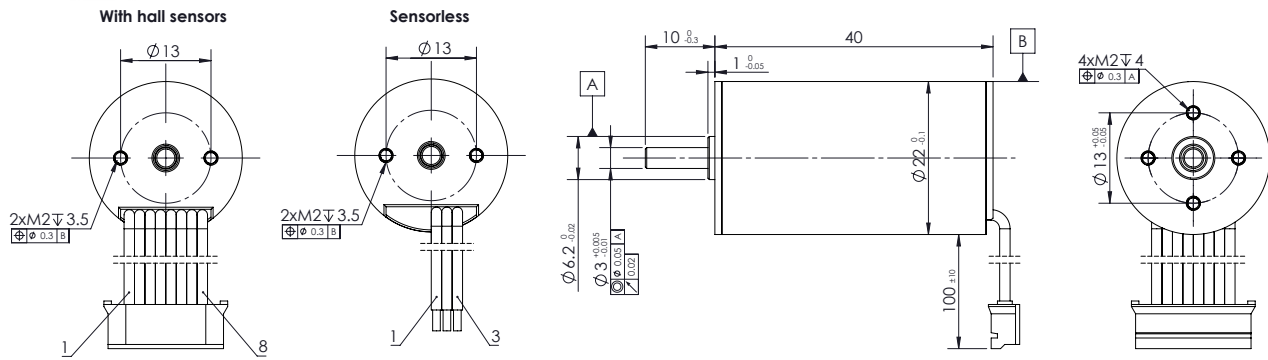
SVTG B 22  
SVTG B 24





# ATOM EC Series SVTN A 01-2240

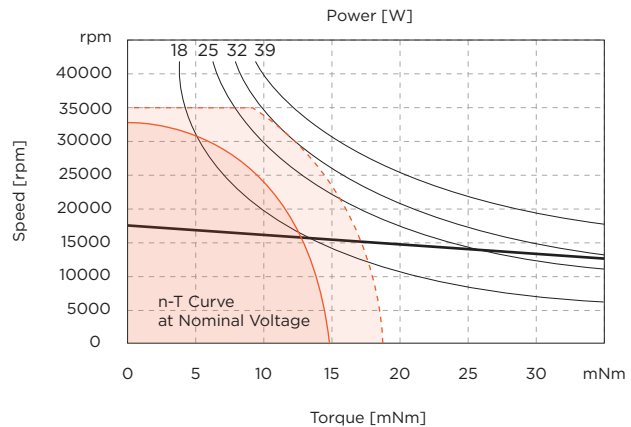
39 Watt



V 3

| Values                                  | Unit             | SVTN A 01 | 2240-12.. | 2240-24.. | 2240-30.. | 2240-36.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 24        | 30        | 36        |           |
| 2 No load speed                         | rpm              | 16748     | 16768     | 16713     | 16679     |           |
| 3 No load current                       | mA               | 183       | 115       | 87        | 73        |           |
| 4 Nominal speed                         | rpm              | 14354     | 14337     | 14360     | 14128     |           |
| 5 Nominal torque                        | mNm              | 12        | 12        | 12        | 12        |           |
| 6 Nominal current                       | A                | 1,96      | 1,01      | 0,8       | 0,67      |           |
| 7 Stall torque                          | mNm              | 83,9      | 82,8      | 85,2      | 78,5      |           |
| 8 Stall current                         | A                | 12,6      | 6,28      | 5,15      | 3,95      |           |
| 9 Max. efficiency                       | %                | 77,4      | 74,8      | 75,7      | 74,7      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |           |
| 10 Terminal resistance*                 | Ω                | 0,95      | 3,82      | 5,83      | 9,11      |           |
| 11 Terminal inductance*                 | mH               | 0,07      | 0,28      | 0,44      | 0,64      |           |
| 12 Torque constant                      | mNm/A            | 6,74      | 13,4      | 16,9      | 20,2      |           |
| 13 Speed constant                       | rpm/V            | 1416      | 712       | 567       | 472       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 200       | 203       | 196       | 213       |           |
| 15 Mechanical time constant             | ms               | 4,7       | 4,8       | 4,7       | 5,1       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 2,3       | 2,3       | 2,3       | 2,3       |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 12.7 K/W         |           |           |           |           |           |
| 18 Thermal resistance winding-housing   | 5.0 K/W          |           |           |           |           |           |
| 19 Thermal time constant winding        | 12 s             |           |           |           |           |           |
| 20 Thermal time constant motor          | 420 s            |           |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |           |
| 23 Max. permissible speed               | 35000 rpm        |           |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |           |
| 25 Max. axial load (dynamic)            | 3.5 N            |           |           |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |           |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 15 N             |           |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |           |
| 30 Weight                               | 64 g             |           |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22A  
EN 22AL

## Gearbox combinations

SVTG B 22  
SVTG B 24

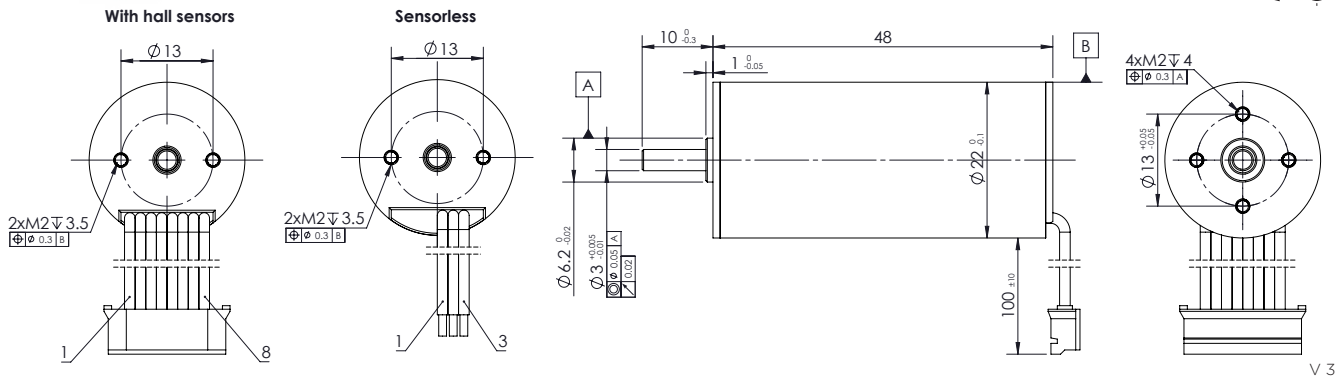


# ATOM EC Series SVTN A 01-2248

43 Watt

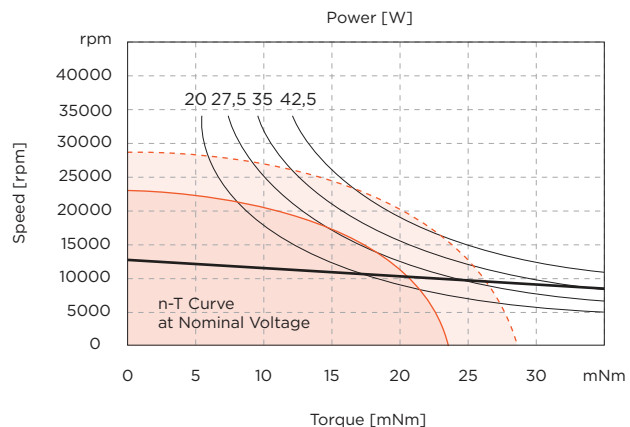


servotecnica  
CORELESS  
BRUSHLESS



| Values                                  | Unit             | SVTN A 01<br>2248-12.. | 2248-24.. | 2248-36.. | 2248-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36        | 48        |
| 2 No load speed                         | rpm              | 13004                  | 12930     | 13390     | 13641     |
| 3 No load current                       | mA               | 179                    | 102       | 82        | 69        |
| 4 Nominal speed                         | rpm              | 11426                  | 11413     | 11749     | 12159     |
| 5 Nominal torque                        | mNm              | 18                     | 18        | 18        | 18        |
| 6 Nominal current                       | A                | 2,24                   | 1,13      | 0,79      | 0,61      |
| 7 Stall torque                          | mNm              | 148                    | 153       | 147       | 166       |
| 8 Stall current                         | A                | 17,2                   | 8,88      | 5,88      | 5,07      |
| 9 Max. efficiency                       | %                | 80,6                   | 79,7      | 77,8      | 78        |
| <b>Characteristics</b>                  |                  |                        |           |           |           |
| 10 Terminal resistance*                 | Ω                | 0,7                    | 2,71      | 6,12      | 9,47      |
| 11 Terminal inductance*                 | mH               | 0,07                   | 0,28      | 0,58      | 0,97      |
| 12 Torque constant                      | mNm/A            | 8,72                   | 17,5      | 25,3      | 33,1      |
| 13 Speed constant                       | rpm/V            | 1095                   | 545       | 377       | 288       |
| 14 Speed/torque gradient                | rpm/mNm          | 87,7                   | 84,3      | 91,2      | 82,3      |
| 15 Mechanical time constant             | ms               | 2,9                    | 2,8       | 3         | 2,7       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 3,1                    | 3,1       | 3,1       | 3,1       |
| <b>Mechanical data</b>                  |                  |                        |           |           |           |
| 17 Thermal resistance housing-ambient   | 11.8 K/W         |                        |           |           |           |
| 18 Thermal resistance winding-housing   | 4.7 K/W          |                        |           |           |           |
| 19 Thermal time constant winding        | 21 s             |                        |           |           |           |
| 20 Thermal time constant motor          | 504 s            |                        |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |                        |           |           |           |
| 23 Max. permissible speed               | 30000 rpm        |                        |           |           |           |
| 24 Radial play                          | preloaded        |                        |           |           |           |
| 25 Max. axial load (dynamic)            | 3.5 N            |                        |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |                        |           |           |           |
| 27 Max. radial load, 5mm from flange    | 15 N             |                        |           |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |           |
| 28 Number of poles                      | 2                |                        |           |           |           |
| 29 Number of phases                     | 3                |                        |           |           |           |
| 30 Weight                               | 85 g             |                        |           |           |           |

\*The diagram based on ambient temperature of 25°.



## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22A  
EN 22AL

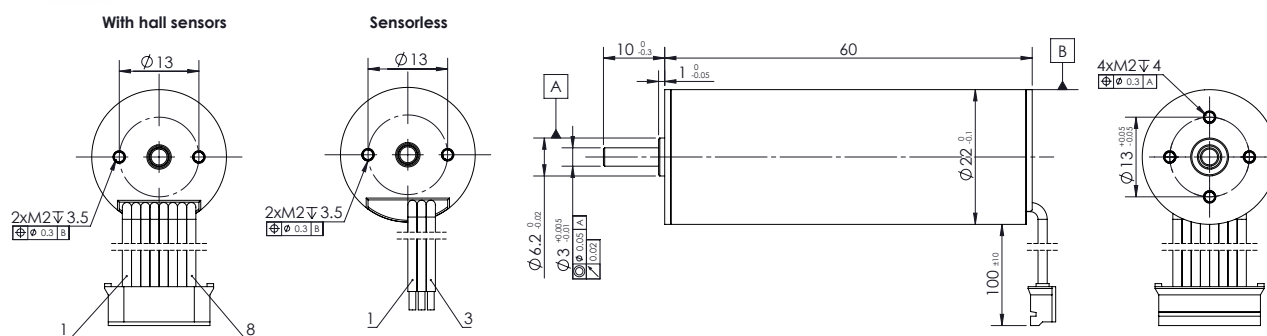
## Gearbox combinations

SVTG B 22  
SVTG B 24



# ATOM EC Series SVTN A 01-2260

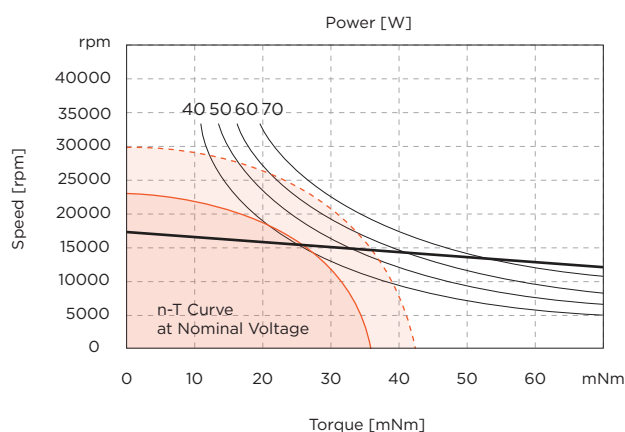
70 Watt



V 3

| Values                                  | Unit             | SVTN A 01  | 2260-12.. | 2260-24.. | 2260-36.. | 2260-48.. |
|-----------------------------------------|------------------|------------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |            |           |           |           |           |
| 1 Nominal voltage                       | V                | 12         | 24        | 36        | 48        |           |
| 2 No load speed                         | rpm              | 16360      | 16086     | 16030     | 16200     |           |
| 3 No load current                       | mA               | 440        | 230       | 170       | 110       |           |
| 4 Nominal speed                         | rpm              | 14517      | 14441     | 14364     | 14530     |           |
| 5 Nominal torque                        | mNm              | 28         | 28        | 28        | 28        |           |
| 6 Nominal current                       | A                | 4,49       | 2,22      | 1,49      | 1,11      |           |
| 7 Stall torque                          | mNm              | 249        | 274       | 269       | 272       |           |
| 8 Stall current                         | A                | 36,4       | 19,7      | 12,9      | 9,82      |           |
| 9 Max. efficiency                       | %                | 79,2       | 79,5      | 78,4      | 79,9      |           |
| <b>Characteristics</b>                  |                  |            |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,33       | 1,22      | 2,79      | 4,89      |           |
| 11 Terminal inductance*                 | mH               | 0,03       | 0,13      | 0,3       | 0,52      |           |
| 12 Torque constant                      | mNm/A            | 6,92       | 14,1      | 21,2      | 28        |           |
| 13 Speed constant                       | rpm/V            | 1380       | 678       | 451       | 341       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 65,8       | 58,8      | 59,5      | 59,7      |           |
| 15 Mechanical time constant             | ms               | 3,1        | 2,8       | 2,8       | 2,8       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 4,5        | 4,5       | 4,5       | 4,5       |           |
| <b>Mechanical data</b>                  |                  |            |           |           |           |           |
| 17 Thermal resistance housing-ambient   | K/W              | 7,6        |           |           |           |           |
| 18 Thermal resistance winding-housing   | K/W              | 4,6        |           |           |           |           |
| 19 Thermal time constant winding        | s                | 29         |           |           |           |           |
| 20 Thermal time constant motor          | s                | 533        |           |           |           |           |
| 21 Ambient temperature                  | °C               | -30...+100 |           |           |           |           |
| 22 Max. permissible winding temperature | °C               | +150       |           |           |           |           |
| 23 Max. permissible speed               | rpm              | 30000      |           |           |           |           |
| 24 Radial play                          |                  | preloaded  |           |           |           |           |
| 25 Max. axial load (dynamic)            | N                | 3,5        |           |           |           |           |
| 26 Max. force for press fits (static)   | N                | 44         |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | N                | 15         |           |           |           |           |
| <b>Other specifications</b>             |                  |            |           |           |           |           |
| 28 Number of poles                      |                  | 2          |           |           |           |           |
| 29 Number of phases                     |                  | 3          |           |           |           |           |
| 30 Weight                               | g                | 122        |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22A  
EN 22AL

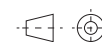
## Gearbox combinations

SVTG B 22  
SVTG B 24

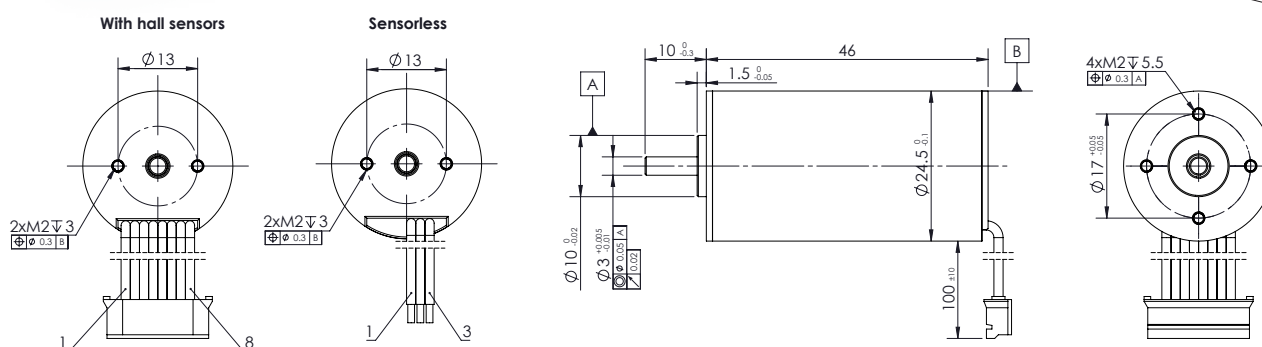


# ATOM EC Series SVTN A 01-2446

42 Watt



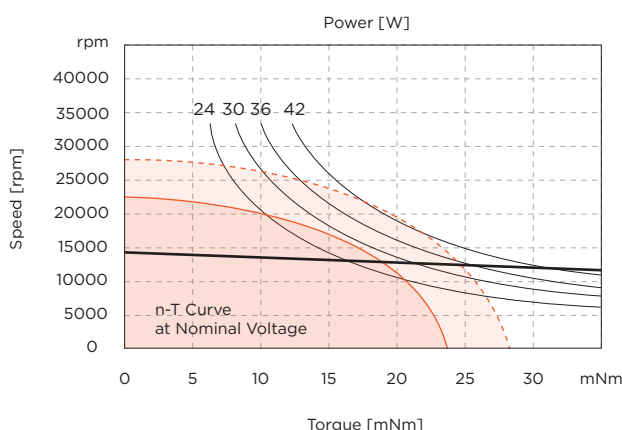
servotecnica  
CORELESS  
BRUSHLESS



V 3

| Values                                  | Unit             | SVTN A 01 | 2446-12.. | 2446-24.. | 2446-36.. | 2446-48.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 24        | 36        | 48        |           |
| 2 No load speed                         | rpm              | 14150     | 13872     | 13920     | 13870     |           |
| 3 No load current                       | mA               | 249       | 124       | 106       | 79        |           |
| 4 Nominal speed                         | rpm              | 12678     | 12487     | 12662     | 12446     |           |
| 5 Nominal torque                        | mNm              | 18        | 18        | 18        | 18        |           |
| 6 Nominal current                       | A                | 2,5       | 1,23      | 0,84      | 0,63      |           |
| 7 Stall torque                          | mNm              | 173       | 180       | 199       | 175       |           |
| 8 Stall current                         | A                | 21,9      | 11,2      | 8,28      | 5,46      |           |
| 9 Max. efficiency                       | %                | 79,8      | 80        | 78,6      | 77,4      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,55      | 2,15      | 4,35      | 8,79      |           |
| 11 Terminal inductance*                 | mH               | 0,07      | 0,29      | 0,62      | 1,14      |           |
| 12 Torque constant                      | mNm/A            | 8,01      | 16,3      | 24,4      | 32,6      |           |
| 13 Speed constant                       | rpm/V            | 1193      | 584       | 392       | 293       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 81,8      | 76,9      | 69,9      | 79,1      |           |
| 15 Mechanical time constant             | ms               | 3,6       | 3,4       | 3,1       | 3,5       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 4,2       | 4,2       | 4,2       | 4,2       |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 11.6 K/W         |           |           |           |           |           |
| 18 Thermal resistance winding-housing   | 5.6 K/W          |           |           |           |           |           |
| 19 Thermal time constant winding        | 30 s             |           |           |           |           |           |
| 20 Thermal time constant motor          | 557 s            |           |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |           |
| 23 Max. permissible speed               | 30000 rpm        |           |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |           |
| 25 Max. axial load (dynamic)            | 3.5 N            |           |           |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |           |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 15 N             |           |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |           |
| 30 Weight                               | 92 g             |           |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22A  
EN 22AL

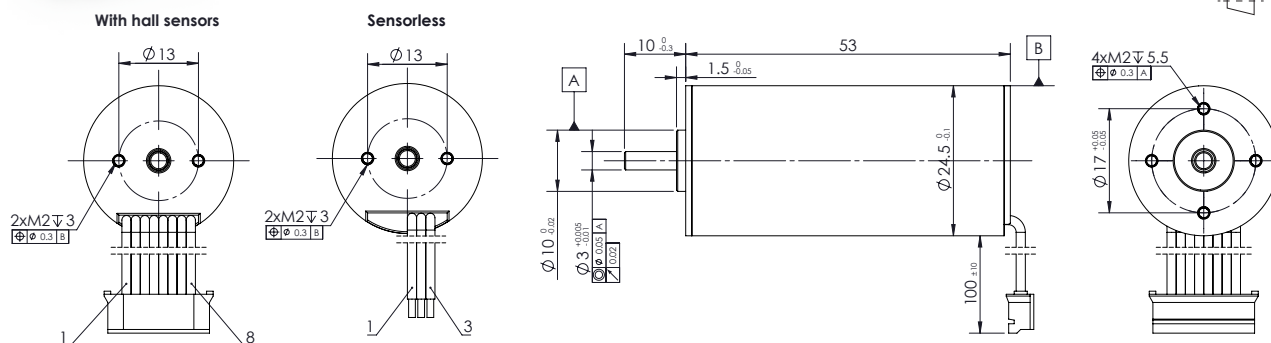
## Gearbox combinations

SVTG B 24  
SVTG B 28



# ATOM EC Series SVTN A 01-2453

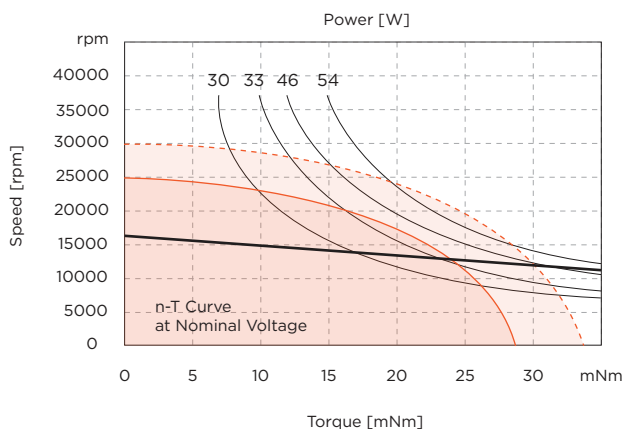
54 Watt



V 3

| Values                                  | Unit             | SVTN A 01<br>2453-12.. | 2453-24.. | 2453-36.. | 2453-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36        | 48        |
| 2 No load speed                         | rpm              | 15083                  | 15398     | 15202     | 15310     |
| 3 No load current                       | mA               | 308                    | 156       | 115       | 94        |
| 4 Nominal speed                         | rpm              | 13938                  | 14347     | 14211     | 14263     |
| 5 Nominal torque                        | mNm              | 20                     | 20        | 20        | 20        |
| 6 Nominal current                       | A                | 2,96                   | 1,51      | 1,01      | 0,77      |
| 7 Stall torque                          | mNm              | 263                    | 293       | 307       | 293       |
| 8 Stall current                         | A                | 35,3                   | 20        | 13,8      | 9,96      |
| 9 Max. efficiency                       | %                | 82,2                   | 83,1      | 82,6      | 81,5      |
| <b>Characteristics</b>                  |                  |                        |           |           |           |
| 10 Terminal resistance*                 | Ω                | 0,34                   | 1,2       | 2,61      | 4,82      |
| 11 Terminal inductance*                 | mH               | 0,05                   | 0,19      | 0,44      | 0,76      |
| 12 Torque constant                      | mNm/A            | 7,53                   | 14,8      | 22,4      | 29,7      |
| 13 Speed constant                       | rpm/V            | 1268                   | 647       | 426       | 322       |
| 14 Speed/torque gradient                | rpm/mNm          | 57,2                   | 52,5      | 49,6      | 52,3      |
| 15 Mechanical time constant             | ms               | 3,5                    | 3,2       | 3,1       | 3,2       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 5,9                    | 5,9       | 5,9       | 5,9       |
| <b>Mechanical data</b>                  |                  |                        |           |           |           |
| 17 Thermal resistance housing-ambient   | 10.2 K/W         |                        |           |           |           |
| 18 Thermal resistance winding-housing   | 6.4 K/W          |                        |           |           |           |
| 19 Thermal time constant winding        | 36 s             |                        |           |           |           |
| 20 Thermal time constant motor          | 555 s            |                        |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |                        |           |           |           |
| 23 Max. permissible speed               | 30000 rpm        |                        |           |           |           |
| 24 Radial play                          | preloaded        |                        |           |           |           |
| 25 Max. axial load (dynamic)            | 3.5 N            |                        |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |                        |           |           |           |
| 27 Max. radial load, 5mm from flange    | 15 N             |                        |           |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |           |
| 28 Number of poles                      | 2                |                        |           |           |           |
| 29 Number of phases                     | 3                |                        |           |           |           |
| 30 Weight                               | 110 g            |                        |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22A  
EN 22AL

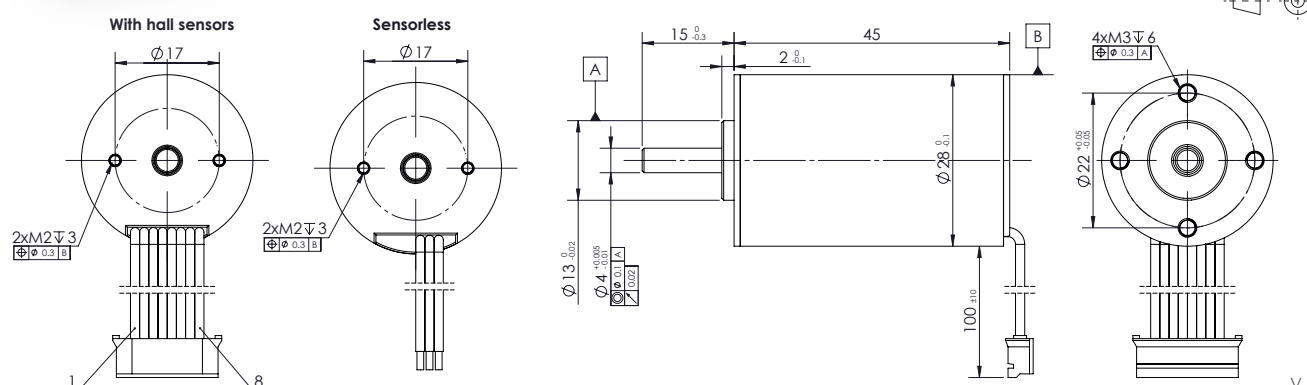
## Gearbox combinations

SVTG B 22  
SVTG B 24



# ATOM EC Series SVTN A 01-2845

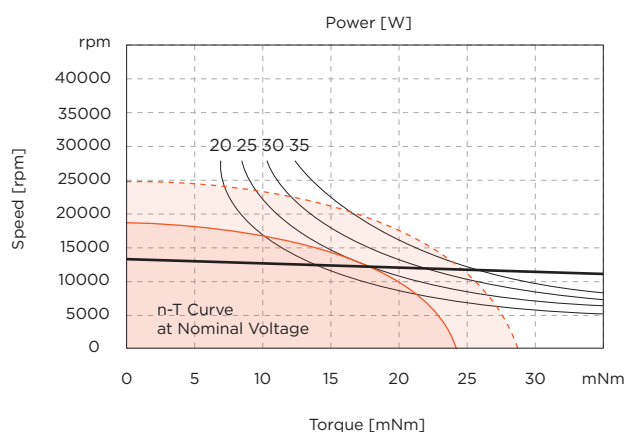
35 Watt



V 3

| Values                                  | Unit             | SVTN A 01<br>2845-12.. | 2845-24.. | 2845-36.. | 2845-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36        | 48        |
| 2 No load speed                         | rpm              | 13737                  | 13756     | 13783     | 13400     |
| 3 No load current                       | mA               | 202                    | 128       | 84        | 79        |
| 4 Nominal speed                         | rpm              | 12232                  | 12342     | 12432     | 11903     |
| 5 Nominal torque                        | mNm              | 18                     | 18        | 18        | 18        |
| 6 Nominal current                       | A                | 2,38                   | 1,22      | 0,81      | 0,61      |
| 7 Stall torque                          | mNm              | 164                    | 175       | 184       | 161       |
| 8 Stall current                         | A                | 20,1                   | 10,8      | 7,53      | 4,87      |
| 9 Max. efficiency                       | %                | 81                     | 79,4      | 80        | 76,1      |
| <b>Characteristics</b>                  |                  |                        |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,6                    | 2,23      | 4,78      | 9,86      |
| 11 Terminal inductance*                 | mH               | 0,08                   | 0,34      | 0,73      | 1,47      |
| 12 Torque constant                      | mNm/A            | 8,26                   | 16,5      | 24,7      | 33,7      |
| 13 Speed constant                       | rpm/V            | 1156                   | 580       | 387       | 284       |
| 14 Speed/torque gradient                | rpm/mNm          | 83,6                   | 78,6      | 75        | 83,1      |
| 15 Mechanical time constant             | ms               | 4,5                    | 4,3       | 4,1       | 4,5       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 5,2                    | 5,2       | 5,2       | 5,2       |
| <b>Mechanical data</b>                  |                  |                        |           |           |           |
| 17 Thermal resistance housing-ambient   | K/W              | 9,6                    |           |           |           |
| 18 Thermal resistance winding-housing   | K/W              | 6,3                    |           |           |           |
| 19 Thermal time constant winding        | s                | 37                     |           |           |           |
| 20 Thermal time constant motor          | s                | 584                    |           |           |           |
| 21 Ambient temperature                  | °C               | -30...+100             |           |           |           |
| 22 Max. permissible winding temperature | °C               | +150                   |           |           |           |
| 23 Max. permissible speed               | rpm              | 25000                  |           |           |           |
| 24 Radial play                          |                  | preloaded              |           |           |           |
| 25 Max. axial load (dynamic)            | N                | 7,5                    |           |           |           |
| 26 Max. force for press fits (static)   | N                | 100                    |           |           |           |
| 27 Max. radial load, 5mm from flange    | N                | 25                     |           |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |           |
| 28 Number of poles                      |                  | 2                      |           |           |           |
| 29 Number of phases                     |                  | 3                      |           |           |           |
| 30 Weight                               | g                | 120                    |           |           |           |

\*The diagram based on ambient temperature of 25°.

Continuous operating range  
Continuous operating range  
with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

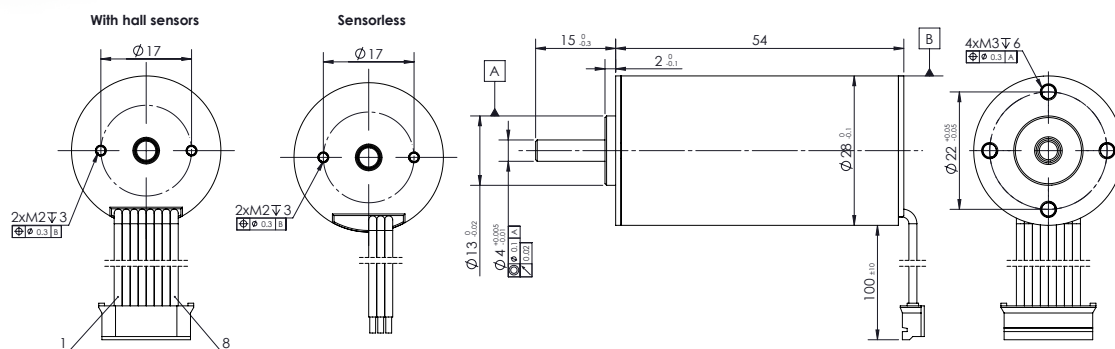
## Gearbox combinations

SVTG B 28



# ATOM EC Series SVTN A 01-2854

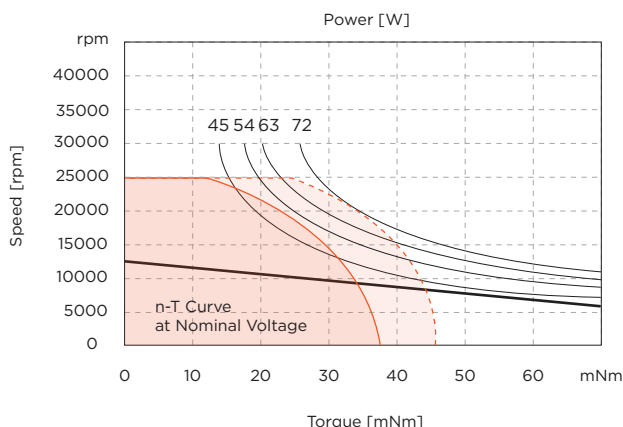
72 Watt



V 3

| Values                                  | Unit             | SVTN A 01 | 2854-12.. | 2854-24.. | 2854-36.. | 2854-48.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 24        | 36        | 48        |           |
| 2 No load speed                         | rpm              | 8031      | 8336      | 8175      | 8325      |           |
| 3 No load current                       | mA               | 142       | 94        | 65        | 51        |           |
| 4 Nominal speed                         | rpm              | 6646      | 7084      | 6891      | 6805      |           |
| 5 Nominal torque                        | mNm              | 35        | 35        | 35        | 35        |           |
| 6 Nominal current                       | A                | 2,62      | 1,38      | 0,91      | 0,7       |           |
| 7 Stall torque                          | mNm              | 203       | 233       | 223       | 192       |           |
| 8 Stall current                         | A                | 14,5      | 8,66      | 5,43      | 3,58      |           |
| 9 Max. efficiency                       | %                | 81,2      | 80,3      | 79,3      | 77,6      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,83      | 2,77      | 6,63      | 13,4      |           |
| 11 Terminal inductance*                 | mH               | 0,16      | 0,61      | 1,41      | 2,56      |           |
| 12 Torque constant                      | mNm/A            | 14,1      | 27,2      | 41,5      | 54,3      |           |
| 13 Speed constant                       | rpm/V            | 676       | 351       | 230       | 176       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 39,6      | 35,8      | 36,7      | 43,4      |           |
| 15 Mechanical time constant             | ms               | 3,5       | 3,2       | 3,3       | 3,9       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 8,5       | 8,5       | 8,5       | 8,5       |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 7.1 K/W          |           |           |           |           |           |
| 18 Thermal resistance winding-housing   | 5 K/W            |           |           |           |           |           |
| 19 Thermal time constant winding        | 51 s             |           |           |           |           |           |
| 20 Thermal time constant motor          | 552 s            |           |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |           |
| 23 Max. permissible speed               | 25000 rpm        |           |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |           |
| 25 Max. axial load (dynamic)            | 7.5 N            |           |           |           |           |           |
| 26 Max. force for press fits (static)   | 100 N            |           |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 25 N             |           |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |           |
| 30 Weight                               | 156 g            |           |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

## Gearbox combinations

SVTG B 28

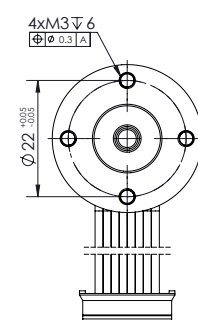
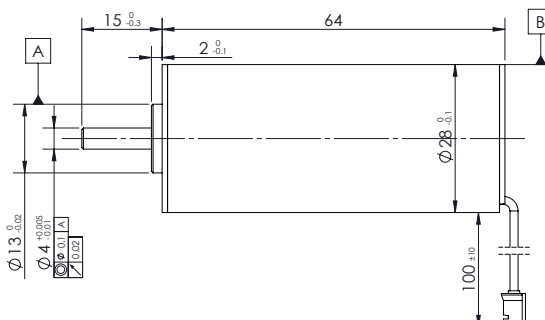
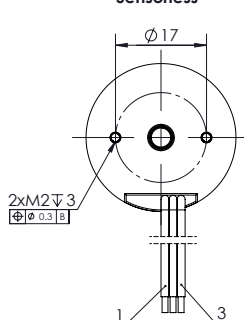
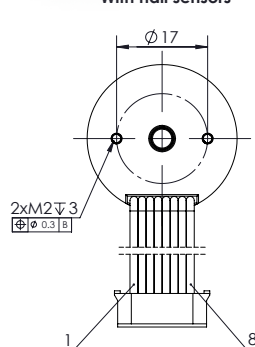




# ATOM EC Series SVTN A 01-2864

With hall sensors

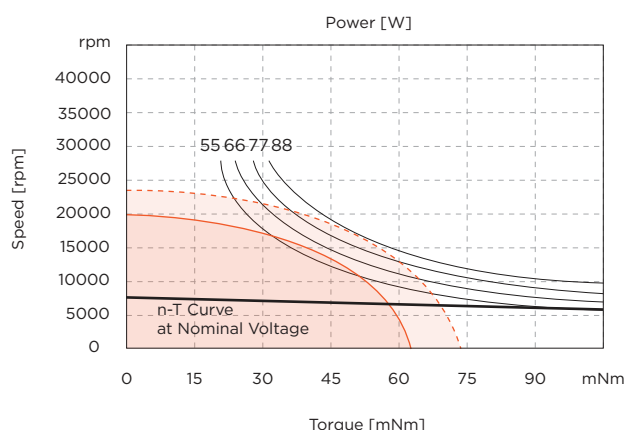
Sensorless



V 3

| Values                                  | Unit             | SVTN A 01<br>2864-12.. | 2864-24.. | 2864-36.. | 2864-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36        | 48        |
| 2 No load speed                         | rpm              | 7956                   | 8014      | 8275      | 7960      |
| 3 No load current                       | mA               | 182                    | 104       | 92        | 59        |
| 4 Nominal speed                         | rpm              | 6712                   | 6840      | 7053      | 6782      |
| 5 Nominal torque                        | mNm              | 50                     | 50        | 50        | 50        |
| 6 Nominal current                       | A                | 3,68                   | 1,87      | 1,31      | 0,94      |
| 7 Stall torque                          | mNm              | 320                    | 341       | 339       | 338       |
| 8 Stall current                         | A                | 22,6                   | 12,1      | 8,33      | 5,99      |
| 9 Max. efficiency                       | %                | 82,8                   | 82,3      | 80,1      | 81,1      |
| <b>Characteristics</b>                  |                  |                        |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,53                   | 1,98      | 4,32      | 8,02      |
| 11 Terminal inductance*                 | mH               | 0,11                   | 0,46      | 0,96      | 1,83      |
| 12 Torque constant                      | mNm/A            | 14,3                   | 14,3      | 14,3      | 14,3      |
| 13 Speed constant                       | rpm/V            | 668                    | 337       | 232       | 167       |
| 14 Speed/torque gradient                | rpm/mNm          | 24,9                   | 23,5      | 24,4      | 23,6      |
| 15 Mechanical time constant             | ms               | 2,5                    | 2,4       | 2,5       | 2,4       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 9,6                    | 9,6       | 9,6       | 9,6       |
| <b>Mechanical data</b>                  |                  |                        |           |           |           |
| 17 Thermal resistance housing-ambient   | 5.5 K/W          |                        |           |           |           |
| 18 Thermal resistance winding-housing   | 4 K/W            |                        |           |           |           |
| 19 Thermal time constant winding        | 56 s             |                        |           |           |           |
| 20 Thermal time constant motor          | 521 s            |                        |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |                        |           |           |           |
| 23 Max. permissible speed               | 25000 rpm        |                        |           |           |           |
| 24 Radial play                          | preloaded        |                        |           |           |           |
| 25 Max. axial load (dynamic)            | 7.5 N            |                        |           |           |           |
| 26 Max. force for press fits (static)   | 100 N            |                        |           |           |           |
| 27 Max. radial load, 5mm from flange    | 25 N             |                        |           |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |           |
| 28 Number of poles                      | 2                |                        |           |           |           |
| 29 Number of phases                     | 3                |                        |           |           |           |
| 30 Weight                               | 195 g            |                        |           |           |           |

\*The diagram based on ambient temperature of 25°.

Continuous operating range  
Continuous operating range  
with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

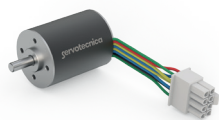
|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

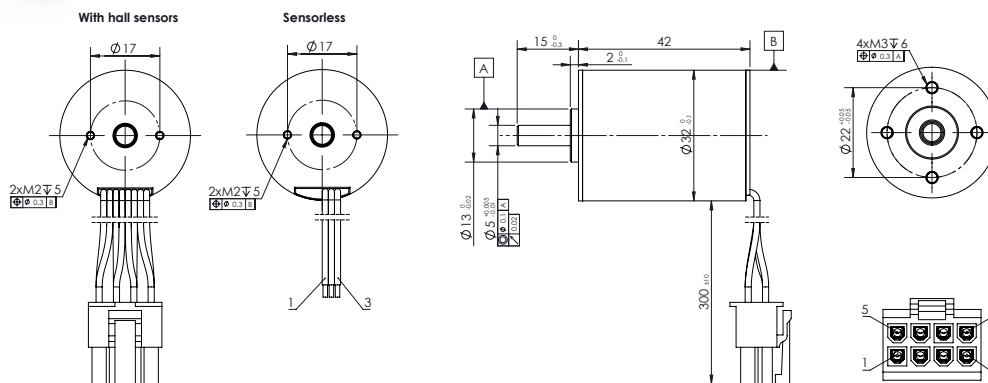
## Gearbox combinations

SVTG B 28



# ATOM EC Series SVTN A 01-3242

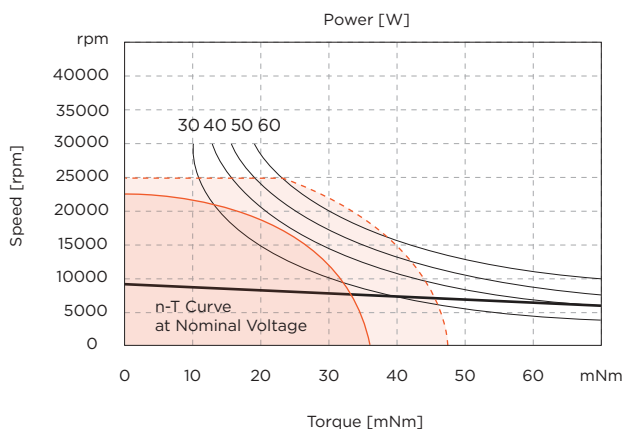
60 Watt



V 3

| Values                                  | Unit             | SVTN A 01 | 3242-12..  | 3242-24.. | 3242-36.. | 3242-48.. |
|-----------------------------------------|------------------|-----------|------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |            |           |           |           |
| 1 Nominal voltage                       | V                |           | 12         | 24        | 36        | 48        |
| 2 No load speed                         | rpm              |           | 9300       | 9500      | 9000      | 9300      |
| 3 No load current                       | mA               |           | 370        | 190       | 120       | 90        |
| 4 Nominal speed                         | rpm              |           | 7979       | 8227      | 7848      | 8035      |
| 5 Nominal torque                        | mNm              |           | 22,3       | 24,5      | 21,8      | 27,8      |
| 6 Nominal current                       | A                |           | 2,23       | 1,23      | 0,83      | 0,58      |
| 7 Stall torque                          | mNm              |           | 157        | 183       | 206       | 173       |
| 8 Stall current                         | A                |           | 13,5       | 7,95      | 5,64      | 3,68      |
| 9 Max. efficiency                       | %                |           | 69,6       | 71,4      | 72,9      | 71,1      |
| <b>Characteristics</b>                  |                  |           |            |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         |           | 0,89       | 3,02      | 6,38      | 13,04     |
| 11 Terminal inductance*                 | mH               |           | 0,08       | 0,26      | 0,61      | 1,05      |
| 12 Torque constant                      | mNm/A            |           | 12         | 23,5      | 37,4      | 48,1      |
| 13 Speed constant                       | rpm/V            |           | 797        | 406       | 256       | 199       |
| 14 Speed/torque gradient                | rpm/mNm          |           | 59,2       | 52        | 46,8      | 53,9      |
| 15 Mechanical time constant             | ms               |           | 5,8        | 5,1       | 4,6       | 5,3       |
| 16 Rotor inertia                        | gcm <sup>2</sup> |           | 9,4        | 9,4       | 9,4       | 9,4       |
| <b>Mechanical data</b>                  |                  |           |            |           |           |           |
| 17 Thermal resistance housing-ambient   | K/W              |           | 8,8        |           |           |           |
| 18 Thermal resistance winding-housing   | K/W              |           | 2,7        |           |           |           |
| 19 Thermal time constant winding        | s                |           | 23,5       |           |           |           |
| 20 Thermal time constant motor          | s                |           | 560        |           |           |           |
| 21 Ambient temperature                  | °C               |           | -30...+100 |           |           |           |
| 22 Max. permissible winding temperature | °C               |           | +150       |           |           |           |
| 23 Max. permissible speed               | rpm              |           | 25000      |           |           |           |
| 24 Radial play                          |                  |           | preloaded  |           |           |           |
| 25 Max. axial load (dynamic)            | N                |           | 7,5        |           |           |           |
| 26 Max. force for press fits (static)   | N                |           | 100        |           |           |           |
| 27 Max. radial load, 5mm from flange    | N                |           | 25         |           |           |           |
| <b>Other specifications</b>             |                  |           |            |           |           |           |
| 28 Number of poles                      |                  |           | 2          |           |           |           |
| 29 Number of phases                     |                  |           | 3          |           |           |           |
| 30 Weight                               | g                |           | 147        |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |              |
|--------------|------------------|--------------|
| Connection H | (Sensor)         | PTFE         |
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

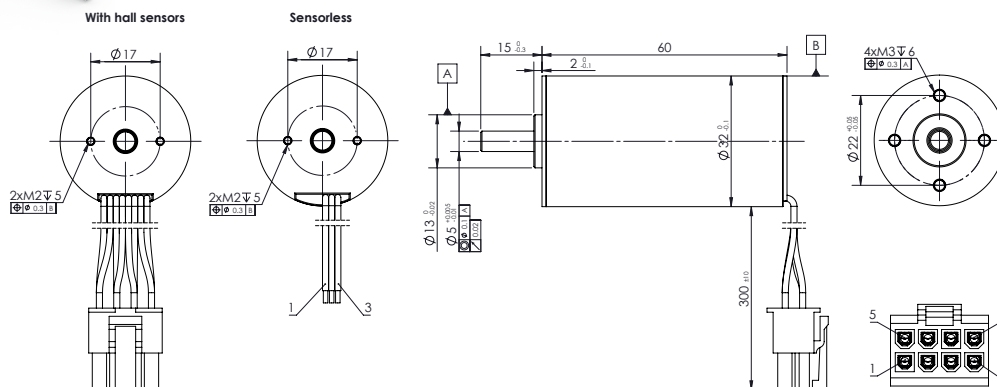
EN 22B  
EN 22BL

## Gearbox combinations

SVTG B 32  
SVTG B 36



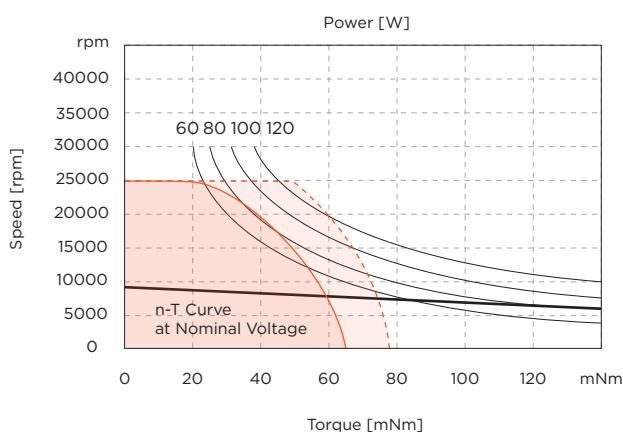
# ATOM EC Series SVTN A 01-3260



V 3

| Values                                  | Unit             | SVTN A 01 | 3260-12..  | 3260-24.. | 3260-36.. | 3260-48.. |
|-----------------------------------------|------------------|-----------|------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |            |           |           |           |
| 1 Nominal voltage                       | V                |           | 12         | 24        | 36        | 48        |
| 2 No load speed                         | rpm              |           | 10845      | 11038     | 10937     | 11125     |
| 3 No load current                       | mA               |           | 430        | 190       | 130       | 90        |
| 4 Nominal speed                         | rpm              |           | 9889       | 10027     | 9931      | 10087     |
| 5 Nominal torque                        | mNm              |           | 50         | 50        | 50        | 50        |
| 6 Nominal current                       | A                |           | 5,2        | 2,62      | 1,73      | 1,31      |
| 7 Stall torque                          | mNm              |           | 567        | 546       | 544       | 536       |
| 8 Stall current                         | A                |           | 54,5       | 26,7      | 17,6      | 13,2      |
| 9 Max. efficiency                       | %                |           | 83         | 83,8      | 83,5      | 84,2      |
| <b>Characteristics</b>                  |                  |           |            |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         |           | 0,2        | 0,9       | 2,05      | 3,64      |
| 11 Terminal inductance*                 | mH               |           | 0,08       | 0,32      | 0,9       | 1,22      |
| 12 Torque constant                      | mNm/A            |           | 10,5       | 20,6      | 31,2      | 40,9      |
| 13 Speed constant                       | rpm/V            |           | 911        | 463       | 306       | 233       |
| 14 Speed/torque gradient                | rpm/mNm          |           | 19,1       | 20,2      | 20,1      | 20,8      |
| 15 Mechanical time constant             | ms               |           | 3,1        | 3,3       | 3,3       | 3,4       |
| 16 Rotor inertia                        | gcm <sup>2</sup> |           | 15,5       | 15,5      | 15,5      | 15,5      |
| <b>Mechanical data</b>                  |                  |           |            |           |           |           |
| 17 Thermal resistance housing-ambient   | K/W              |           | 6          |           |           |           |
| 18 Thermal resistance winding-housing   | K/W              |           | 3,2        |           |           |           |
| 19 Thermal time constant winding        | s                |           | 36         |           |           |           |
| 20 Thermal time constant motor          | s                |           | 626        |           |           |           |
| 21 Ambient temperature                  | °C               |           | -30...+100 |           |           |           |
| 22 Max. permissible winding temperature | °C               |           | +150       |           |           |           |
| 23 Max. permissible speed               | rpm              |           | 25000      |           |           |           |
| 24 Radial play                          |                  |           | preloaded  |           |           |           |
| 25 Max. axial load (dynamic)            | N                |           | 7,5        |           |           |           |
| 26 Max. force for press fits (static)   | N                |           | 100        |           |           |           |
| 27 Max. radial load, 5mm from flange    | N                |           | 25         |           |           |           |
| <b>Other specifications</b>             |                  |           |            |           |           |           |
| 28 Number of poles                      |                  |           | 2          |           |           |           |
| 29 Number of phases                     |                  |           | 3          |           |           |           |
| 30 Weight                               | g                |           | 217        |           |           |           |

\*The diagram based on ambient temperature of 25°.

Continuous operating range  
Continuous operating range  
with Reduced Rth2 50%

## Connection

| Connection H | (Sensor)         | PTFE         |
|--------------|------------------|--------------|
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

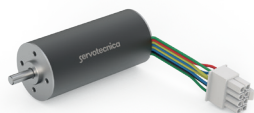
| Hall sensors | Encoder    |
|--------------|------------|
| SVTE-A-E40   | SVTE-A-E45 |
| SVTE-A-E50   | SVTE-A-E55 |

## Encoder combinations

EN 22B  
EN 22BL

## Gearbox combinations

SVTG B 32  
SVTG B 36



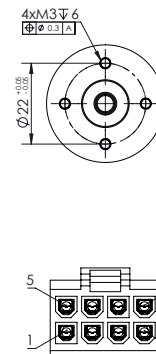
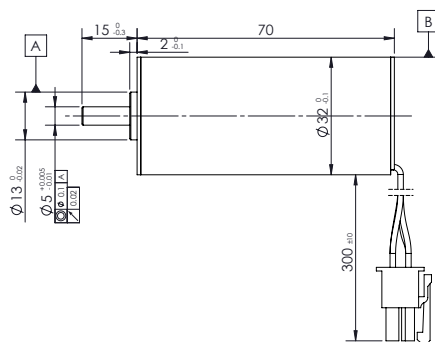
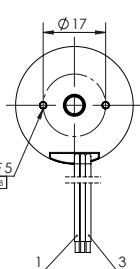
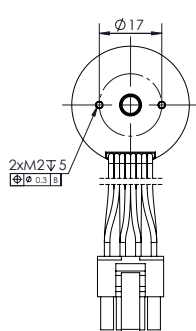
# ATOM EC Series SVTN A 01-3270

130 Watt



With hall sensors

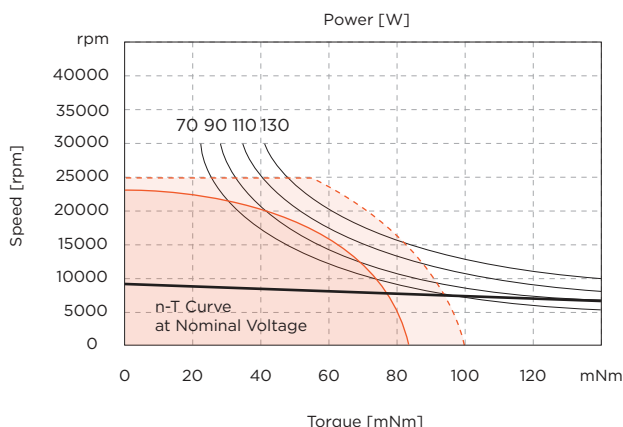
Sensorless



V 3

| Values                                  | Unit             | SVTN A 01 | 3270-12..  | 3270-24.. | 3270-36.. | 3270-48.. |
|-----------------------------------------|------------------|-----------|------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |            |           |           |           |
| 1 Nominal voltage                       | V                |           | 12         | 24        | 36        | 48        |
| 2 No load speed                         | rpm              |           | 8998       | 9055      | 9252      | 9080      |
| 3 No load current                       | mA               |           | 450        | 180       | 100       | 90        |
| 4 Nominal speed                         | rpm              |           | 7991       | 7963      | 8129      | 8077      |
| 5 Nominal torque                        | mNm              |           | 70         | 70        | 70        | 70        |
| 6 Nominal current                       | A                |           | 6          | 2,97      | 2         | 1,49      |
| 7 Stall torque                          | mNm              |           | 625        | 581       | 577       | 634       |
| 8 Stall current                         | A                |           | 50         | 23,3      | 15,7      | 12,7      |
| 9 Max. efficiency                       | %                |           | 81,9       | 83,2      | 84,7      | 83,9      |
| <b>Characteristics</b>                  |                  |           |            |           |           |           |
| 10 Terminal resistance*                 | Ω                |           | 0,24       | 1,03      | 2,29      | 3,77      |
| 11 Terminal inductance*                 | mH               |           | 0,09       | 0,35      | 0,75      | 1,33      |
| 12 Torque constant                      | mNm/A            |           | 12,6       | 25,1      | 36,9      | 50,1      |
| 13 Speed constant                       | rpm/V            |           | 757        | 380       | 259       | 191       |
| 14 Speed/torque gradient                | rpm/mNm          |           | 14,4       | 15,6      | 16        | 14,3      |
| 15 Mechanical time constant             | ms               |           | 2,8        | 3         | 3,1       | 2,8       |
| 16 Rotor inertia                        | gcm <sup>2</sup> |           | 18,5       | 18,5      | 18,5      | 18,5      |
| <b>Mechanical data</b>                  |                  |           |            |           |           |           |
| 17 Thermal resistance housing-ambient   | K/W              |           | 4,7        |           |           |           |
| 18 Thermal resistance winding-housing   | K/W              |           | 2,9        |           |           |           |
| 19 Thermal time constant winding        | s                |           | 38         |           |           |           |
| 20 Thermal time constant motor          | s                |           | 568        |           |           |           |
| 21 Ambient temperature                  | °C               |           | -30...+100 |           |           |           |
| 22 Max. permissible winding temperature | °C               |           | +150       |           |           |           |
| 23 Max. permissible speed               | rpm              |           | 25000      |           |           |           |
| 24 Radial play                          |                  |           | preloaded  |           |           |           |
| 25 Max. axial load (dynamic)            | N                |           | 7,5        |           |           |           |
| 26 Max. force for press fits (static)   | N                |           | 100        |           |           |           |
| 27 Max. radial load, 5mm from flange    | N                |           | 25         |           |           |           |
| <b>Other specifications</b>             |                  |           |            |           |           |           |
| 28 Number of poles                      |                  |           | 2          |           |           |           |
| 29 Number of phases                     |                  |           | 3          |           |           |           |
| 30 Weight                               | g                |           | 256        |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |              |
|--------------|------------------|--------------|
| Connection H | (Sensor)         | PTFE         |
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

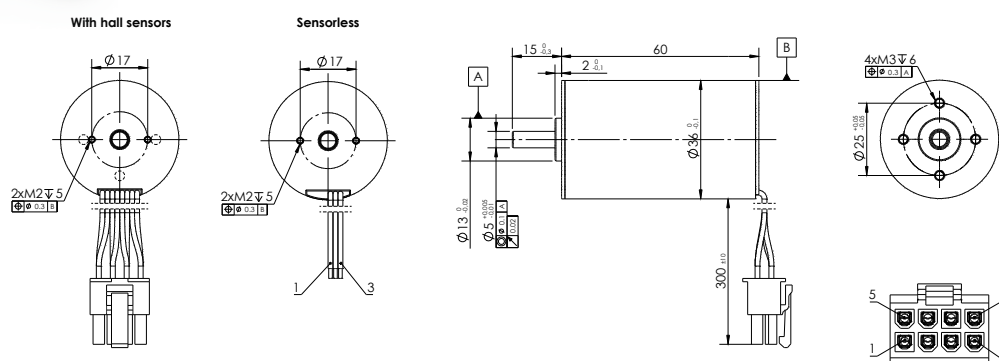
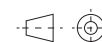
## Gearbox combinations

SVTG B 32  
SVTG B 36



# ATOM EC Series SVTN A 01-3660

140 Watt

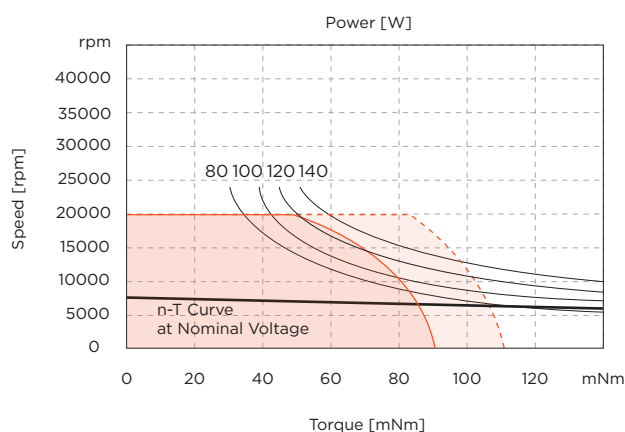


V 3

**servotecnica**  
CORELESS  
BRUSHLESS

| Values                                  | Unit             | SVTN A 01<br>3660-12.. | 3660-24.. | 3660-36.. | 3660-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36        | 48        |
| 2 No load speed                         | rpm              | 8050                   | 8140      | 8014      | 8083      |
| 3 No load current                       | mA               | 288                    | 148       | 101       | 84        |
| 4 Nominal speed                         | rpm              | 6794                   | 6784      | 6804      | 6766      |
| 5 Nominal torque                        | mNm              | 82                     | 82        | 82        | 82        |
| 6 Nominal current                       | A                | 6,09                   | 3,08      | 2,03      | 1,54      |
| 7 Stall torque                          | mNm              | 526                    | 492       | 543       | 503       |
| 8 Stall current                         | A                | 37,5                   | 17,8      | 12,9      | 9,04      |
| 9 Max. efficiency                       | %                | 83,2                   | 82,6      | 83,1      | 81,6      |
| <b>Characteristics</b>                  |                  |                        |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,32                   | 1,35      | 2,8       | 5,31      |
| 11 Terminal inductance*                 | mH               | 0,09                   | 0,38      | 0,88      | 1,6       |
| 12 Torque constant                      | mNm/A            | 14,1                   | 27,9      | 42,6      | 56,2      |
| 13 Speed constant                       | rpm/V            | 676                    | 342       | 224       | 170       |
| 14 Speed/torque gradient                | rpm/mNm          | 15,3                   | 16,5      | 14,8      | 16,1      |
| 15 Mechanical time constant             | ms               | 3,1                    | 3,4       | 3         | 3,3       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 19,5                   | 19,5      | 19,5      | 19,5      |
| <b>Mechanical data</b>                  |                  |                        |           |           |           |
| 17 Thermal resistance housing-ambient   | 4.4 K/W          |                        |           |           |           |
| 18 Thermal resistance winding-housing   | 1.3 K/W          |                        |           |           |           |
| 19 Thermal time constant winding        | 15 s             |                        |           |           |           |
| 20 Thermal time constant motor          | 582 s            |                        |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |                        |           |           |           |
| 23 Max. permissible speed               | 20000 rpm        |                        |           |           |           |
| 24 Radial play                          | preloaded        |                        |           |           |           |
| 25 Max. axial load (dynamic)            | 7.5 N            |                        |           |           |           |
| 26 Max. force for press fits (static)   | 100 N            |                        |           |           |           |
| 27 Max. radial load, 5mm from flange    | 25 N             |                        |           |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |           |
| 28 Number of poles                      | 2                |                        |           |           |           |
| 29 Number of phases                     | 3                |                        |           |           |           |
| 30 Weight                               | 272 g            |                        |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range

Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |              |
|--------------|------------------|--------------|
| Connection H | (Sensor)         | PTFE         |
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

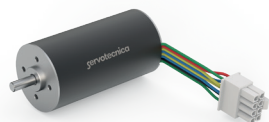
|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

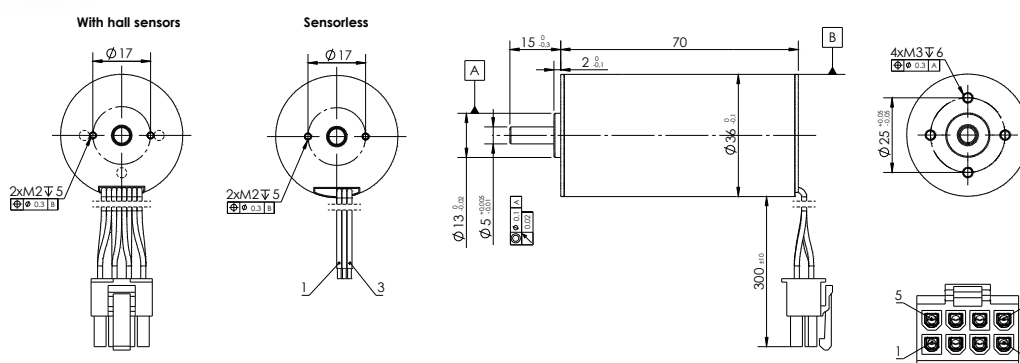
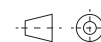
## Gearbox combinations

SVTG B 36  
SVTG B 42



# ATOM EC Series SVTN A 01-3670

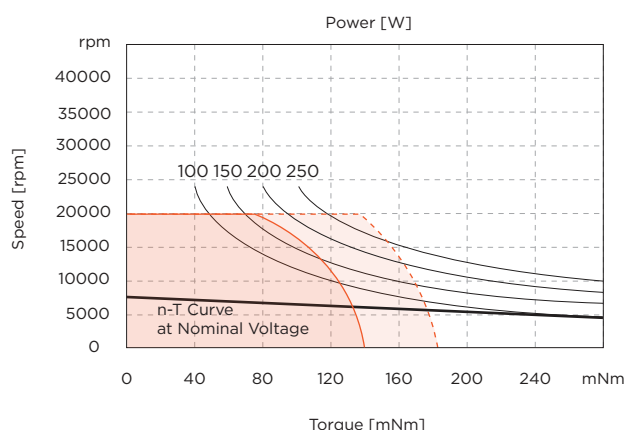
250 Watt



V 3

| Values                                  | Unit             | SVTN A 01 | 3670-12.. | 3670-24.. | 3670-36.. | 3670-48.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 24        | 36        | 48        |           |
| 2 No load speed                         | rpm              | 6578      | 6555      | 6675      | 6545      |           |
| 3 No load current                       | mA               | 293       | 137       | 101       | 78        |           |
| 4 Nominal speed                         | rpm              | 5300      | 5391      | 5455      | 5401      |           |
| 5 Nominal torque                        | mNm              | 120       | 120       | 120       | 120       |           |
| 6 Nominal current                       | A                | 7,24      | 3,59      | 2,45      | 1,81      |           |
| 7 Stall torque                          | mNm              | 618       | 676       | 657       | 687       |           |
| 8 Stall current                         | A                | 36        | 19,6      | 12,9      | 9,96      |           |
| 9 Max. efficiency                       | %                | 82,8      | 84        | 83,1      | 83,1      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |           |
| 10 Terminal resistance*                 | Ω                | 0,33      | 1,22      | 2,78      | 4,82      |           |
| 11 Terminal inductance*                 | mH               | 0,09      | 0,38      | 0,85      | 1,52      |           |
| 12 Torque constant                      | mNm/A            | 17,3      | 34,7      | 51,1      | 69,5      |           |
| 13 Speed constant                       | rpm/V            | 553       | 275       | 187       | 137       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 10,7      | 9,7       | 10,2      | 9,5       |           |
| 15 Mechanical time constant             | ms               | 2,4       | 2,2       | 2,3       | 2,1       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 21,5      | 21,5      | 21,5      | 21,5      |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 3.5 K/W          |           |           |           |           |           |
| 18 Thermal resistance winding-housing   | 0.9 K/W          |           |           |           |           |           |
| 19 Thermal time constant winding        | 14.3 s           |           |           |           |           |           |
| 20 Thermal time constant motor          | 558 s            |           |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |           |
| 23 Max. permissible speed               | 20000 rpm        |           |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |           |
| 25 Max. axial load (dynamic)            | 7.5 N            |           |           |           |           |           |
| 26 Max. force for press fits (static)   | 100 N            |           |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 25 N             |           |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |           |
| 30 Weight                               | 331 g            |           |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

| Connection H | (Sensor)         | PTFE         |
|--------------|------------------|--------------|
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

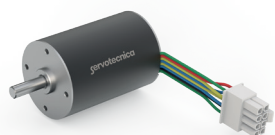
| Hall sensors | Encoder    |
|--------------|------------|
| SVTE-A-E40   | SVTE-A-E45 |
| SVTE-A-E50   | SVTE-A-E55 |

## Encoder combinations

EN 22B  
EN 22BL

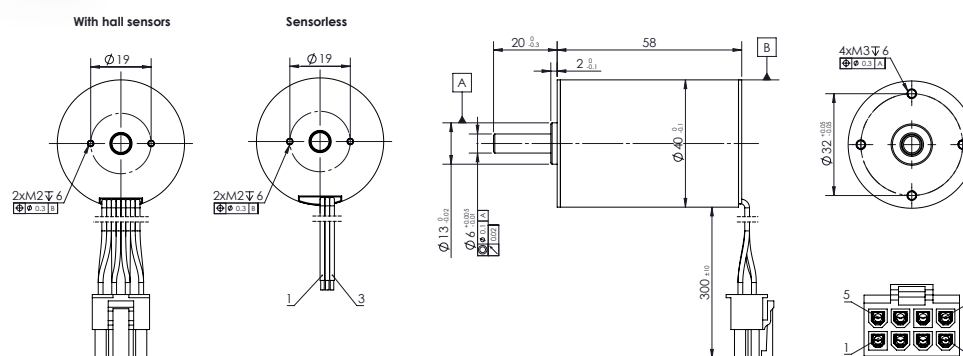
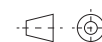
## Gearbox combinations

SVTG B 36  
SVTG B 42



# ATOM EC Series SVTN A 01-4058

150 Watt

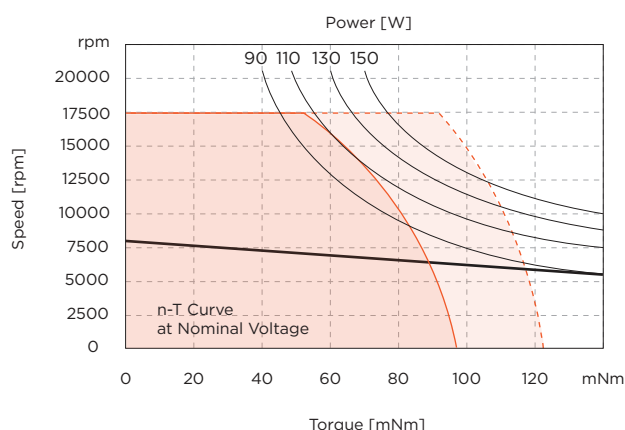


V 3

**servotecnica**  
CORELESS  
BRUSHLESS

| Values                                  | Unit             | SVTN A 01<br>4058-12.. | 4058-24.. | 4058-36.. | 4058-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36        | 48        |
| 2 No load speed                         | rpm              | 7958                   | 7890      | 7962      | 8001      |
| 3 No load current                       | mA               | 480                    | 200       | 170       | 110       |
| 4 Nominal speed                         | rpm              | 7000                   | 6912      | 6943      | 6986      |
| 5 Nominal torque                        | mNm              | 85                     | 85        | 85        | 85        |
| 6 Nominal current                       | A                | 6,44                   | 3,15      | 2,16      | 1,61      |
| 7 Stall torque                          | mNm              | 706                    | 686       | 664       | 670       |
| 8 Stall current                         | A                | 50                     | 24        | 15,7      | 11,9      |
| 9 Max. efficiency                       | %                | 81,4                   | 82,6      | 80,3      | 81,7      |
| <b>Characteristics</b>                  |                  |                        |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,24                   | 1         | 2,29      | 4,03      |
| 11 Terminal inductance*                 | mH               | 0,11                   | 0,46      | 0,97      | 1,67      |
| 12 Torque constant                      | mNm/A            | 14,3                   | 28,8      | 42,7      | 56,8      |
| 13 Speed constant                       | rpm/V            | 670                    | 332       | 224       | 168       |
| 14 Speed/torque gradient                | rpm/mNm          | 11,3                   | 11,5      | 12        | 11,9      |
| 15 Mechanical time constant             | ms               | 3,5                    | 3,6       | 3,7       | 3,7       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 29,6                   | 29,6      | 29,6      | 29,6      |
| <b>Mechanical data</b>                  |                  |                        |           |           |           |
| 17 Thermal resistance housing-ambient   | 4.7 K/W          |                        |           |           |           |
| 18 Thermal resistance winding-housing   | 2.2 K/W          |                        |           |           |           |
| 19 Thermal time constant winding        | 35 s             |                        |           |           |           |
| 20 Thermal time constant motor          | 777 s            |                        |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |                        |           |           |           |
| 23 Max. permissible speed               | 17500 rpm        |                        |           |           |           |
| 24 Radial play                          | preloaded        |                        |           |           |           |
| 25 Max. axial load (dynamic)            | 9 N              |                        |           |           |           |
| 26 Max. force for press fits (static)   | 170 N            |                        |           |           |           |
| 27 Max. radial load, 5mm from flange    | 80 N             |                        |           |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |           |
| 28 Number of poles                      | 2                |                        |           |           |           |
| 29 Number of phases                     | 3                |                        |           |           |           |
| 30 Weight                               | 338 g            |                        |           |           |           |

\*The diagram based on ambient temperature of 25°.



## Connection

|              |                  |              |
|--------------|------------------|--------------|
| Connection H | (Sensor)         | PTFE         |
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

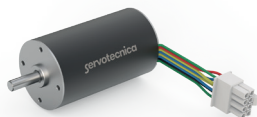
## Encoder combinations

EN 24  
EN 24L

## Gearbox combinations

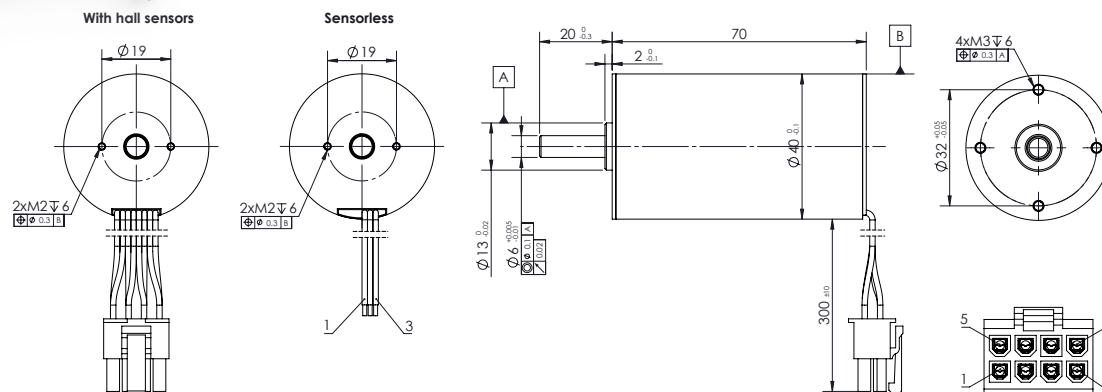
SVTG B 42





# ATOM EC Series SVTN A 01-4070

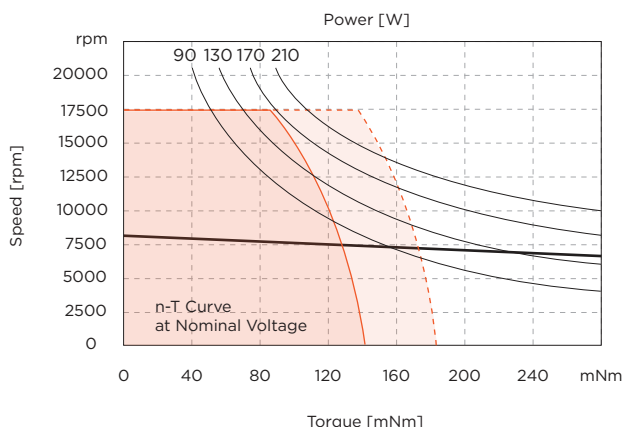
210 Watt



V 3

| Values                                  | Unit             | SVTN A 01 | 4070-12.. | 4070-24.. | 4070-36.. | 4070-48.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 24        | 36        | 48        |           |
| 2 No load speed                         | rpm              | 6154      | 8102      | 8113      | 8061      |           |
| 3 No load current                       | mA               | 264       | 200       | 190       | 130       |           |
| 4 Nominal speed                         | rpm              | 5084      | 7304      | 7266      | 7238      |           |
| 5 Nominal torque                        | mNm              | 130       | 130       | 130       | 130       |           |
| 6 Nominal current                       | A                | 7,29      | 4,82      | 3,28      | 2,43      |           |
| 7 Stall torque                          | mNm              | 748       | 1320      | 1245      | 1273      |           |
| 8 Stall current                         | A                | 40,7      | 47,1      | 29,8      | 22,6      |           |
| 9 Max. efficiency                       | %                | 84,5      | 87,4      | 84,7      | 85,4      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,3       | 0,51      | 1,21      | 2,12      |           |
| 11 Terminal inductance*                 | mH               | 0,11      | 0,3       | 0,66      | 1,2       |           |
| 12 Torque constant                      | mNm/A            | 18,5      | 28,2      | 42,1      | 56,5      |           |
| 13 Speed constant                       | rpm/V            | 516       | 339       | 227       | 169       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 8,23      | 6,14      | 6,52      | 6,33      |           |
| 15 Mechanical time constant             | ms               | 3,4       | 2,5       | 2,7       | 2,6       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 39,4      | 39,4      | 39,4      | 39,4      |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 3.8 K/W          |           |           |           |           |           |
| 18 Thermal resistance winding-housing   | 1.5 K/W          |           |           |           |           |           |
| 19 Thermal time constant winding        | 33 s             |           |           |           |           |           |
| 20 Thermal time constant motor          | 775 s            |           |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |           |
| 23 Max. permissible speed               | 17500 rpm        |           |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |           |
| 25 Max. axial load (dynamic)            | 9 N              |           |           |           |           |           |
| 26 Max. force for press fits (static)   | 170 N            |           |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 80 N             |           |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |           |
| 30 Weight                               | 415 g            |           |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

| Connection H | (Sensor)         | PTFE         |
|--------------|------------------|--------------|
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

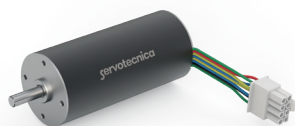
| Hall sensors | Encoder    |
|--------------|------------|
| SVTE-A-E40   | SVTE-A-E45 |
| SVTE-A-E50   | SVTE-A-E55 |

## Encoder combinations

EN 24  
EN 24L

## Gearbox combinations

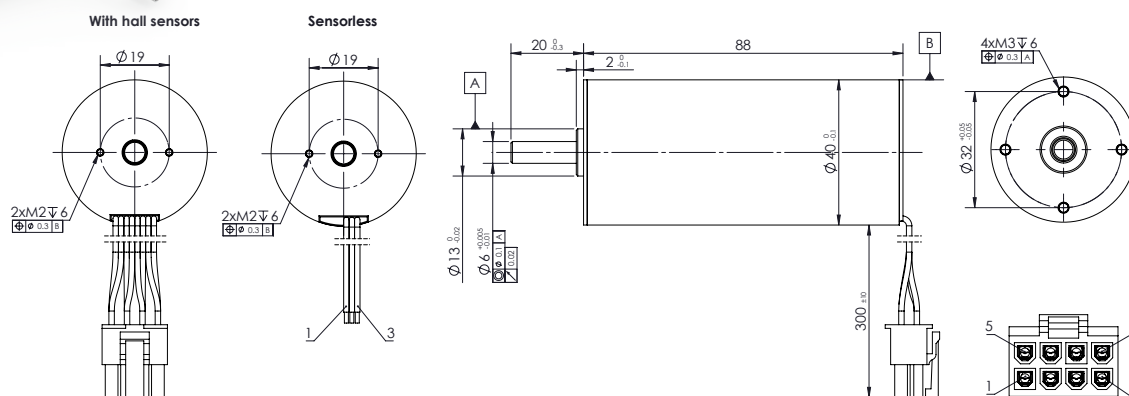
SVTG B 42



# ATOM EC Series SVTN A 01-4088

400 Watt

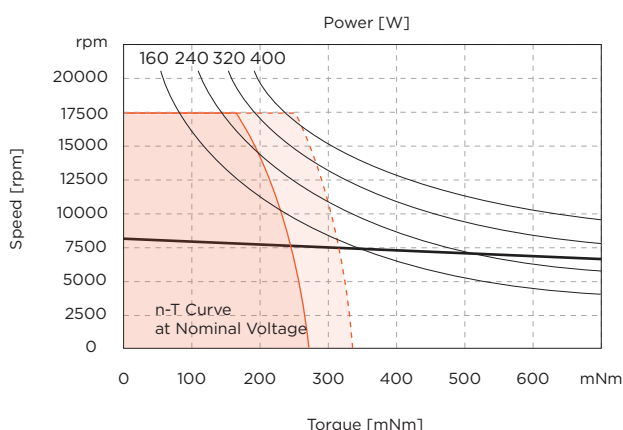
**servotecnica**  
CORELESS  
BRUSHLESS



V 3

| Values                                  | Unit             | SVTN A 01<br>4088-24.. | 4088-36.. | 4088-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |           |
| 1 Nominal voltage                       | V                | 24                     | 36        | 48        |
| 2 No load speed                         | rpm              | 7921                   | 8032      | 8081      |
| 3 No load current                       | mA               | 440                    | 290       | 200       |
| 4 Nominal speed                         | rpm              | 7299                   | 7379      | 7452      |
| 5 Nominal torque                        | mNm              | 200                    | 200       | 200       |
| 6 Nominal current                       | A                | 7,39                   | 4,99      | 3,74      |
| 7 Stall torque                          | mNm              | 2546                   | 2460      | 2570      |
| 8 Stall current                         | A                | 88,9                   | 58,1      | 45,7      |
| 9 Max. efficiency                       | %                | 86,4                   | 86,4      | 87,2      |
| <b>Characteristics</b>                  |                  |                        |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 0,27                   | 0,62      | 1,05      |
| 11 Terminal inductance*                 | mH               | 0,18                   | 0,38      | 0,78      |
| 12 Torque constant                      | mNm/A            | 28,8                   | 42,6      | 56,5      |
| 13 Speed constant                       | rpm/V            | 332                    | 224       | 169       |
| 14 Speed/torque gradient                | rpm/mNm          | 3,1                    | 3,3       | 3,1       |
| 15 Mechanical time constant             | ms               | 1,8                    | 1,9       | 1,8       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 54,1                   | 54,1      | 54,1      |
| <b>Mechanical data</b>                  |                  |                        |           |           |
| 17 Thermal resistance housing-ambient   | 3.0 K/W          |                        |           |           |
| 18 Thermal resistance winding-housing   | 0.6 K/W          |                        |           |           |
| 19 Thermal time constant winding        | 48 s             |                        |           |           |
| 20 Thermal time constant motor          | 996 s            |                        |           |           |
| 21 Ambient temperature                  | -30...+100°C     |                        |           |           |
| 22 Max. permissible winding temperature | +150°C           |                        |           |           |
| 23 Max. permissible speed               | 17500 rpm        |                        |           |           |
| 24 Radial play                          | preloaded        |                        |           |           |
| 25 Max. axial load (dynamic)            | 9 N              |                        |           |           |
| 26 Max. force for press fits (static)   | 170 N            |                        |           |           |
| 27 Max. radial load, 5mm from flange    | 80 N             |                        |           |           |
| <b>Other specifications</b>             |                  |                        |           |           |
| 28 Number of poles                      | 2                |                        |           |           |
| 29 Number of phases                     | 3                |                        |           |           |
| 30 Weight                               | 571 g            |                        |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range  
with Reduced Rth2 50%

## Connection

|              |                  |              |
|--------------|------------------|--------------|
| Connection H | (Sensor)         | PTFE         |
| Pin 1        | Motor winding MB | AWG20 green  |
| Pin 2        | Vhall 3-18 VDC   | AWG26 red    |
| Pin 3        | Hall sensor HA   | AWG26 yellow |
| Pin 4        | Hall sensor HC   | AWG26 blue   |
| Pin 5        | Motor winding MA | AWG20 yellow |
| Pin 6        | Motor winding MC | AWG20 blue   |
| Pin 7        | GND              | AWG26 black  |
| Pin 8        | Hall sensor HB   | AWG26 green  |
| Connector    |                  |              |
| Molex        | 39-01-2080       |              |
| Connection O | (Sensorless)     | PTFE         |
| Pin 1        | Motor winding MA | AWG20 yellow |
| Pin 2        | Motor winding MB | AWG20 green  |
| Pin 3        | Motor winding MC | AWG20 blue   |

## Drive combinations

|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 24  
EN 24L

## Gearbox combinations

SVTG B 42

# **ATOM HS Series**

## **SVTN A 02**

Coreless BLDC motors

2 Pole High-speed Brushless DC Motors

## HIGH SPEED

HIGH SPEED

# ATOM HS Series

## SVTN A 02

### Coreless BLDC motors

2 Pole High-speed Brushless DC Motors



Cost effective



Low noise



High speed



Typically employed in the medical field for surgical tools, these motors merge the SVTN A Series characteristics to a optimized project for high-speed functions.

Thanks to a precise balancing of the rotor and the use of special bearings, maximum stability and low noise are guaranteed.

## Benefits

High-speed

Long lifespan

Cost-effective

Low inertia

High efficiency

Low noise

High reliability

## Product code

SVTN A 02 ○○◇◇ - □□ - ◇ - ◇☆☆

A Series

02 Brushless DC Motors

○ Diameter

◇ Length

□ Nominal Voltage

◇ Shaft  
Single shaft - standard [S]; Double shaft [D]

◇ Sensor  
Sensorless [0]; Hall sensor - standard [H]\*

☆☆ Customizations

\* Not available for SVTN A 02 2053 and SVTN A 02 2057

## Features

|                              |                                                                                                   |
|------------------------------|---------------------------------------------------------------------------------------------------|
| Winding                      | 3 phase                                                                                           |
| Operating temperature        | -30° +100° C                                                                                      |
| Connectors                   | JST PHR-8<br>1636; 1644; 1656; 2040                                                               |
| Magnets                      | Neodymium                                                                                         |
| Design technology            | Coreless winding system                                                                           |
| Estimated operating lifetime | Lifetime depends on motor working conditions. It can reach 20.000 hours under optimal conditions. |

## Feedback

Hall Sensor (standard)

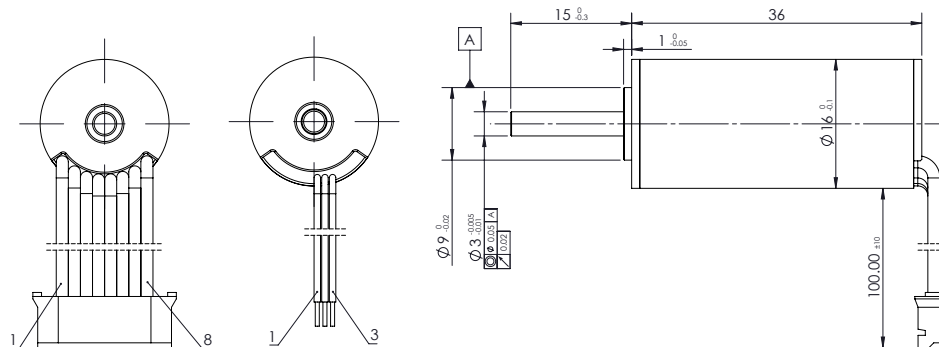
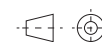
## Customizations

|           |                                           |
|-----------|-------------------------------------------|
| Flange    | Shape                                     |
| Shaft     | Length/Diameter/D-Cut                     |
| Leadwire  | PVC/Silicon/Teflon/UL No/Dimension/length |
| Connector | JST                                       |



# ATOM HS Series SVTN A 02 1636

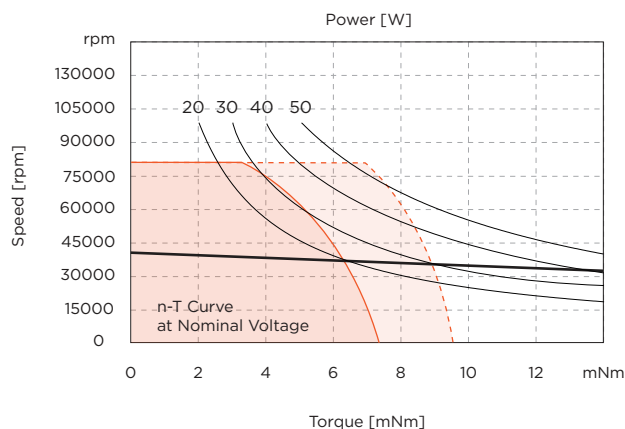
50 Watt



V 3

| Values                                  | Unit             | SVTN A 02 | 1636-24.. | 1636-30.. | 1636-36.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |
| 1 Nominal voltage                       | V                | 24        | 30        | 36        |           |
| 2 No load speed                         | rpm              | 40273     | 40225     | 40760     |           |
| 3 No load current                       | mA               | 90        | 77        | 72        |           |
| 4 Nominal speed                         | rpm              | 37067     | 36958     | 37406     |           |
| 5 Nominal torque                        | mNm              | 5         | 5         | 5         |           |
| 6 Nominal current                       | A                | 0,98      | 0,79      | 0,67      |           |
| 7 Stall torque                          | mNm              | 62,8      | 61,6      | 60,8      |           |
| 8 Stall current                         | A                | 11,2      | 8,8       | 7,3       |           |
| 9 Max. efficiency                       | %                | 82,9      | 82,2      | 81,2      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 2,14      | 3,41      | 4,9       |           |
| 11 Terminal inductance*                 | mH               | 0,11      | 0,17      | 0,24      |           |
| 12 Torque constant                      | mNm/A            | 5,65      | 7,06      | 8,35      |           |
| 13 Speed constant                       | rpm/V            | 1692      | 1353      | 1143      |           |
| 14 Speed/torque gradient                | rpm/mNm          | 641       | 653       | 671       |           |
| 15 Mechanical time constant             | ms               | 3,7       | 3,8       | 3,9       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,55      | 0,55      | 0,55      |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 18.6 K/W         |           |           |           |           |
| 18 Thermal resistance winding-housing   | 3.44 K/W         |           |           |           |           |
| 19 Thermal time constant winding        | 6 s              |           |           |           |           |
| 20 Thermal time constant motor          | 298 s            |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |
| 23 Max. permissible speed               | 80000 rpm        |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |
| 25 Max. axial load (dynamic)            | 2.5 N            |           |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 11 N             |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |
| 30 Weight                               | 32 g             |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    |                  |       |        |
| JST          | PHR-8            |       |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

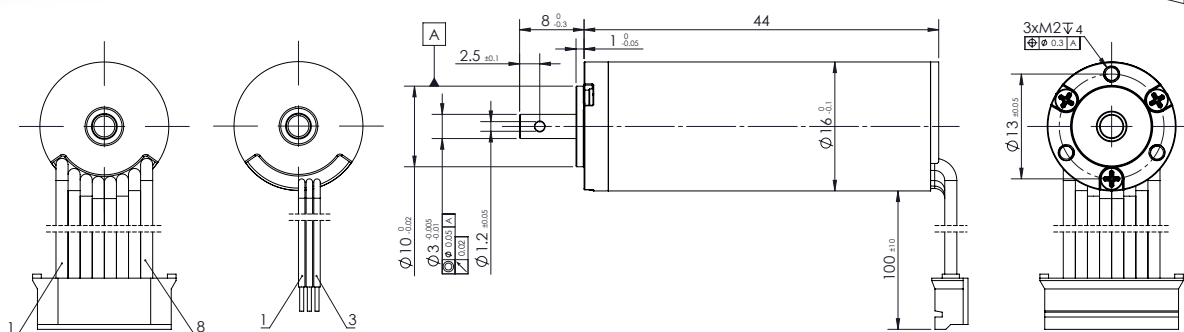
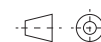
**Hall sensors**  
SVTE-A-E45  
SVTE-A-E55





# ATOM HS Series SVTN A 02 1644

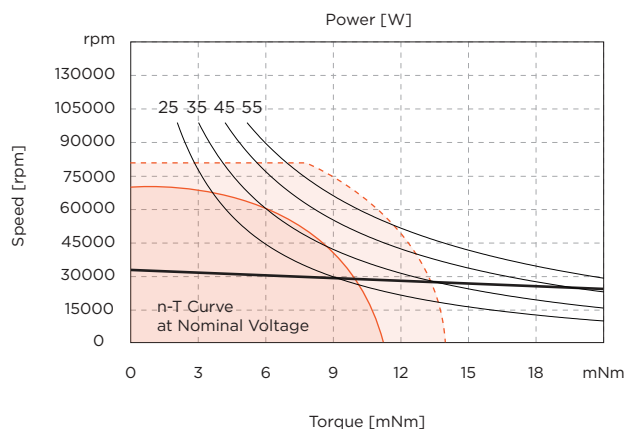
55 Watt



V 3

| Values                                  | Unit             | SVTN A 02 | 1644-24.. | 1644-30.. | 1644-36.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |
| 1 Nominal voltage                       | V                | 24        | 30        | 36        |           |
| 2 No load speed                         | rpm              | 30580     | 30900     | 30160     |           |
| 3 No load current                       | mA               | 95        | 80        | 76        |           |
| 4 Nominal speed                         | rpm              | 28134     | 28403     | 27632     |           |
| 5 Nominal torque                        | mNm              | 7,5       | 7,5       | 7,5       |           |
| 6 Nominal current                       | A                | 1,1       | 0,9       | 0,74      |           |
| 7 Stall torque                          | mNm              | 93,8      | 92,8      | 89,5      |           |
| 8 Stall current                         | A                | 12,7      | 10,2      | 8         |           |
| 9 Max. efficiency                       | %                | 83,4      | 83        | 81,5      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 1,89      | 2,95      | 4,5       |           |
| 11 Terminal inductance*                 | mH               | 0,12      | 0,19      | 0,28      |           |
| 12 Torque constant                      | mNm/A            | 7,44      | 9,2       | 11,3      |           |
| 13 Speed constant                       | rpm/V            | 1284      | 1038      | 846       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 326       | 333       | 337       |           |
| 15 Mechanical time constant             | ms               | 2,8       | 2,9       | 2,9       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,82      | 0,82      | 0,82      |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 16.2 K/W         |           |           |           |           |
| 18 Thermal resistance winding-housing   | 3.5 K/W          |           |           |           |           |
| 19 Thermal time constant winding        | 4 s              |           |           |           |           |
| 20 Thermal time constant motor          | 339 s            |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |
| 23 Max. permissible speed               | 80000 rpm        |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |
| 25 Max. axial load (dynamic)            | 2.5 N            |           |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 11 N             |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |
| 30 Weight                               | 43g              |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range

Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    | JST              | PHR-8 |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

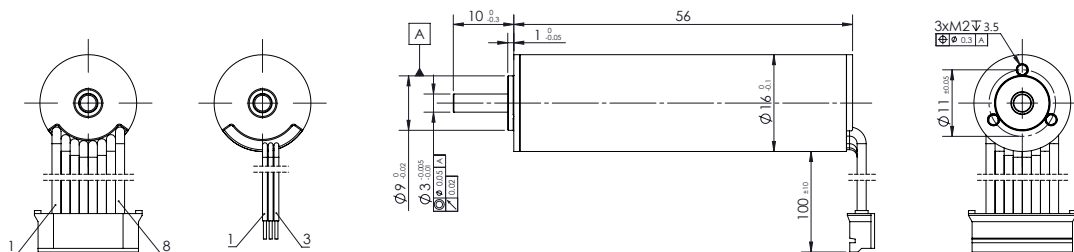
## Drive combinations

**Hall sensors**  
SVTE-A-E45  
SVTE-A-E55



# ATOM HS Series SVTN A 02 1656

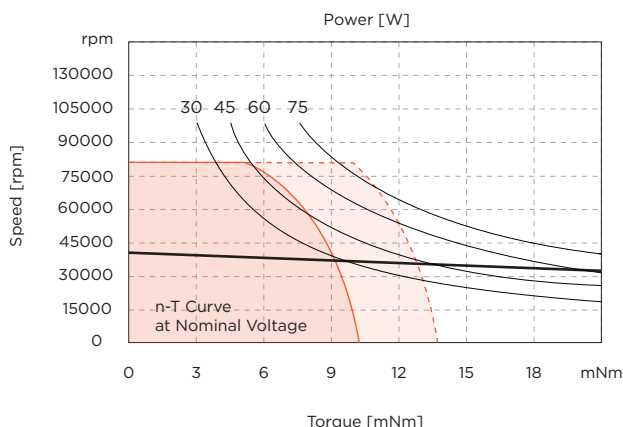
75 Watt



V 3

| Values                                  | Unit             | SVTN A 02 | 1656-24.. | 1656-30.. | 1656-36.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |
| 1 Nominal voltage                       | V                | 24        | 30        | 36        |           |
| 2 No load speed                         | rpm              | 41670     | 40775     | 41311     |           |
| 3 No load current                       | mA               | 103       | 89        | 79        |           |
| 4 Nominal speed                         | rpm              | 39232     | 38438     | 38898     |           |
| 5 Nominal torque                        | mNm              | 6         | 6         | 6         |           |
| 6 Nominal current                       | A                | 1,2       | 0,95      | 0,8       |           |
| 7 Stall torque                          | mNm              | 103       | 105       | 103       |           |
| 8 Stall current                         | A                | 18,9      | 15,1      | 12,5      |           |
| 9 Max. efficiency                       | %                | 85,8      | 85,2      | 84,7      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 1,27      | 1,99      | 2,88      |           |
| 11 Terminal inductance*                 | mH               | 0,09      | 0,14      | 0,2       |           |
| 12 Torque constant                      | mNm/A            | 5,47      | 6,98      | 8,27      |           |
| 13 Speed constant                       | rpm/V            | 1746      | 1367      | 1155      |           |
| 14 Speed/torque gradient                | rpm/mNm          | 406       | 390       | 402       |           |
| 15 Mechanical time constant             | ms               | 2,6       | 2,5       | 2,6       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,61      | 0,61      | 0,61      |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |
| 17 Thermal resistance housing-ambient   | 16.2 K/W         |           |           |           |           |
| 18 Thermal resistance winding-housing   | 1.9 K/W          |           |           |           |           |
| 19 Thermal time constant winding        | 5 s              |           |           |           |           |
| 20 Thermal time constant motor          | 397 s            |           |           |           |           |
| 21 Ambient temperature                  | -30...+100°C     |           |           |           |           |
| 22 Max. permissible winding temperature | +150°C           |           |           |           |           |
| 23 Max. permissible speed               | 80000 rpm        |           |           |           |           |
| 24 Radial play                          | preloaded        |           |           |           |           |
| 25 Max. axial load (dynamic)            | 2.5 N            |           |           |           |           |
| 26 Max. force for press fits (static)   | 44 N             |           |           |           |           |
| 27 Max. radial load, 5mm from flange    | 11 N             |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |
| 30 Weight                               | 50 g             |           |           |           |           |

\*The diagram based on ambient temperature of 25°.



Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## Connection

|              |                  |       |        |
|--------------|------------------|-------|--------|
| Connection H | (Sensor)         | PVC   |        |
| Pin 1        | Vhall 3-18 VDC   | AWG26 | black  |
| Pin 2        | Hall sensor HA   | AWG26 | black  |
| Pin 3        | Hall sensor HB   | AWG26 | black  |
| Pin 4        | Hall sensor HC   | AWG26 | black  |
| Pin 5        | GND              | AWG26 | black  |
| Pin 6        | Motor winding MA | AWG26 | black  |
| Pin 7        | Motor winding MB | AWG26 | black  |
| Pin 8        | Motor winding MC | AWG26 | black  |
| Connector    | JST              | PHR-8 |        |
| Connection O | (Sensorless)     |       |        |
| Pin 1        | Motor winding MA | AWG26 | yellow |
| Pin 2        | Motor winding MB | AWG26 | green  |
| Pin 3        | Motor winding MC | AWG26 | blue   |

## Drive combinations

**Hall sensors**  
SVTE-A-E45  
SVTE-A-E55





\*The diagram based on ambient temperature of 25°.

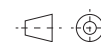


Servotecnica SpA  
www.servotecnica.com

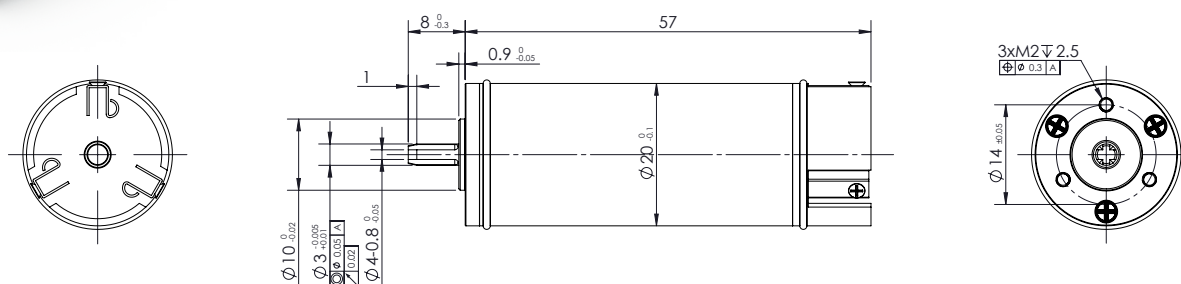


# ATOM HS Series SVTN A 02 2057

150 Watt



servotecnica



V 3

| Values               | Unit                                 | SVTN A 02<br>2057-18.. | 2057-24.. | 2057-36.. | 2057-48.. |       |
|----------------------|--------------------------------------|------------------------|-----------|-----------|-----------|-------|
| Motor Data           |                                      |                        |           |           |           |       |
| 1                    | Nominal voltage                      | V                      | 18        | 24        | 36        | 48    |
| 2                    | No load speed                        | rpm                    | 50202     | 50832     | 51286     | 50700 |
| 3                    | No load current                      | mA                     | 210       | 158       | 113       | 94    |
| 4                    | Nominal speed                        | rpm                    | 46263     | 46714     | 47328     | 46436 |
| 5                    | Nominal torque                       | mNm                    | 15        | 15        | 15        | 15    |
| 6                    | Nominal current                      | A                      | 4,61      | 3,5       | 2,36      | 1,76  |
| 7                    | Stall torque                         | mNm                    | 191       | 185       | 194       | 178   |
| 8                    | Stall current                        | A                      | 56,3      | 41,4      | 29,2      | 19,9  |
| 9                    | Max. efficiency                      | %                      | 88,2      | 88        | 87,9      | 86,7  |
| Characteristics      |                                      |                        |           |           |           |       |
| 10                   | Terminal resistance*                 | Ω                      | 0,32      | 0,58      | 1,23      | 2,41  |
| 11                   | Terminal inductance*                 | mH                     | 0,04      | 0,06      | 0,14      | 0,25  |
| 12                   | Torque constant                      | mNm/A                  | 3,41      | 4,49      | 6,68      | 9     |
| 13                   | Speed constant                       | rpm/V                  | 2799      | 2126      | 1430      | 1061  |
| 14                   | Speed/torque gradient                | rpm/mNm                | 263       | 275       | 264       | 284   |
| 15                   | Mechanical time constant             | ms                     | 2,5       | 2,6       | 2,5       | 2,7   |
| 16                   | Rotor inertia                        | gcm²                   | 0,91      | 0,91      | 0,91      | 0,91  |
| Mechanical data      |                                      |                        |           |           |           |       |
| 17                   | Thermal resistance housing-ambient   | 7.6 K/W                |           |           |           |       |
| 18                   | Thermal resistance winding-housing   | 1.6 K/W                |           |           |           |       |
| 19                   | Thermal time constant winding        | 5 s                    |           |           |           |       |
| 20                   | Thermal time constant motor          | 410 s                  |           |           |           |       |
| 21                   | Ambient temperature                  | -30...+100°C           |           |           |           |       |
| 22                   | Max. permissible winding temperature | +150°C                 |           |           |           |       |
| 23                   | Max. permissible speed               | 80000 rpm              |           |           |           |       |
| 24                   | Radial play                          | preloaded              |           |           |           |       |
| 25                   | Max. axial load (dynamic)            | 2.5 N                  |           |           |           |       |
| 26                   | Max. force for press fits (static)   | 44 N                   |           |           |           |       |
| 27                   | Max. radial load, 5mm from flange    | 11 N                   |           |           |           |       |
| Other specifications |                                      |                        |           |           |           |       |
| 28                   | Number of poles                      | 2                      |           |           |           |       |
| 29                   | Number of phases                     | 3                      |           |           |           |       |
| 30                   | Weight                               | 69 g                   |           |           |           |       |

\*The diagram based on ambient temperature of 25°.

rpm

Power [W]

Speed [rpm]

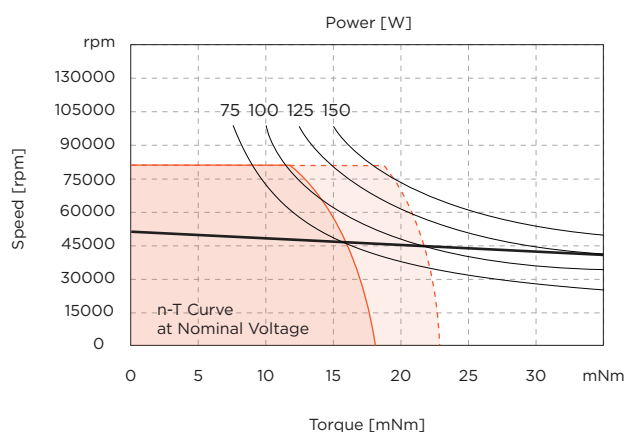
75 100 125 150

n-T Curve at Nominal Voltage

Continuous operating range

operating range

\*The diagram based on ambient temperature of 25°.



Continuous operating range

Continuous operating range with Reduced Rth2 50%

## Connection

Screw terminals

# **ATOM SC Series**

## **SVTN A 03**

Coreless BLDC motors

2 Pole Brushless DC Motors with Integrated Electronics

INTEGRATED  
ELECTRONICS

INTEGRATED  
ELECTRONICS



# ATOM SC Series

## SVTN A 03

### Coreless BLDC motors

2 Pole Brushless DC Motors with Integrated Electronics



Cost effective



Easy to use



Long service life



The benefits of this build technology join the simplicity of use of a brushed DC motor with the longevity of a brushless motor, maintaining cost-effectiveness and ease of integration.

The lack of cogging is typical of the coreless motors and guarantees a reduce ripple torque, a linear correlation between torque, speed and low inertia.

The miniaturization of the electronics allows to maintain the diameter of the motor unvaried with a slight increase in length.

## Benefits

Long lifetime

High efficiency

Low noise

High reliability

No cogging

Low inertia

Cost-effective

## Product code

SVTN A 03 ○○◇◇ - □□ - ◇ - ◇☆☆

|    |                     |   |                                                                                                                                            |
|----|---------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------|
| A  | Series              | □ | Voltage                                                                                                                                    |
| 03 | Brushless DC Motors | ◇ | Shaft<br>Single shaft [S]; Double shaft [D]                                                                                                |
| ○  | Diameter            | ◇ | Direction of rotation<br>CW [0]; CCW [1]; Third wire for direction control [2];<br>Five wires for direction/speed control and feedback [3] |
| ◇  | Length              | ☆ | Customizations                                                                                                                             |

## Features

|                              |                                                                                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Winding                      | 3 phase (2-wires DC regulated)                                                                                                                     |
| Operating temperature        | -30° +100° C                                                                                                                                       |
| Connectors                   | Flying leads or JST* or MOLEX*                                                                                                                     |
| Magnets                      | Neodymium                                                                                                                                          |
| Construction technology      | Coreless winding system                                                                                                                            |
| Estimated operating lifetime | Lifetime depends on motor working conditions. It can reach 20.000 work hours under optimal conditions (almost 100 hours under extreme conditions). |

## Customizations

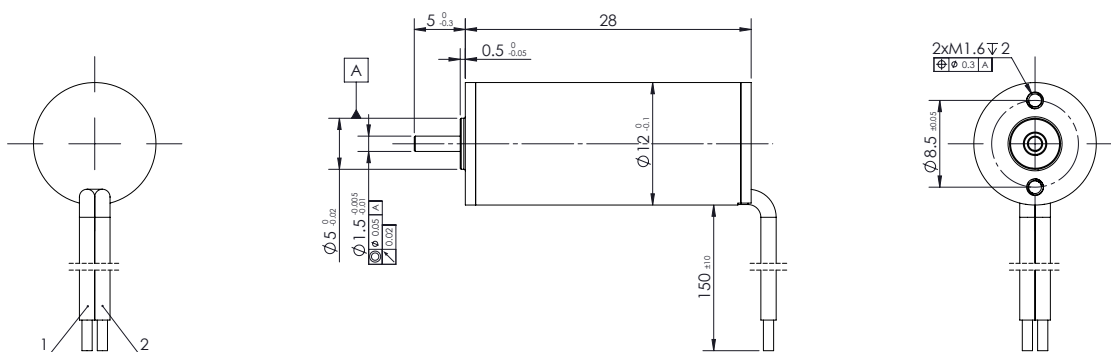
|           |                                           |
|-----------|-------------------------------------------|
| Flange    | Shape                                     |
| Shaft     | Length/Diameter/D-Cut                     |
| Leadwire  | PVC/Silicon/Teflon/UL No/Dimension/length |
| Connector | JST/MOLEX                                 |

\*Optional



## ATOM SC Series SVTN A 03 1228

1.5 Watt



V 3

| Values                                  | Unit             | SVTN A 03<br>1228-06..       |
|-----------------------------------------|------------------|------------------------------|
| <b>Motor Data</b>                       |                  |                              |
| 1 Nominal voltage                       | V                | 6                            |
| 2 No load speed                         | rpm              | 31000                        |
| 3 No load current                       | mA               | 140                          |
| 4 Nominal speed                         | rpm              | 27755                        |
| 5 Nominal torque                        | mNm              | 0,5                          |
| 6 Nominal current                       | A                | 0,42                         |
| 7 Stall torque                          | mNm              | 4,78                         |
| 8 Stall current                         | A                | 2,86                         |
| 9 Max. efficiency                       | %                | 60,6                         |
| <b>Characteristics</b>                  |                  |                              |
| 10 Supply Voltage +Vcc                  | V                | 4.5..7                       |
| 11 Direction of rotation                |                  | CCW viewed from shaft endend |
| 12 Torque constant                      | mNm/A            | 1,78                         |
| 13 Speed constant                       | rpm/V            | 5374                         |
| 14 Speed/torque gradient                | rpm/mNm          | 6350                         |
| 15 Mechanical time constant             | ms               | 11,3                         |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0,2                          |
| <b>Mechanical data</b>                  |                  |                              |
| 17 Thermal resistance housing-ambient   |                  | 38.3 K/W                     |
| 18 Thermal resistance winding-housing   |                  | 9.6 K/W                      |
| 19 Thermal time constant winding        |                  | 5 s                          |
| 20 Thermal time constant motor          |                  | 196 s                        |
| 21 Ambient temperature                  |                  | -30...+100°C                 |
| 22 Max. permissible winding temperature |                  | +125°C                       |
| 23 Max. permissible speed               |                  | 50000 rpm                    |
| 24 Radial play                          |                  | preloaded                    |
| 25 Max. axial load (dynamic)            |                  | 0,3                          |
| 26 Max.force for press fits (static)    |                  | 11N                          |
| 27 (static, shaft supported)            |                  | 200 N                        |
| 28 Max. radial load, 5mm from flange    |                  | 4.3 N                        |
| <b>Other specifications</b>             |                  |                              |
| 29 Number of poles                      |                  | 2                            |
| 30 Number of phases                     |                  | 3                            |
| 31 Weight                               |                  | 12.2 g                       |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG24 red   |
| Pin 2      | GND  | AWG24 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

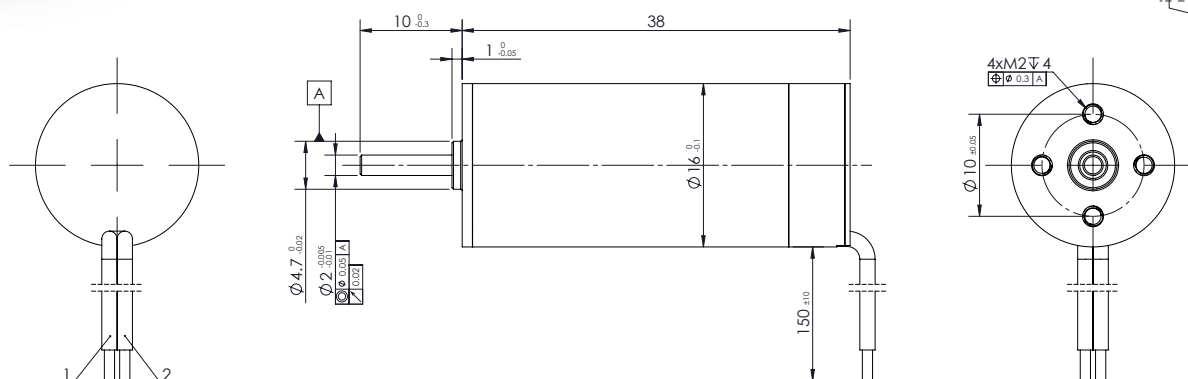
SVTG A 10  
SVTG A 12

Caution  
Incorrect lead connection will damage the controller!



# ATOM SC Series

## SVTN A 03 1638



V 3

| Values               | Unit                                 | SVTN A 03 |                           |       |
|----------------------|--------------------------------------|-----------|---------------------------|-------|
|                      |                                      | 1638-06.. | 1638-12..                 |       |
| Motor Data           |                                      |           |                           |       |
| 1                    | Nominal voltage                      | V         | 6                         | 12    |
| 2                    | No load speed                        | rpm       | 8832                      | 17664 |
| 3                    | No load current                      | mA        | 110                       | 100   |
| 4                    | Nominal speed                        | rpm       | 6102                      | 14491 |
| 5                    | Nominal torque                       | mNm       | 1,5                       | 2     |
| 6                    | Nominal current                      | A         | 0,37                      | 0,43  |
| 7                    | Stall torque                         | mNm       | 4,85                      | 11,1  |
| 8                    | Stall current                        | A         | 0,96                      | 1,91  |
| 9                    | Max. efficiency                      | %         | 43,7                      | 59,5  |
| Characteristics      |                                      |           |                           |       |
| 10                   | Supply Voltage +Vcc                  | V         | 4.5..7                    | 8..13 |
| 11                   | Direction of rotation                |           | CCW viewed from shaft end |       |
| 12                   | Torque constant                      | mNm/A     | 5,74                      | 6,11  |
| 13                   | Speed constant                       | rpm/V     | 1664                      | 1562  |
| 14                   | Speed/torque gradient                | rpm/mNm   | 1820                      | 1604  |
| 15                   | Mechanical time constant             | ms        | 8,2                       | 7,2   |
| 16                   | Rotor inertia                        | gcm²      | 0,4                       | 0,4   |
| Mechanical data      |                                      |           |                           |       |
| 17                   | Thermal resistance housing-ambient   |           | 20.2 K/W                  |       |
| 18                   | Thermal resistance winding-housing   |           | 8.7 K/W                   |       |
| 19                   | Thermal time constant winding        |           | 7 s                       |       |
| 20                   | Thermal time constant motor          |           | 238 s                     |       |
| 21                   | Ambient temperature                  |           | -30...+100°C              |       |
| 22                   | Max. permissible winding temperature |           | +150°C                    |       |
| 23                   | Max. permissible speed               |           | 35000 rpm                 |       |
| 24                   | Radial play                          |           | preloaded                 |       |
| 25                   | Max. axial load (dynamic)            |           | 1.3 N                     |       |
| 26                   | Max.force for press fits (static)    |           | 15 N                      |       |
| 27                   | (static, shaft supported)            |           | 350 N                     |       |
| 28                   | Max. radial load, 5mm from flange    |           | 5 N                       |       |
| Other specifications |                                      |           |                           |       |
| 29                   | Number of poles                      |           | 2                         |       |
| 30                   | Number of phases                     |           | 3                         |       |
| 31                   | Weight                               |           | 27 g                      |       |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG24 red   |
| Pin 2      | GND  | AWG24 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

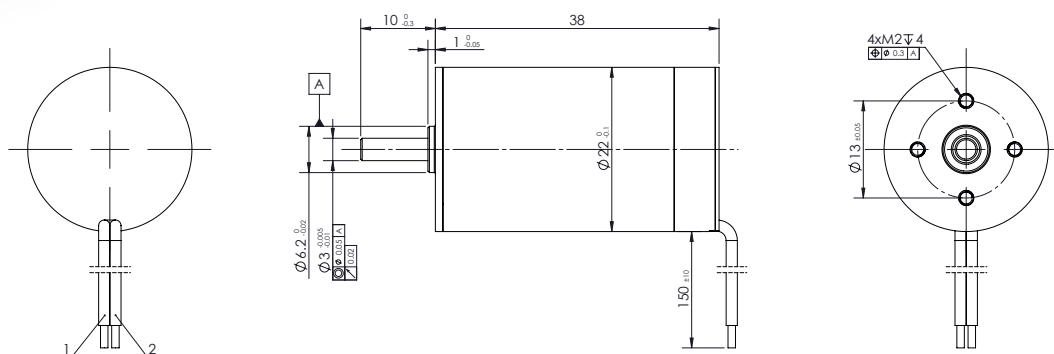
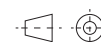
SVTG A 16

Caution  
Incorrect lead connection will damage the controller!



# ATOM SC Series SVTN A 03 2238

9 Watt



V 3

| Values               | Unit                                 | SVTN A 03<br>2238-12.. | 2238-18..                 | 2238-24.. |        |
|----------------------|--------------------------------------|------------------------|---------------------------|-----------|--------|
| Motor Data           |                                      |                        |                           |           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 18        | 24     |
| 2                    | No load speed                        | rpm                    | 17445                     | 17830     | 17721  |
| 3                    | No load current                      | mA                     | 220                       | 150       | 110    |
| 4                    | Nominal speed                        | rpm                    | 14292                     | 14700     | 14260  |
| 5                    | Nominal torque                       | mNm                    | 6                         | 6         | 6      |
| 6                    | Nominal current                      | A                      | 1,13                      | 0,75      | 0,57   |
| 7                    | Stall torque                         | mNm                    | 44,8                      | 45,3      | 40,7   |
| 8                    | Stall current                        | A                      | 7,44                      | 4,96      | 3,39   |
| 9                    | Max. efficiency                      | %                      | 70,2                      | 70,3      | 67,7   |
| Characteristics      |                                      |                        |                           |           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |           |        |
| 12                   | Torque constant                      | mNm/A                  | 6,15                      | 9,32      | 12,3   |
| 13                   | Speed constant                       | rpm/V                  | 1553                      | 1024      | 777    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 407                       | 399       | 447    |
| 15                   | Mechanical time constant             | ms                     | 6,4                       | 6,2       | 7      |
| 16                   | Rotor inertia                        | gcm²                   | 1,5                       | 1,5       | 1,5    |
| Mechanical data      |                                      |                        |                           |           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 15.2 K/W                  |           |        |
| 18                   | Thermal resistance winding-housing   |                        | 6.0 K/W                   |           |        |
| 19                   | Thermal time constant winding        |                        | 11 s                      |           |        |
| 20                   | Thermal time constant motor          |                        | 383 s                     |           |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |           |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |           |        |
| 23                   | Max. permissible speed               |                        | 35000 rpm                 |           |        |
| 24                   | Radial play                          |                        | preloaded                 |           |        |
| 25                   | Max. axial load (dynamic)            |                        | 3.5 N                     |           |        |
| 26                   | Max.force for press fits (static)    |                        | 44 N                      |           |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 15 N                      |           |        |
| Other specifications |                                      |                        |                           |           |        |
| 28                   | Number of poles                      |                        | 2                         |           |        |
| 29                   | Number of phases                     |                        | 3                         |           |        |
| 30                   | Weight                               |                        | 63 g                      |           |        |

## Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG24 red   |
| Pin 2      | GND  | AWG24 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

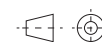
\*Reverse direction when connected to GND

## Gearbox combinations

SVTG B 22\*  
SVTG B 24\*

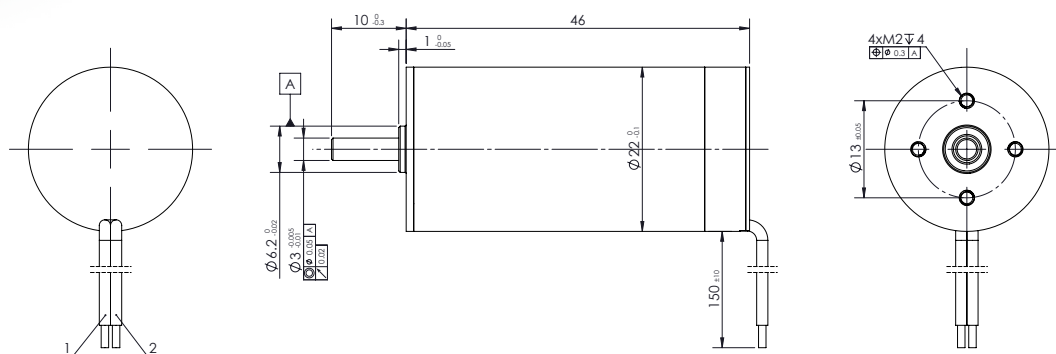
Caution  
Incorrect lead connection will damage the controller!

\*On request. Contact factory.



# ATOM SC Series

## SVTN A 03 2246



V 3

| Values               | Unit                                 | SVTN A 03<br>2246-12.. | 2246-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 11570                     | 15627  |
| 3                    | No load current                      | mA                     | 170                       | 140    |
| 4                    | Nominal speed                        | rpm                    | 10085                     | 12771  |
| 5                    | Nominal torque                       | mNm                    | 8                         | 12     |
| 6                    | Nominal current                      | A                      | 1,01                      | 1,01   |
| 7                    | Stall torque                         | mNm                    | 60,4                      | 82,8   |
| 8                    | Stall current                        | A                      | 6,7                       | 6,28   |
| 9                    | Max. efficiency                      | %                      | 70,5                      | 71,8   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 9,2                       | 13,4   |
| 13                   | Speed constant                       | rpm/V                  | 1038                      | 712    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 202                       | 203    |
| 15                   | Mechanical time constant             | ms                     | 4,8                       | 4,8    |
| 16                   | Rotor inertia                        | gcm²                   | 2,3                       | 2,3    |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 12.7 K/W                  |        |
| 18                   | Thermal resistance winding-housing   |                        | 5.0 K/W                   |        |
| 19                   | Thermal time constant winding        |                        | 12 s                      |        |
| 20                   | Thermal time constant motor          |                        | 420 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 35000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 3.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 44 N                      |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 15 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 79 g                      |        |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG24 red   |
| Pin 2      | GND  | AWG24 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

SVTG B 22\*  
SVTG B 24\*

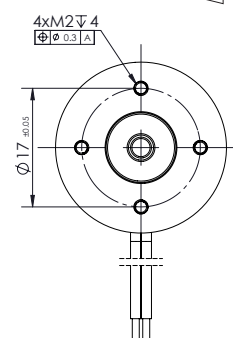
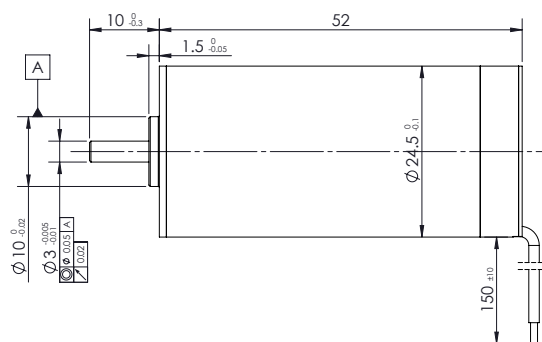
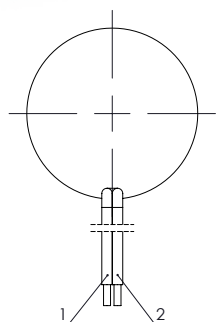
Caution  
Incorrect lead connection will damage the controller!

\*On request. Contact factory.



## ATOM SC Series SVTN A 03 2452

8 Watt



V 3

| Values               | Unit                                 | SVTN A 03<br>2452-12.. | 2452-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 6904                      | 6980   |
| 3                    | No load current                      | mA                     | 103                       | 70     |
| 4                    | Nominal speed                        | rpm                    | 5087                      | 5089   |
| 5                    | Nominal torque                       | mNm                    | 14                        | 14     |
| 6                    | Nominal current                      | A                      | 0,98                      | 0,51   |
| 7                    | Stall torque                         | mNm                    | 87                        | 85,2   |
| 8                    | Stall current                        | A                      | 5,58                      | 2,73   |
| 9                    | Max. efficiency                      | %                      | 71,7                      | 67,9   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 15,9                      | 32     |
| 13                   | Speed constant                       | rpm/V                  | 601                       | 298    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 81,3                      | 81,9   |
| 15                   | Mechanical time constant             | ms                     | 3,6                       | 3,6    |
| 16                   | Rotor inertia                        | gcm²                   | 4,2                       | 4,2    |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 11.6 K/W                  |        |
| 18                   | Thermal resistance winding-housing   |                        | 5.6 K/W                   |        |
| 19                   | Thermal time constant winding        |                        | 30 s                      |        |
| 20                   | Thermal time constant motor          |                        | 557 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 30000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 3.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 44 N                      |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 15 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 112 g                     |        |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG24 red   |
| Pin 2      | GND  | AWG24 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

SVTG B 24\*  
SVTG B 28\*

Caution  
Incorrect lead connection will damage the controller!

\*On request. Contact factory.

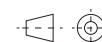




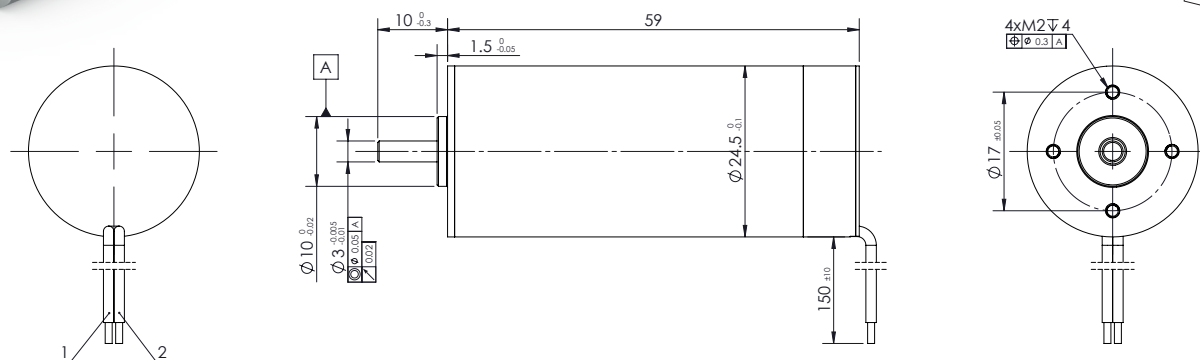
ATOM SC Series

SVTN A 03 2459

14 Watt



servotecnica



V 3

| Values               | Unit                                 | SVTN A 03<br>2459-12.. | 2459-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 7699                      | 7655   |
| 3                    | No load current                      | mA                     | 114                       | 73     |
| 4                    | Nominal speed                        | rpm                    | 6958                      | 6597   |
| 5                    | Nominal torque                       | mNm                    | 14                        | 20     |
| 6                    | Nominal current                      | A                      | 1,07                      | 0,75   |
| 7                    | Stall torque                         | mNm                    | 145                       | 145    |
| 8                    | Stall current                        | A                      | 10                        | 4,98   |
| 9                    | Max. efficiency                      | %                      | 79,8                      | 77,2   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 14,7                      | 29,5   |
| 13                   | Speed constant                       | rpm/V                  | 649                       | 324    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 52,9                      | 52,9   |
| 15                   | Mechanical time constant             | ms                     | 3,3                       | 3,3    |
| 16                   | Rotor inertia                        | gcm²                   | 5,9                       | 5,9    |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 10.2 K/W                  |        |
| 18                   | Thermal resistance winding-housing   |                        | 6.4 K/W                   |        |
| 19                   | Thermal time constant winding        |                        | 36 s                      |        |
| 20                   | Thermal time constant motor          |                        | 555 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 30000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 3.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 44 N                      |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 15 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 130 g                     |        |

**Connection**

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG24 red   |
| Pin 2      | GND  | AWG24 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

**Gearbox combinations**

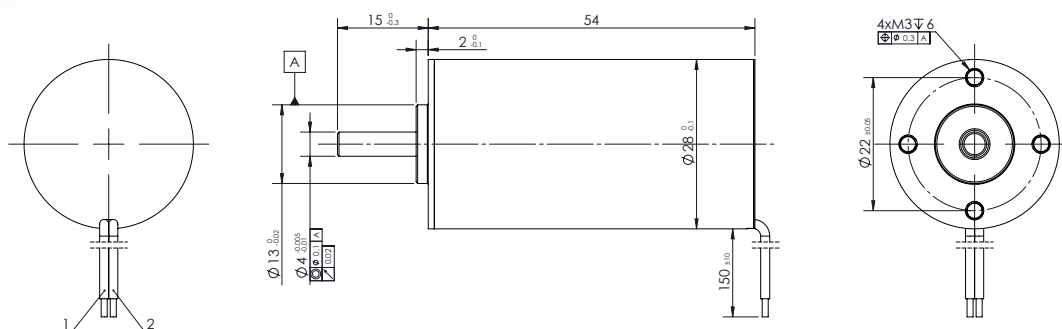
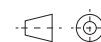
SVTG B 24  
SVTG B 28

Caution  
Incorrect lead connection will damage the controller!



# ATOM SC Series SVTN A 03 2854

10 Watt



V 3

| Values               | Unit                                 | SVTN A 03<br>2854-12.. | 2854-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 6878                      | 6700   |
| 3                    | No load current                      | mA                     | 121                       | 76     |
| 4                    | Nominal speed                        | rpm                    | 5674                      | 5157   |
| 5                    | Nominal torque                       | mNm                    | 15                        | 18     |
| 6                    | Nominal current                      | A                      | 1,04                      | 0,62   |
| 7                    | Stall torque                         | mNm                    | 85,7                      | 78,1   |
| 8                    | Stall current                        | A                      | 5,38                      | 2,43   |
| 9                    | Max. efficiency                      | %                      | 72,3                      | 67,8   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 16,3                      | 33,1   |
| 13                   | Speed constant                       | rpm/V                  | 586                       | 288    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 80,3                      | 85,7   |
| 15                   | Mechanical time constant             | ms                     | 4,4                       | 4,7    |
| 16                   | Rotor inertia                        | gcm²                   | 5,2                       | 5,2    |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 9.6 K/W                   |        |
| 18                   | Thermal resistance winding-housing   |                        | 6.3 K/W                   |        |
| 19                   | Thermal time constant winding        |                        | 37 s                      |        |
| 20                   | Thermal time constant motor          |                        | 584 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 25000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 7.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 100 N                     |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 25 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 153 g                     |        |

## Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG20 red   |
| Pin 2      | GND  | AWG20 black |

Optional:

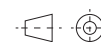
|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

## Gearbox combination

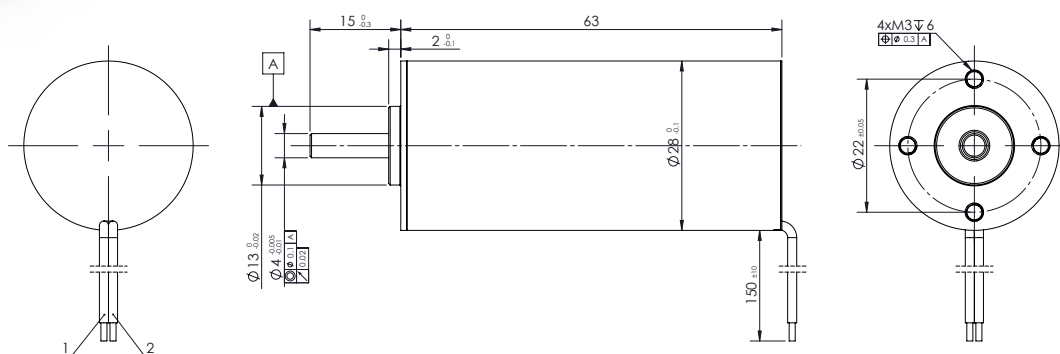
SVTG B 28

Caution  
Incorrect lead connection will damage the controller!



ATOM SC Series

## SVTN A 03 2863



V 3

| Values               | Unit                                 | SVTN A 03<br>2863-12.. | 2863-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 4168                      | 4162   |
| 3                    | No load current                      | mA                     | 70                        | 60     |
| 4                    | Nominal speed                        | rpm                    | 3264                      | 3033   |
| 5                    | Nominal torque                       | mNm                    | 25                        | 25     |
| 6                    | Nominal current                      | A                      | 0,99                      | 0,53   |
| 7                    | Stall torque                         | mNm                    | 115                       | 92,1   |
| 8                    | Stall current                        | A                      | 4,33                      | 1,79   |
| 9                    | Max. efficiency                      | %                      | 76,2                      | 66,7   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 27                        | 53,2   |
| 13                   | Speed constant                       | rpm/V                  | 353                       | 179    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 36,2                      | 45,2   |
| 15                   | Mechanical time constant             | ms                     | 3,2                       | 4,0    |
| 16                   | Rotor inertia                        | gcm²                   | 8,5                       | 8,5    |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 7,1 K/W                   |        |
| 18                   | Thermal resistance winding-housing   |                        | 5 K/W                     |        |
| 19                   | Thermal time constant winding        |                        | 51 s                      |        |
| 20                   | Thermal time constant motor          |                        | 552 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 25000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 7,5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 100 N                     |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 25 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 188 g                     |        |

## Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG20 red   |
| Pin 2      | GND  | AWG20 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

## Gearbox combinations

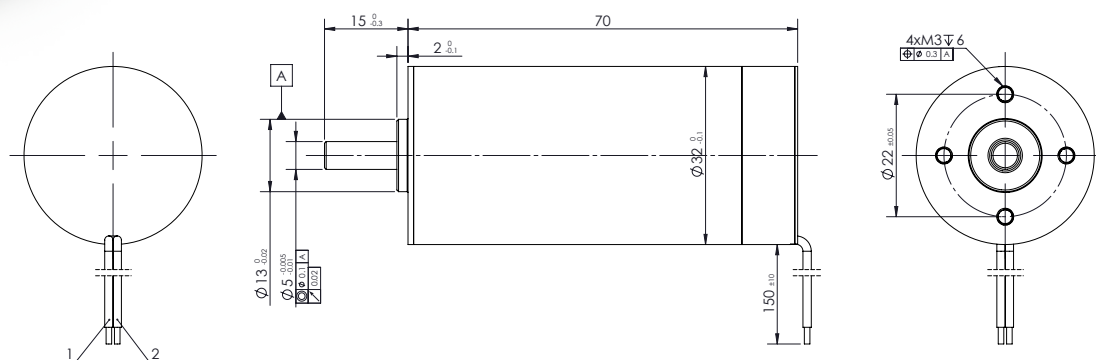
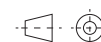
SVTG B 28

Caution  
Incorrect lead connection will damage the controller!



## ATOM SC Series SVTN A 03 3270

26 Watt



V 3

| Values               | Unit                                 | SVTN A 03<br>3270-12.. | 3270-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 7200                      | 7100   |
| 3                    | No load current                      | mA                     | 194                       | 110    |
| 4                    | Nominal speed                        | rpm                    | 6623                      | 6243   |
| 5                    | Nominal torque                       | mNm                    | 25                        | 40     |
| 6                    | Nominal current                      | A                      | 1,78                      | 1,36   |
| 7                    | Stall torque                         | mNm                    | 312                       | 331    |
| 8                    | Stall current                        | A                      | 20                        | 10,5   |
| 9                    | Max. efficiency                      | %                      | 81,3                      | 80,6   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 15,8                      | 31,9   |
| 13                   | Speed constant                       | rpm/V                  | 606                       | 299    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 23,1                      | 21,4   |
| 15                   | Mechanical time constant             | ms                     | 3,7                       | 3,5    |
| 16                   | Rotor inertia                        | gcm²                   | 15,5                      | 15,5   |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 5 K/W                     |        |
| 18                   | Thermal resistance winding-housing   |                        | 4 K/W                     |        |
| 19                   | Thermal time constant winding        |                        | 52 s                      |        |
| 20                   | Thermal time constant motor          |                        | 540 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 25000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 7.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 100 N                     |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 25 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 255g                      |        |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG20 red   |
| Pin 2      | GND  | AWG20 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

SVTG B 32  
SVTG B 36

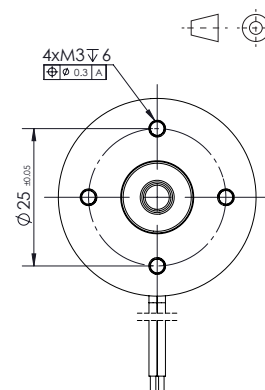
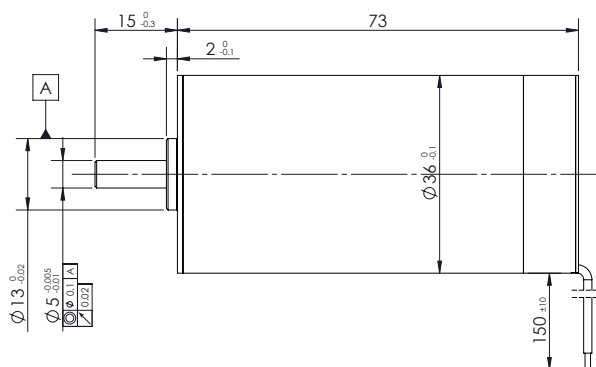
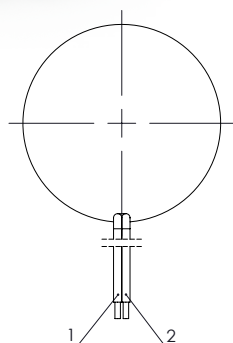
Caution  
Incorrect lead connection will damage the controller!

17 Watt



# ATOM SC Series

## SVTN A 03 3673



V 3

| Values               | Unit                                 | SVTN A 03<br>3673-12.. | 3673-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 4070                      | 4042   |
| 3                    | No load current                      | mA                     | 148                       | 84     |
| 4                    | Nominal speed                        | rpm                    | 3229                      | 3223   |
| 5                    | Nominal torque                       | mNm                    | 50                        | 50     |
| 6                    | Nominal current                      | A                      | 1,95                      | 0,98   |
| 7                    | Stall torque                         | mNm                    | 242                       | 247    |
| 8                    | Stall current                        | A                      | 8,89                      | 4,52   |
| 9                    | Max. efficiency                      | %                      | 75,9                      | 74,6   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 27,7                      | 55,7   |
| 13                   | Speed constant                       | rpm/V                  | 345                       | 172    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 16,8                      | 16,4   |
| 15                   | Mechanical time constant             | ms                     | 3,4                       | 3,3    |
| 16                   | Rotor inertia                        | gcm²                   | 19,5                      | 19,5   |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 4.9 K/W                   |        |
| 18                   | Thermal resistance winding-housing   |                        | 1.6 K/W                   |        |
| 19                   | Thermal time constant winding        |                        | 45 s                      |        |
| 20                   | Thermal time constant motor          |                        | 630 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 20000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 7.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 100 N                     |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 25 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 317 g                     |        |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG20 red   |
| Pin 2      | GND  | AWG20 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

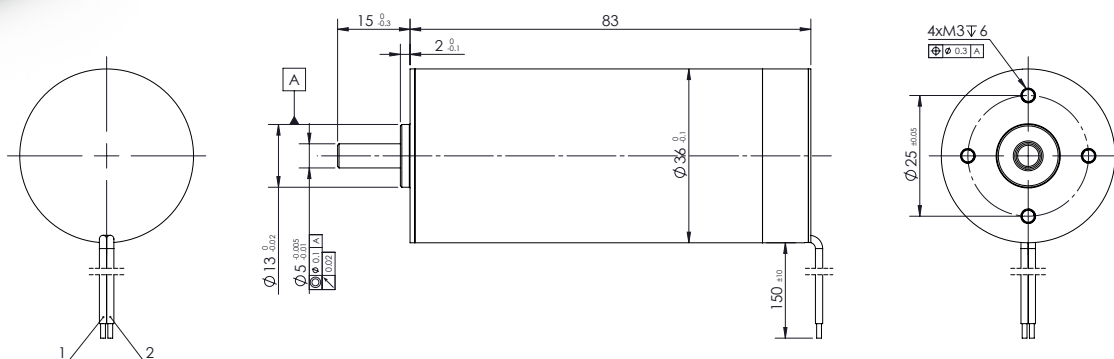
SVTG B 36  
SVTG B 42

Caution  
Incorrect lead connection will damage the controller!



## ATOM SC Series SVTN A 03 3683

24 Watt



V 3

| Values               | Unit                                 | SVTN A 03<br>3683-12.. | 3683-24..                 |        |
|----------------------|--------------------------------------|------------------------|---------------------------|--------|
| Motor Data           |                                      |                        |                           |        |
| 1                    | Nominal voltage                      | V                      | 12                        | 24     |
| 2                    | No load speed                        | rpm                    | 3278                      | 3273   |
| 3                    | No load current                      | mA                     | 137                       | 78     |
| 4                    | Nominal speed                        | rpm                    | 2294                      | 2304   |
| 5                    | Nominal torque                       | mNm                    | 100                       | 100    |
| 6                    | Nominal current                      | A                      | 3,04                      | 1,53   |
| 7                    | Stall torque                         | mNm                    | 333                       | 338    |
| 8                    | Stall current                        | A                      | 9,8                       | 4,98   |
| 9                    | Max. efficiency                      | %                      | 77,8                      | 76,5   |
| Characteristics      |                                      |                        |                           |        |
| 10                   | Supply Voltage +Vcc                  | V                      | 10..28                    | 10..28 |
| 11                   | Direction of rotation                |                        | CCW viewed from shaft end |        |
| 12                   | Torque constant                      | mNm/A                  | 34,5                      | 68,9   |
| 13                   | Speed constant                       | rpm/V                  | 277                       | 139    |
| 14                   | Speed/torque gradient                | rpm/mNm                | 9,83                      | 9,69   |
| 15                   | Mechanical time constant             | ms                     | 2,2                       | 2,2    |
| 16                   | Rotor inertia                        | gcm²                   | 21,5                      | 21,5   |
| Mechanical data      |                                      |                        |                           |        |
| 17                   | Thermal resistance housing-ambient   |                        | 5 K/W                     |        |
| 18                   | Thermal resistance winding-housing   |                        | 2.3 K/W                   |        |
| 19                   | Thermal time constant winding        |                        | 46 s                      |        |
| 20                   | Thermal time constant motor          |                        | 816 s                     |        |
| 21                   | Ambient temperature                  |                        | -30...+100°C              |        |
| 22                   | Max. permissible winding temperature |                        | +150°C                    |        |
| 23                   | Max. permissible speed               |                        | 20000 rpm                 |        |
| 24                   | Radial play                          |                        | preloaded                 |        |
| 25                   | Max. axial load (dynamic)            |                        | 7.5 N                     |        |
| 26                   | Max.force for press fits (static)    |                        | 100 N                     |        |
| 27                   | Max. radial load, 5mm from flange    |                        | 25 N                      |        |
| Other specifications |                                      |                        |                           |        |
| 28                   | Number of poles                      |                        | 2                         |        |
| 29                   | Number of phases                     |                        | 3                         |        |
| 30                   | Weight                               |                        | 366 g                     |        |

### Connection

|            |      |             |
|------------|------|-------------|
| Connection |      | PTFE        |
| Pin 1      | +VCC | AWG20 red   |
| Pin 2      | GND  | AWG20 black |

Optional:

|       |     |              |
|-------|-----|--------------|
| Pin 3 | FR* | AWG28 yellow |
|-------|-----|--------------|

\*Reverse direction when connected to GND

### Gearbox combinations

SVTG B 36  
SVTG B 42

Caution  
Incorrect lead connection will damage the controller!

## Notes

This image shows a full page of white paper with horizontal grey ruling lines. The lines are evenly spaced and extend across the width of the page, providing a template for handwriting practice or general writing. There are no margins, text, or other markings on the page.

# **ATOM DC Series**

## **SVTN B 01**

Coreless DC motors  
2 Pole Brushed DC Motors



CORELESS  
PUBLISHED

CORELESS  
PUBLISHED

# ATOM DC Series

## SVTN B 01

### Coreless DC motors

2 Pole Brushed DC Motors



Cost effective



High power density



Long service life



The specific design construction of a coreless DC motor provides several advantages over traditional, iron core, technology. A first added value it is given from rotor lower mass and inertia, so very rapid acceleration and deceleration rates are possible. Furthermore the lack of iron reduce “iron losses” to provide higher efficiencies (up to 90 percent) than traditional DC motors. Last, but not least, coreless design reduces winding inductance, so sparking between the brushes and commutator is reduced, increasing motor life and reducing electromagnetic interference (EMI).

Servotecnica’s Coreless DC Motors are available on a wide range of sizes and high flexibility on mechanical custom requirements.

## Benefits

High power density

Long operational lifetime

High efficiency

Cost-effective

High reliability

No cogging

Low inductance

Low inertia

Good heat dissipation

## Product code

SVTN B 01 - ○ ○ ◇ ◇ - □ □ - ◇ - ○ △ ☆

B 01 Series

○ Diameter

◇ Length

□ Nominal Voltage

◇ Shaft  
Single shaft [S]; Double shaft [D]

○ Connection  
Terminals [0]

△ Commutator  
Graphite brushes [G]; Metal brushes [M]

☆ Customizations

## Features

|                              |                                                                                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature        | -30° +100° C                                                                                                                                       |
| Connections                  | Terminals                                                                                                                                          |
| Magnets                      | Neodymium                                                                                                                                          |
| Construction technology      | Coreless winding system                                                                                                                            |
| Estimated operating lifetime | Lifetime depends on motor working conditions. It can reach 10.000 work hours under optimal conditions (almost 100 hours under extreme conditions). |

## Feedback

Please contact factory for more details

## Customizations

|         |                                    |
|---------|------------------------------------|
| Flange  | Shape                              |
| Shaft   | Length/Diameter/D-Cut/double shaft |
| Winding | Special                            |

# Explanation of the performance diagram

The characteristic curve is composed of the following 4 key parameters:

**No-load speed:** It refers to the speed measured at the output shaft end when the motor is not connected to any load under the rated voltage, and the unit is RPM (revolutions per minute).

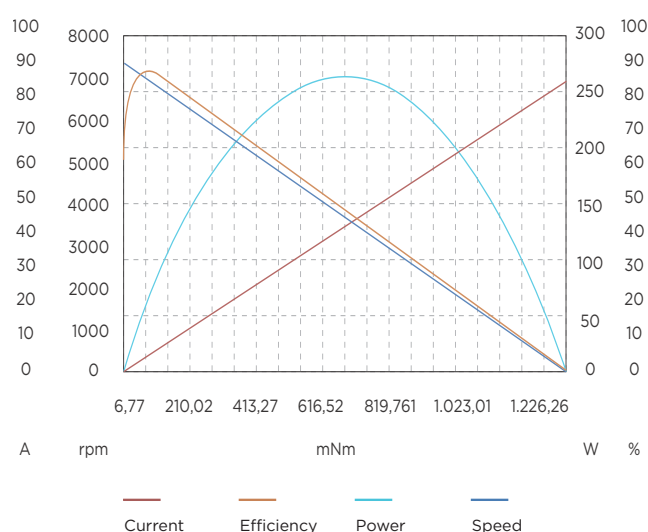
**No-load current:** It refers to the input current measured at the two terminals of the motor when the motor is not connected to any load at the rated voltage, and the unit is A (ampere).

**Stall torque:** The maximum torque measured by the motor at rated voltage due to the load causing the motor to stop rotating, in g.cm(g.cm).

**Stalled current:** This refers to the current measured in A (ampere) when the motor is stopped at the rated voltage due to the load.

It is recommended that you do not perform a stall operation on the motor, as this operation may cause the motor to “demagnetize” or even cause damage.

In general, the performance curve of the motor takes the output torque as the abscissa, and the speed, current, efficiency, and output power as the ordinate. correspondingly called: speed curve, current curve, efficiency curve, output power curve.



## Speed curve

Is connected to the no-load speed NO point and stall torque Ts pointCurve, which indicates the speed of the motor under different load conditions. It is known that it decreases linearly with the increase in load.

## Current curve

It is the curve shows the connection between two end points, no-load current and stall current. It describes motor current in different loading situation. As per diagram, current increase linearly with increasing torque.

## Output power curve

It describes motor output power.

## Efficiency curve

It describes motor efficiency and can be calculated with the following formula:  $\text{Eff}(\%) = (\text{output power} / (\text{voltage} \times \text{current})) \times 100\%$ . In general, the maximum efficiency point occurs in the area between stall torque/7 and stall torque/3. To design a suitable motor, maximum efficiency and maximum output power do not occur at the same point.

## Table explanation

### 1 Nominal voltage

It is the applied voltage between two powered phases in block commutation. All nominal data (lines 2 – 9) refer to this voltage. Lower and higher voltages are permissible, provided that limits are not exceeded.

### 2 No load speed

It is the speed at which the unloaded motor runs with the nominal voltage applied. It is proportional to the applied voltage.

### 3 No load current

This is the typical current that the unloaded motor draws when operating at nominal voltage. No load friction depends heavily on temperature. It decreases in extended operation and increases at lower temperatures.

### 4 Nominal speed

It is the speed set for operation at nominal voltage and nominal torque at a motor temperature of 25°C.

### 5 Nominal torque

It is the torque generated for operation at nominal voltage and nominal current at a motor temperature of 25°C. It is at the limit of the motor's continuous operation range. Higher torques heat up the winding too much.

### 6 Nominal current

It is the current in the active phase the nominal torque at the given nominal speed (= max. permissible continuous load current). The maximum winding temperature is reached at 25°C ambient temperature in continuous operation with Nominal current.

### 7 Stall torque

It is the linearly calculated load torque for motors that causes the shaft to stall at nominal voltage. This torque often cannot be achieved due to saturation effects.

### 8 Stall current

It is the quotient from nominal voltage and the motor's terminal resistance. Stall current is equivalent to stall torque. With larger motors, Stall current cannot be reached due to the amplifier's current limits.

### 9 Max. efficiency

It is the optimal relationship between input and output power at nominal voltage. Contact factory for more detail.

### 10 Terminal resistance

It is determined by the resistance at 25 °C between two motor phase.

### 11 Terminal inductance

It is the winding inductance between two motor phase.

### 12 Torque constant

Represents the quotient from generated torque and applicable current.

### 13 Speed constant

It indicates the theoretical no load speed per volt of applied voltage, disregarding friction losses.

### 14 Speed/torque gradient

The speed/torque gradient is an indicator of the motor's performance. It is based on the quotient of ideal no load speed and ideal stall torque (tolerance  $\pm 20\%$ ).

### 15 Mechanical time constant

It is the time required for the rotor to accelerate from standstill to 63% of its no load speed.

### 16 Rotor inertia

It is the mass moment of inertia of the rotor.

### 17 Thermal resistance housing-ambient

Characteristic values of thermal contact resistance without additional heat sinking. Lines 17 and 18 combined define the maximum heating at a given power loss (load). Thermal resistance Rth2 on motors with metal flanges can decrease by up to 80% if the motor is coupled directly to a good heat-conducting.

### 18 Thermal resistance winding-housing

Characteristic values of thermal contact resistance without additional heat sinking. Lines 17 and 18 combined define the maximum heating at a given power loss (load). Thermal resistance Rth2 on motors with metal flanges can decrease by up to 80% if the motor is coupled directly to a good heat-conducting.

### 19 Thermal time constant winding

These are the typical reaction times for a temperature change of winding and motor. It can be seen that the motor reacts much more sluggishly in thermal terms than the winding. The values are calculated from the product of thermal capacity and given heat resistances.

### 20 Thermal time constant motor

These are the typical reaction times for a temperature change of winding and motor. It can be seen that the motor reacts much more sluggishly in thermal terms than the winding. The values are calculated from the product of thermal capacity and given heat resistances.

### 21 Ambient temperature

Operating temperature range. This derives from the heat reliability of the materials.

### 22 Max. permissible winding temperature

Maximum permissible winding temperature.

### 23 Max. permissible speed

It is the maximum recommended speed based on thermal and mechanical perspectives. A reduced service life can be expected at higher speeds.

### 24 Max. axial load (dynamics)

Dynamic: axial loading permissible in operation. If different values apply for traction and thrust, the smaller value is given.

### 25 Max force for press fits (static)

Maximum axial force applying to the shaft at standstill if the force is not input at the other shaft end. This is not possible for motors with only one shaft end.

### 26 Max. radial load

The value is given for a typical distance from the front flange. As the distance increases, this value decreases.

### 27 Number of poles

Number of north poles of the permanent magnet. The phase streams and commutation signals pass through per revolution p cycles. Servo-controllers require the correct details of the number of pole pairs.

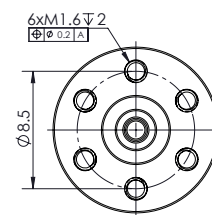
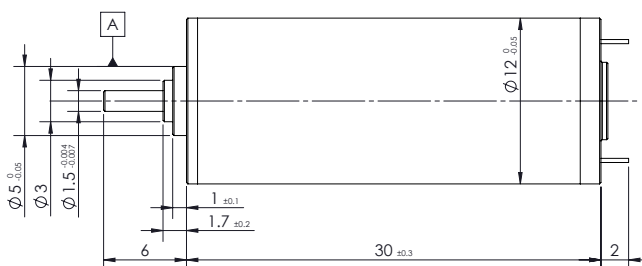
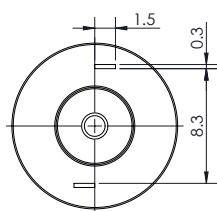
### 28 Weight



ATOM DC Series

# SVTN B 01-1230 Metal brushes

2.5 Watt



V 3

| Values                                  | Unit             | SVTN B 01 | 1230-06.. | 1230-12..   | 1230-15.. | 1230-24.. |
|-----------------------------------------|------------------|-----------|-----------|-------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |             |           |           |
| 1 Nominal voltage                       | V                | 6         | 12        | 15          | 24        |           |
| 2 No-load speed                         | rpm              | 13500     | 11400     | 13500       | 15000     |           |
| 3 No-load current                       | mA               | 22.0      | 16.0      | 15.0        | 8.0       |           |
| 4 Nominal speed                         | rpm              | 10800     | 9120      | 10800       | 12000     |           |
| 5 Nominal torque                        | mNm              | 1.4       | 1.5       | 1.8         | 2.7       |           |
| 6 Nominal current                       | A                | 0.4       | 0.2       | 0.2         | 0.2       |           |
| 7 Stall torque                          | mNm              | 7.0       | 7.6       | 9.2         | 13.4      |           |
| 8 Stall current                         | A                | 1.69      | 0.78      | 0.89        | 0.90      |           |
| 9 Max. efficiency                       | %                | 78.5      | 77.7      | 79.9        | 80.0      |           |
| <b>Characteristics</b>                  |                  |           |           |             |           |           |
| 10 Terminal resistance                  | Ω                | 3.55      | 15.38     | 16.85       | 26.67     |           |
| 11 Terminal inductance                  | mH               | 0.25      | 0.59      | 0.65        | 0.98      |           |
| 12 Torque constant                      | mNm/A            | 4.19      | 9.91      | 10.49       | 15.11     |           |
| 13 Speed constant                       | rpm/V            | 2250.0    | 950.0     | 900.0       | 625.0     |           |
| 14 Speed/torque gradient                | rpm/mNm          | 1932.1    | 1495.9    | 1462.3      | 1115.5    |           |
| 15 Mechanical time constant             | ms               | 5.7       | 4.3       | 4.5         | 3.2       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0.28      | 0.27      | 0.29        | 0.27      |           |
| <b>Mechanical data</b>                  |                  |           |           |             |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |           | 33 K/W      |           |           |
| 18 Thermal resistance winding-housing   |                  |           |           | 7.0 K/W     |           |           |
| 19 Thermal time constant winding        |                  |           |           | 4.88 s      |           |           |
| 20 Thermal time constant motor          |                  |           |           | 229 s       |           |           |
| 21 Ambient temperature                  |                  |           |           | -20...+85°C |           |           |
| 22 Max. permissible winding temperature |                  |           |           | +100°C      |           |           |
| 23 Max. permissible speed               |                  |           |           | 15000 rpm   |           |           |
| 24 Max. axial load (dynamic)            |                  |           |           | 0,1 N       |           |           |
| 25 Max.force for press fits (static)    |                  |           |           | 20 N        |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           | 5 N         |           |           |
| <b>Other specifications</b>             |                  |           |           |             |           |           |
| 27 Number of poles                      |                  |           |           | 2           |           |           |
| 28 Weight                               |                  |           |           | 17 gr       |           |           |

## Gearbox combinations

SVTG B 10\*

SVTG B 12\*

\*On request



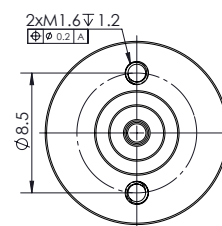
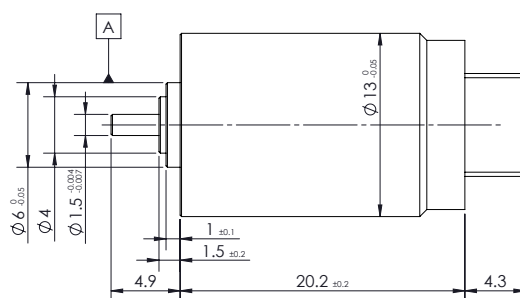
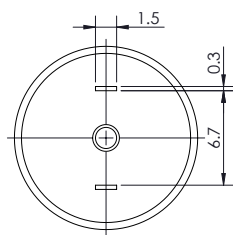
ATOM DC Series

## SVTN B 01-1320 Metal brushes

1.1 Watt



servotecnica



V 3

| Values                                  | Unit             | SVTN B 01<br>1320-3.7.. | 1320-06.. | 1320-12..   | 1320-24.. |
|-----------------------------------------|------------------|-------------------------|-----------|-------------|-----------|
| <b>Motor Data</b>                       |                  |                         |           |             |           |
| 1 Nominal voltage                       | V                | 3.7                     | 6         | 12          | 24        |
| 2 No-load speed                         | rpm              | 9500                    | 12000     | 13000       | 12000     |
| 3 No-load current                       | mA               | 35.0                    | 30        | 16          | 10        |
| 4 Nominal speed                         | rpm              | 7600                    | 9600      | 10400       | 9600      |
| 5 Nominal torque                        | mNm              | 0.9                     | 1.5       | 1.0         | 1.19      |
| 6 Nominal current                       | A                | 0.288                   | 0.358     | 0.133       | 0.074     |
| 7 Stall torque                          | mNm              | 4.58                    | 7.41      | 5.01        | 5.93      |
| 8 Stall current                         | A                | 1.30                    | 1.63      | 0.60        | 0.33      |
| 9 Max. efficiency                       | %                | 69.9                    | 71.1      | 70.0        | 68.21     |
| <b>Characteristics</b>                  |                  |                         |           |             |           |
| 10 Terminal resistance                  | Ω                | 2.85                    | 3.68      | 20          | 72.73     |
| 11 Terminal inductance                  | mH               | 0.09                    | 0.12      | 0.50        | 1.30      |
| 12 Torque constant                      | mNm/A            | 3.62                    | 4.66      | 8.58        | 18.52     |
| 13 Speed constant                       | rpm/V            | 2567.6                  | 2000.0    | 1083.3      | 500.00    |
| 14 Speed/torque gradient                | rpm/mNm          | 2075.1                  | 1620.4    | 2594.5      | 2024.85   |
| 15 Mechanical time constant             | ms               | 5.3                     | 4.2       | 5.6         | 4.63      |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0.25                    | 0.25      | 0.20        | 0.22      |
| <b>Mechanical data</b>                  |                  |                         |           |             |           |
| 17 Thermal resistance housing-ambient   |                  |                         |           | 46 K/W      |           |
| 18 Thermal resistance winding-housing   |                  |                         |           | 14 K/W      |           |
| 19 Thermal time constant winding        |                  |                         |           | 5.18 s      |           |
| 20 Thermal time constant motor          |                  |                         |           | 76.1 s      |           |
| 21 Ambient temperature                  |                  |                         |           | -20...+85°C |           |
| 22 Max. permissible winding temperature |                  |                         |           | +100°C      |           |
| 23 Max. permissible speed               |                  |                         |           | 19000 rpm   |           |
| 24 Max. axial load (dynamic)            |                  |                         |           | 0.2 N       |           |
| 25 Max. force for press fits (static)   |                  |                         |           | 20 N        |           |
| 26 Max. radial load, 5mm from flange    |                  |                         |           | 1.4 N       |           |
| <b>Other specifications</b>             |                  |                         |           |             |           |
| 27 Number of poles                      |                  |                         |           | 2           |           |
| 28 Weight                               |                  |                         |           | 13 gr       |           |

## Gearbox combinations

SVTG B 10\*

SVTG B 12\*

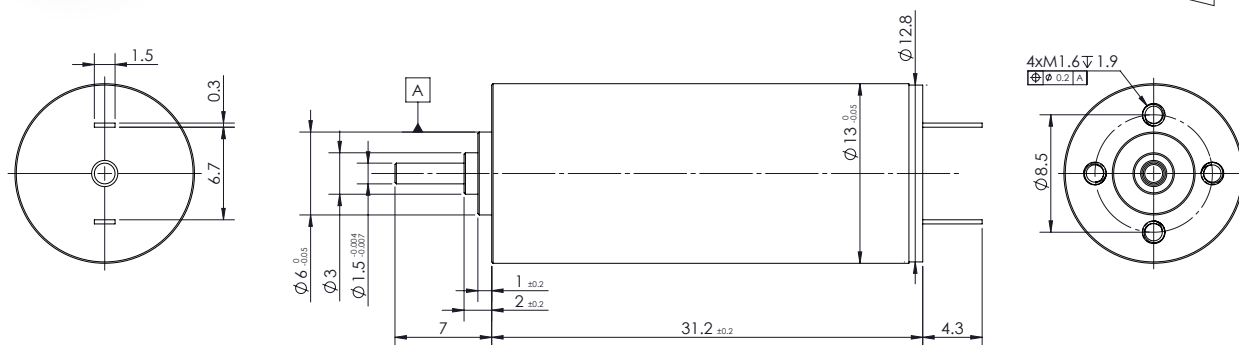
\*On request

CORELESS  
BRUSHED DC



# ATOM DC Series **SVTN B 01-1331** Metal brushes

3.5 Watt



V 3

| Values                                  | Unit             | SVTN B 01 | 1331-3.. | 1331-06..   | 1331-12.. | 1331-24.. |
|-----------------------------------------|------------------|-----------|----------|-------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |          |             |           |           |
| 1 Nominal voltage                       | V                | 3         | 6        | 12          | 24        |           |
| 2 No-load speed                         | rpm              | 12000     | 11000    | 11600       | 16200     |           |
| 3 No-load current                       | mA               | 45.0      | 30.0     | 18.0        | 12.0      |           |
| 4 Nominal speed                         | rpm              | 9600      | 8800     | 9280        | 12960     |           |
| 5 Nominal torque                        | mNm              | 2.1       | 2.4      | 2.0         | 4.1       |           |
| 6 Nominal current                       | A                | 0.9       | 0.5      | 0.2         | 0.4       |           |
| 7 Stall torque                          | mNm              | 10.3      | 12.1     | 10.1        | 21.0      |           |
| 8 Stall current                         | A                | 4.400     | 2.400    | 1.080       | 1.570     |           |
| 9 Max. efficiency                       | %                | 80.8      | 75.8     | 69.4        | 70.5      |           |
| <b>Characteristics</b>                  |                  |           |          |             |           |           |
| 10 Terminal resistance                  | Ω                | 0.68      | 2.50     | 11.11       | 12.31     |           |
| 11 Terminal inductance                  | mH               | 0.05      | 0.12     | 0.27        | 0.75      |           |
| 12 Torque constant                      | mNm/A            | 2.36      | 5.12     | 9.60        | 13.78     |           |
| 13 Speed constant                       | rpm/V            | 4000.0    | 1833.3   | 966.7       | 675.0     |           |
| 14 Speed/torque gradient                | rpm/mNm          | 1166.1    | 910.0    | 1150.3      | 618.5     |           |
| 15 Mechanical time constant             | ms               | 8.0       | 6.2      | 7.9         | 4.2       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0.65      | 0.65     | 0.65        | 0.65      |           |
| <b>Mechanical data</b>                  |                  |           |          |             |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |          | 33 K/W      |           |           |
| 18 Thermal resistance winding-housing   |                  |           |          | 7.0 K/W     |           |           |
| 19 Thermal time constant winding        |                  |           |          | 4.88 s      |           |           |
| 20 Thermal time constant motor          |                  |           |          | 259 s       |           |           |
| 21 Ambient temperature                  |                  |           |          | -20...+85°C |           |           |
| 22 Max. permissible winding temperature |                  |           |          | +100°C      |           |           |
| 23 Max. permissible speed               |                  |           |          | 16200 rpm   |           |           |
| 24 Max. axial load (dynamic)            |                  |           |          | 0.2 N       |           |           |
| 25 Max. force for press fits (static)   |                  |           |          | 20 N        |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |          | 1.4 N       |           |           |
| <b>Other specifications</b>             |                  |           |          |             |           |           |
| 27 Number of poles                      |                  |           |          | 2           |           |           |
| 28 Weight                               |                  |           |          | 20 gr       |           |           |

## **Gearbox combinations**

SVTG B 10\*

SVTG B 12\*

\*On request





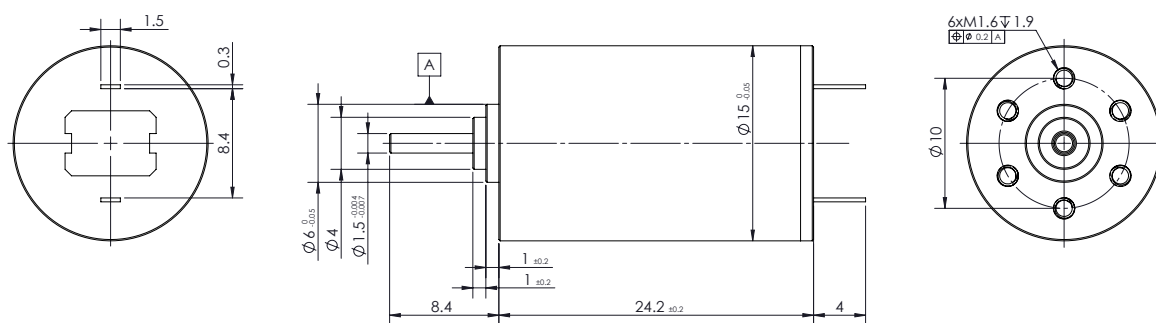
ATOM DC Series

**SVTN B 01-1524** Metal brushes

2.2 Watt



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V 3

| Values               | Unit                                 | SVTN B 01 | 1524-03.. | 1524-06.. | 1524-12..   | 1524-24.. |
|----------------------|--------------------------------------|-----------|-----------|-----------|-------------|-----------|
| Motor Data           |                                      |           |           |           |             |           |
| 1                    | Nominal voltage                      | V         | 3         | 6         | 12          | 24        |
| 2                    | No-load speed                        | rpm       | 10700     | 12300     | 11800       | 9500      |
| 3                    | No-load current                      | mA        | 40        | 20        | 11          | 4         |
| 4                    | Nominal speed                        | rpm       | 8560      | 9840      | 9440        | 7600      |
| 5                    | Nominal torque                       | mNm       | 1.6       | 1.8       | 1.7         | 1.4       |
| 6                    | Nominal current                      | A         | 0.6       | 0.4       | 0.2         | 0.1       |
| 7                    | Stall torque                         | mNm       | 7.8       | 9.1       | 8.7         | 7.0       |
| 8                    | Stall current                        | A         | 3.0       | 2.0       | 0.9         | 0.3       |
| 9                    | Max. efficiency                      | %         | 78.2      | 81.0      | 79.3        | 78.2      |
| Characteristics      |                                      |           |           |           |             |           |
| 10                   | Terminal resistance                  | Ω         | 1.00      | 3.00      | 13.04       | 80.00     |
| 11                   | Terminal inductance                  | mH        | 0.02      | 0.05      | 0.23        | 1.05      |
| 12                   | Torque constant                      | mNm/A     | 2.64      | 4.61      | 9.60        | 23.80     |
| 13                   | Speed constant                       | rpm/V     | 3566.7    | 2050.0    | 983.3       | 395.8     |
| 14                   | Speed/torque gradient                | rpm/mNm   | 1368.4    | 1347.1    | 1352.9      | 1348.3    |
| 15                   | Mechanical time constant             | ms        | 11.0      | 10.1      | 11.9        | 11.9      |
| 16                   | Rotor inertia                        | gcm²      | 0.77      | 0.72      | 0.84        | 0.84      |
| Mechanical data      |                                      |           |           |           |             |           |
| 17                   | Thermal resistance housing-ambient   |           |           |           | 4.5 K/W     |           |
| 18                   | Thermal resistance winding-housing   |           |           |           | 31 K/W      |           |
| 19                   | Thermal time constant winding        |           |           |           | 2.4 s       |           |
| 20                   | Thermal time constant motor          |           |           |           | 300 s       |           |
| 21                   | Ambient temperature                  |           |           |           | -20...+85°C |           |
| 22                   | Max. permissible winding temperature |           |           |           | +100°C      |           |
| 23                   | Max. permissible speed               |           |           |           | 12300 rpm   |           |
| 24                   | Max. axial load (dynamic)            |           |           |           | 0.2 N       |           |
| 25                   | Max.force for press fits (static)    |           |           |           | 20 N        |           |
| 26                   | Max. radial load, 5mm from flange    |           |           |           | 1.4 N       |           |
| Other specifications |                                      |           |           |           |             |           |
| 27                   | Number of poles                      |           |           |           | 2           |           |
| 28                   | Weight                               |           |           |           | 22 gr       |           |

**Gearbox combinations**

SVTG A 16

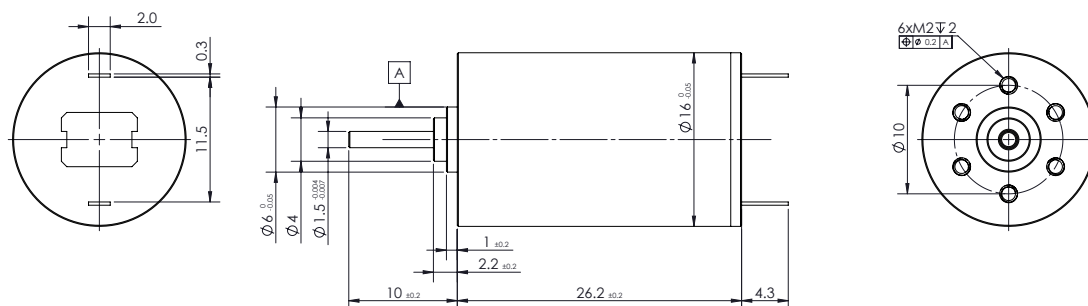
CORELESS  
BRUSHED DC



ATOM DC Series

## SVTN B 01-1625 Metal brushes

2.8 Watt



V 3

| Values               | Unit                                 | SVTN B 01 | 1625-3.7.. | 1625-06.. | 1625-12..   | 1625-24.. |
|----------------------|--------------------------------------|-----------|------------|-----------|-------------|-----------|
| Motor Data           |                                      |           |            |           |             |           |
| 1                    | Nominal voltage                      | V         | 3.7        | 6         | 12          | 24        |
| 2                    | No-load speed                        | rpm       | 8500       | 9800      | 10800       | 11000     |
| 3                    | No-load current                      | mA        | 50         | 20        | 15          | 6         |
| 4                    | Nominal speed                        | rpm       | 6800       | 7840      | 8640        | 8800      |
| 5                    | Nominal torque                       | mNm       | 2.5        | 2.8       | 2.7         | 3.0       |
| 6                    | Nominal current                      | A         | 0.67       | 0.50      | 0.27        | 0.15      |
| 7                    | Stall torque                         | mNm       | 12.7       | 14.0      | 13.5        | 15.2      |
| 8                    | Stall current                        | A         | 3.15       | 2.43      | 1.30        | 0.74      |
| 9                    | Max. efficiency                      | %         | 76.4       | 82.7      | 79.7        | 82.8      |
| Characteristics      |                                      |           |            |           |             |           |
| 10                   | Terminal resistance                  | Ω         | 1.17       | 2.47      | 9.23        | 32.43     |
| 11                   | Terminal inductance                  | mH        | 0.105      | 0.210     | 0.510       | 1.320     |
| 12                   | Torque constant                      | mNm/A     | 4.09       | 5.80      | 10.49       | 20.67     |
| 13                   | Speed constant                       | rpm/V     | 2297.3     | 1633.3    | 900.0       | 458.3     |
| 14                   | Speed/torque gradient                | rpm/mNm   | 670.3      | 701.3     | 801.4       | 725.2     |
| 15                   | Mechanical time constant             | ms        | 6.3        | 6.6       | 7.5         | 6.8       |
| 16                   | Rotor inertia                        | gcm²      | 0.90       | 0.90      | 0.90        | 0.90      |
| Mechanical data      |                                      |           |            |           |             |           |
| 17                   | Thermal resistance housing-ambient   |           |            |           | 40.6 K/W    |           |
| 18                   | Thermal resistance winding-housing   |           |            |           | 9.5 K/W     |           |
| 19                   | Thermal time constant winding        |           |            |           | 5.33 s      |           |
| 20                   | Thermal time constant motor          |           |            |           | 268 s       |           |
| 21                   | Ambient temperature                  |           |            |           | -20...+85°C |           |
| 22                   | Max. permissible winding temperature |           |            |           | +100°C      |           |
| 23                   | Max. permissible speed               |           |            |           | 11000 rpm   |           |
| 24                   | Max. axial load (dynamic)            |           |            |           | 1.3 N       |           |
| 25                   | Max.force for press fits (static)    |           |            |           | 15 N        |           |
| 26                   | Max. radial load, 5mm from flange    |           |            |           | 5 N         |           |
| Other specifications |                                      |           |            |           |             |           |
| 27                   | Number of poles                      |           |            |           | 2           |           |
| 28                   | Weight                               |           |            |           | 24 gr       |           |

### Gearbox combinations

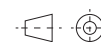
SVTG A 16



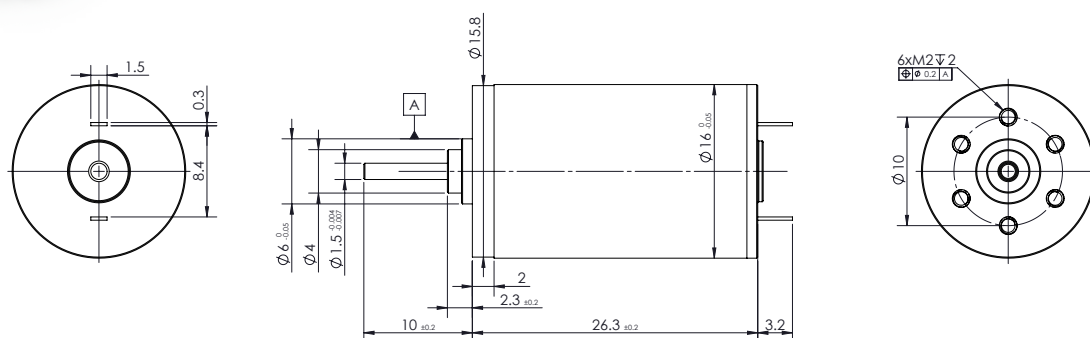
ATOM DC Series

**SVTN B 01-1625** Graphite brushes

2.8 Watt



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V 3

| Values                                  | Unit             | SVTN B 01 | 1625-06-.. | 1625-09-..  | 1625-12-.. | 1625-24-.. |
|-----------------------------------------|------------------|-----------|------------|-------------|------------|------------|
| <b>Motor Data</b>                       |                  |           |            |             |            |            |
| 1 Nominal voltage                       | V                | 6         | 9          | 12          | 24         |            |
| 2 No-load speed                         | rpm              | 11500     | 12500      | 13600       | 11800      |            |
| 3 No-load current                       | mA               | 80        | 65         | 50          | 32         |            |
| 4 Nominal speed                         | rpm              | 8108      | 9125       | 9928        | 8614       |            |
| 5 Nominal torque                        | mNm              | 2.71      | 3.10       | 3.19        | 3.64       |            |
| 6 Nominal current                       | A                | 0.65      | 0.53       | 0.44        | 0.23       |            |
| 7 Stall torque                          | mNm              | 9.2       | 11.5       | 11.8        | 13.5       |            |
| 8 Stall current                         | A                | 2.00      | 1.80       | 1.50        | 0.82       |            |
| 9 Max. efficiency                       | %                | 64.0      | 65.6       | 66.8        | 66.2       |            |
| <b>Characteristics</b>                  |                  |           |            |             |            |            |
| 10 Terminal resistance                  | $\Omega$         | 3.00      | 5.00       | 8.00        | 29.30      |            |
| 11 Terminal inductance                  | mH               | 0.10      | 0.18       | 0.34        | 1.10       |            |
| 12 Torque constant                      | mNm/A            | 4.78      | 6.63       | 8.14        | 18.75      |            |
| 13 Speed constant                       | rpm/V            | 1916.7    | 1388.9     | 1133.3      | 491.7      |            |
| 14 Speed/torque gradient                | rpm/mNm          | 1252.3    | 1087.1     | 1151.5      | 708.8      |            |
| 15 Mechanical time constant             | ms               | 12.6      | 10.7       | 10.8        | 7.6        |            |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0.96      | 0.94       | 0.90        | 1.03       |            |
| <b>Mechanical data</b>                  |                  |           |            |             |            |            |
| 17 Thermal resistance housing-ambient   |                  |           |            | 40.6 K/W    |            |            |
| 18 Thermal resistance winding-housing   |                  |           |            | 9.5 K/W     |            |            |
| 19 Thermal time constant winding        |                  |           |            | 5.33 s      |            |            |
| 20 Thermal time constant motor          |                  |           |            | 268 s       |            |            |
| 21 Ambient temperature                  |                  |           |            | -20...+85°C |            |            |
| 22 Max. permissible winding temperature |                  |           |            | +100°C      |            |            |
| 23 Max. permissible speed               |                  |           |            | 13600 rpm   |            |            |
| 24 Max. axial load (dynamic)            |                  |           |            | 1.3 N       |            |            |
| 25 Max. force for press fits (static)   |                  |           |            | 15 N        |            |            |
| 26 Max. radial load, 5mm from flange    |                  |           |            | 5 N         |            |            |
| <b>Other specifications</b>             |                  |           |            |             |            |            |
| 27 Number of poles                      |                  |           |            | 2           |            |            |
| 28 Weight                               |                  |           |            | 24 gr       |            |            |

**Gearbox combinations**

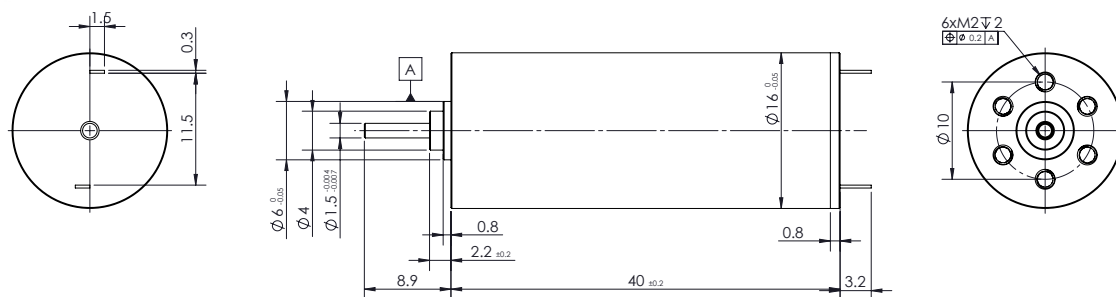
SVTG A 16

CORELESS  
BRUSHED DC

## ATOM DC Series

**SVTN B 01-1640** Metal brushes

11.3 Watt



V 3

| Values               |                                      | Unit    | SVTN B 01 |           |             |           |
|----------------------|--------------------------------------|---------|-----------|-----------|-------------|-----------|
|                      |                                      |         | 1640-03.. | 1640-06.. | 1640-12..   | 1640-24.. |
| Motor Data           |                                      |         |           |           |             |           |
| 1                    | Nominal voltage                      | V       | 3         | 6         | 12          | 24        |
| 2                    | No-load speed                        | rpm     | 10000     | 9200      | 14000       | 13000     |
| 3                    | No-load current                      | mA      | 50        | 28        | 60          | 25        |
| 4                    | Nominal speed                        | rpm     | 8000      | 7360      | 11200       | 10400     |
| 5                    | Nominal torque                       | mNm     | 3.1       | 3.3       | 10.0        | 10.4      |
| 6                    | Nominal current                      | A       | 1.14      | 0.56      | 1.29        | 0.62      |
| 7                    | Stall torque                         | mNm     | 15.5      | 16.3      | 49.8        | 52.0      |
| 8                    | Stall current                        | A       | 5.5       | 2.7       | 6.2         | 3.0       |
| 9                    | Max. efficiency                      | %       | 81.8      | 80.6      | 81.3        | 82.6      |
| Characteristics      |                                      |         |           |           |             |           |
| 10                   | Terminal resistance                  | Ω       | 0.55      | 2.25      | 1.94        | 8.00      |
| 11                   | Terminal inductance                  | mH      | 0.01      | 0.06      | 0.15        | 0.56      |
| 12                   | Torque constant                      | mNm/A   | 2.84      | 6.16      | 8.11        | 17.48     |
| 13                   | Speed constant                       | rpm/V   | 3333.3    | 1533.3    | 1166.7      | 541.7     |
| 14                   | Speed/torque gradient                | rpm/mNm | 646.4     | 565.1     | 281.3       | 249.9     |
| 15                   | Mechanical time constant             | ms      | 11.3      | 9.9       | 4.9         | 4.4       |
| 16                   | Rotor inertia                        | gcm²    | 1.67      | 1.67      | 0.90        | 1.67      |
| Mechanical data      |                                      |         |           |           |             |           |
| 17                   | Thermal resistance housing-ambient   |         |           |           | 30 K/W      |           |
| 18                   | Thermal resistance winding-housing   |         |           |           | 8.5 K/W     |           |
| 19                   | Thermal time constant winding        |         |           |           | 10.6 s      |           |
| 20                   | Thermal time constant motor          |         |           |           | 436 s       |           |
| 21                   | Ambient temperature                  |         |           |           | -20...+85°C |           |
| 22                   | Max. permissible winding temperature |         |           |           | +100°C      |           |
| 23                   | Max. permissible speed               |         |           |           | 14000 rpm   |           |
| 24                   | Max. axial load (dynamic)            |         |           |           | 1.3 N       |           |
| 25                   | Max.force for press fits (static)    |         |           |           | 15 N        |           |
| 26                   | Max. radial load, 5mm from flange    |         |           |           | 5 N         |           |
| Other specifications |                                      |         |           |           |             |           |
| 27                   | Number of poles                      |         |           |           | 2           |           |
| 28                   | Weight                               |         |           |           | 40.5 gr     |           |

## Gearbox combinations

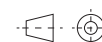
SVTG A 16



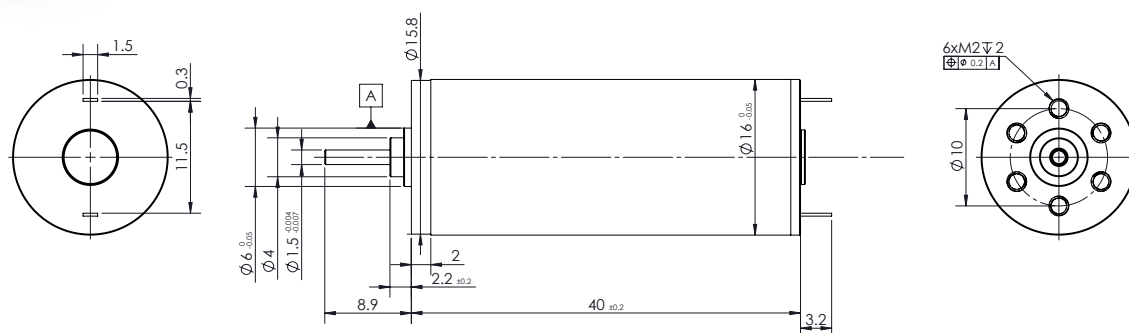
ATOM DC Series

**SVTN B 01-1640** Graphite brushes

6.8 Watt



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V 3

| Values                                  | Unit             | SVTN B 01 |             |           |
|-----------------------------------------|------------------|-----------|-------------|-----------|
|                                         |                  | 1640-06.. | 1640-12..   | 1640-24.. |
| <b>Motor Data</b>                       |                  |           |             |           |
| 1 Nominal voltage                       | V                | 6         | 12          | 24        |
| 2 No-load speed                         | rpm              | 12200     | 10400       | 10000     |
| 3 No-load current                       | mA               | 70        | 45          | 30        |
| 4 Nominal speed                         | rpm              | 9516      | 8112        | 7550      |
| 5 Nominal torque                        | mNm              | 4.5       | 6.6         | 8.7       |
| 6 Nominal current                       | A                | 1.04      | 0.65        | 0.41      |
| 7 Stall torque                          | mNm              | 20.5      | 29.9        | 35.3      |
| 8 Stall current                         | A                | 4.50      | 2.80        | 1.60      |
| 9 Max. efficiency                       | %                | 76.6      | 76.2        | 74.5      |
| <b>Characteristics</b>                  |                  |           |             |           |
| 10 Terminal resistance                  | $\Omega$         | 1.33      | 4.29        | 15.00     |
| 11 Terminal inductance                  | mH               | 0.029     | 0.141       | 0.506     |
| 12 Torque constant                      | mNm/A            | 4.62      | 10.84       | 22.49     |
| 13 Speed constant                       | rpm/V            | 2033.3    | 866.7       | 416.7     |
| 14 Speed/torque gradient                | rpm/mNm          | 595.7     | 348.2       | 283.2     |
| 15 Mechanical time constant             | ms               | 10.4      | 6.1         | 5.0       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 1.67      | 1.67        | 1.69      |
| <b>Mechanical data</b>                  |                  |           |             |           |
| 17 Thermal resistance housing-ambient   |                  |           | 30 K/W      |           |
| 18 Thermal time constant winding        |                  |           | 10.6 s      |           |
| 19 Thermal time constant motor          |                  |           | 436 s       |           |
| 20 Ambient temperature                  |                  |           | -20...+85°C |           |
| 21 Max. permissible winding temperature |                  |           | +100°C      |           |
| 22 Max. permissible speed               |                  |           | 12200 rpm   |           |
| 23 Max. axial load (dynamic)            |                  |           | 1.3 N       |           |
| 24 Max. force for press fits (static)   |                  |           | 15 N        |           |
| 25 Max. radial load, 5mm from flange    |                  |           | 5 N         |           |
| <b>Other specifications</b>             |                  |           |             |           |
| 26 Number of poles                      |                  |           | 2           |           |
| 27 Weight                               |                  |           | 42 gr       |           |

**Gearbox combinations**

SVTG A 16

CORELESS  
BRUSHED DC

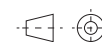
SVTG A 16



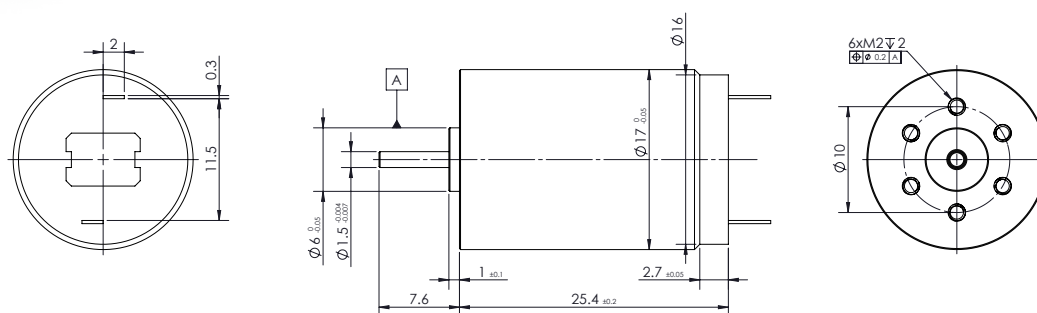
ATOM DC Series

**SVTN B 01-1725** Graphite brushes

3.9 Watt



servotecnica



V 3

| Values                                  | Unit             | SVTN B 01 |             |           |
|-----------------------------------------|------------------|-----------|-------------|-----------|
|                                         |                  | 1725-06.. | 1725-12..   | 1725-24.. |
| <b>Motor Data</b>                       |                  |           |             |           |
| 1 Nominal voltage                       | V                | 6         | 12          | 24        |
| 2 No-load speed                         | rpm              | 11000     | 10000       | 10000     |
| 3 No-load current                       | mA               | 90        | 50          | 22        |
| 4 Nominal speed                         | rpm              | 8140      | 7400        | 7300      |
| 5 Nominal torque                        | mNm              | 3.55      | 3.28        | 3.81      |
| 6 Nominal current                       | A                | 0.79      | 0.35        | 0.19      |
| 7 Stall torque                          | mNm              | 13.66     | 12.60       | 14.10     |
| 8 Stall current                         | A                | 2.80      | 1.17        | 0.66      |
| 9 Max. efficiency                       | %                | 67.4      | 67.8        | 66.6      |
| <b>Characteristics</b>                  |                  |           |             |           |
| 10 Terminal resistance                  | $\Omega$         | 2.14      | 10.20       | 36.40     |
| 11 Terminal inductance                  | mH               | 0.08      | 0.31        | 1.18      |
| 12 Torque constant                      | mNm/A            | 5.04      | 11.10       | 22.14     |
| 13 Speed constant                       | rpm/V            | 1833.3    | 833.3       | 416.7     |
| 14 Speed/torque gradient                | rpm/mNm          | 805.2     | 793.6       | 584.2     |
| 15 Mechanical time constant             | ms               | 7.6       | 5.5         | 5.5       |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 0.90      | 0.90        | 0.90      |
| <b>Mechanical data</b>                  |                  |           |             |           |
| 17 Thermal resistance housing-ambient   |                  |           | 4 K/W       |           |
| 18 Thermal resistance winding-housing   |                  |           | 24.5 K/W    |           |
| 19 Thermal time constant winding        |                  |           | 2.6 s       |           |
| 20 Thermal time constant motor          |                  |           | 270 s       |           |
| 21 Ambient temperature                  |                  |           | -20...+85°C |           |
| 22 Max. permissible winding temperature |                  |           | +100°C      |           |
| 23 Max. permissible speed               |                  |           | 11000 rpm   |           |
| 24 Max. axial load (dynamic)            |                  |           | 1.3 N       |           |
| 25 Max. force for press fits (static)   |                  |           | 15 N        |           |
| 26 Max. radial load, 5mm from flange    |                  |           | 5 N         |           |
| <b>Other specifications</b>             |                  |           |             |           |
| 27 Number of poles                      |                  |           | 2           |           |
| 28 Weight                               |                  |           | 28 gr       |           |

**Gearbox combinations**

SVTG A 16

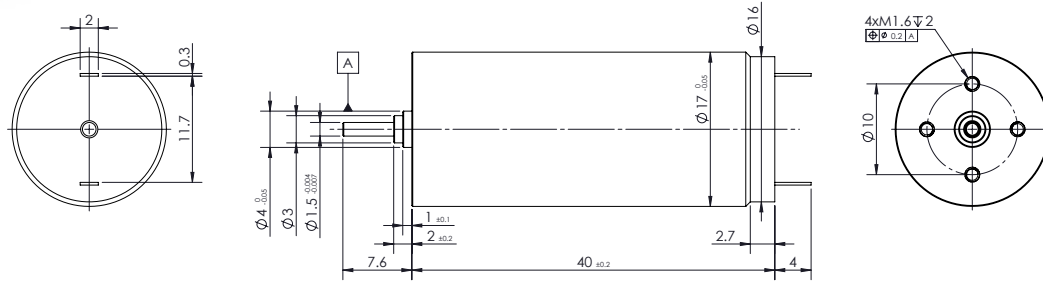
CORELESS  
BRUSHED DC



ATOM DC Series

# SVTN B 01-1740 Graphite brushes

14 Watt



V 3

| Values                                  | Unit             | SVTN B 01 | 1740-06..   | 1740-12.. | 1740-24.. |
|-----------------------------------------|------------------|-----------|-------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |             |           |           |
| 1 Nominal voltage                       | V                | 6         | 12          | 24        |           |
| 2 No-load speed                         | rpm              | 13500     | 22000       | 16000     |           |
| 3 No-load current                       | mA               | 120       | 130         | 48        |           |
| 4 Nominal speed                         | rpm              | 11408     | 18590       | 13520     |           |
| 5 Nominal torque                        | mNm              | 6.0       | 9.5         | 9.8       |           |
| 6 Nominal current                       | A                | 1.54      | 1.97        | 0.74      |           |
| 7 Stall torque                          | mNm              | 38.5      | 61.2        | 63.1      |           |
| 8 Stall current                         | A                | 9.30      | 12.00       | 4.50      |           |
| 9 Max. efficiency                       | %                | 78.6      | 80.3        | 80.4      |           |
| <b>Characteristics</b>                  |                  |           |             |           |           |
| 10 Terminal resistance                  | Ω                | 0.65      | 1.00        | 5.33      |           |
| 11 Terminal inductance                  | mH               | 0.028     | 0.075       | 0.290     |           |
| 12 Torque constant                      | mNm/A            | 4.19      | 5.15        | 14.17     |           |
| 13 Speed constant                       | rpm/V            | 2250.0    | 1833.3      | 666.7     |           |
| 14 Speed/torque gradient                | rpm/mNm          | 351.0     | 359.7       | 253.6     |           |
| 15 Mechanical time constant             | ms               | 6.2       | 6.4         | 4.5       |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 1.69      | 1.69        | 1.69      |           |
| <b>Mechanical data</b>                  |                  |           |             |           |           |
| 17 Thermal resistance housing-ambient   |                  |           | 7 K/W       |           |           |
| 18 Thermal resistance winding-housing   |                  |           | 23 K/W      |           |           |
| 19 Thermal time constant winding        |                  |           | 8 s         |           |           |
| 20 Thermal time constant motor          |                  |           | 440 s       |           |           |
| 21 Ambient temperature                  |                  |           | -20...+85°C |           |           |
| 22 Max. permissible winding temperature |                  |           | +100°C      |           |           |
| 23 Max. permissible speed               |                  |           | 22000 rpm   |           |           |
| 24 Max. axial load (dynamic)            |                  |           | 1.3 N       |           |           |
| 25 Max. force for press fits (static)   |                  |           | 15 N        |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           | 5 N         |           |           |
| <b>Other specifications</b>             |                  |           |             |           |           |
| 27 Number of poles                      |                  |           | 2           |           |           |
| 28 Weight                               |                  |           | 48 gr       |           |           |

## Gearbox combinations

SVTG A 16

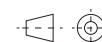




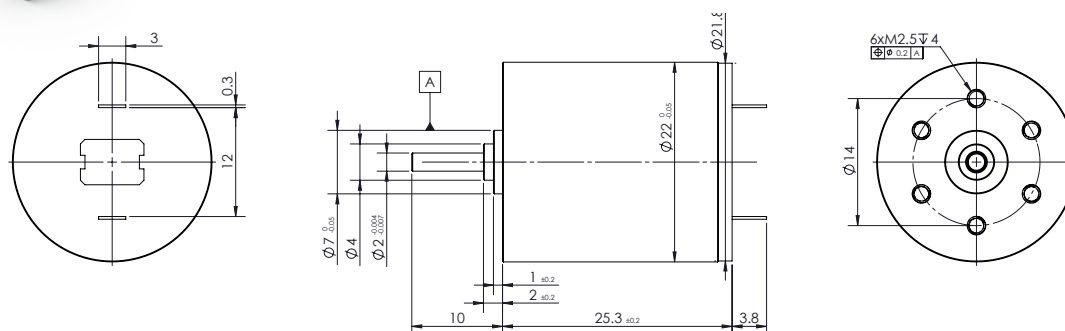
ATOM DC Series

**SVTN B 01-2225** Metal brushes

4.2 Watt



servotecnica



V 3

| Values                                  | Unit             | SVTN B 01 | 2225-03.. | 2225-06..   | 2225-09.. | 2225-12.. | 2225-24.. |
|-----------------------------------------|------------------|-----------|-----------|-------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |             |           |           |           |
| 1 Nominal voltage                       | V                | 3         | 6         | 9           | 12        | 24        |           |
| 2 No-load speed                         | rpm              | 7600      | 8200      | 8500        | 8300      | 7800      |           |
| 3 No-load current                       | mA               | 70        | 30        | 25          | 20        | 6         |           |
| 4 Nominal speed                         | rpm              | 6764      | 6806      | 7480        | 6889      | 6474      |           |
| 5 Nominal torque                        | mNm              | 2.35      | 3.28      | 2.60        | 4.13      | 3.44      |           |
| 6 Nominal current                       | A                | 0.70      | 0.50      | 0.29        | 0.32      | 0.12      |           |
| 7 Stall torque                          | mNm              | 21.3      | 19.3      | 21.7        | 24.3      | 20.2      |           |
| 8 Stall current                         | A                | 5.80      | 2.82      | 2.20        | 1.80      | 0.70      |           |
| 9 Max. efficiency                       | %                | 79.2      | 80.4      | 79.5        | 80.0      | 82.3      |           |
| <b>Characteristics</b>                  |                  |           |           |             |           |           |           |
| 10 Terminal resistance                  | Ω                | 0.52      | 2.13      | 4.09        | 6.67      | 34.29     |           |
| 11 Terminal inductance                  | mH               | 0.013     | 0.045     | 0.095       | 0.240     | 0.800     |           |
| 12 Torque constant                      | mNm/A            | 3.72      | 6.91      | 10.00       | 13.65     | 29.13     |           |
| 13 Speed constant                       | rpm/V            | 2533.3    | 1366.7    | 944.0       | 691.7     | 325.0     |           |
| 14 Speed/torque gradient                | rpm/mNm          | 356.2     | 425.2     | 390.9       | 341.5     | 385.8     |           |
| 15 Mechanical time constant             | ms               | 9.93      | 12.30     | 10.20       | 10.61     | 11.84     |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 2.66      | 2.76      | 2.79        | 2.97      | 2.93      |           |
| <b>Mechanical data</b>                  |                  |           |           |             |           |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |           | 20 K/W      |           |           |           |
| 18 Thermal resistance winding-housing   |                  |           |           | 6.0 K/W     |           |           |           |
| 19 Thermal time constant winding        |                  |           |           | 10.2 s      |           |           |           |
| 20 Thermal time constant motor          |                  |           |           | 313 s       |           |           |           |
| 21 Ambient temperature                  |                  |           |           | -20...+85°C |           |           |           |
| 22 Max. permissible winding temperature |                  |           |           | +100°C      |           |           |           |
| 23 Max. permissible speed               |                  |           |           | 8300 rpm    |           |           |           |
| 24 Max. axial load (dynamic)            |                  |           |           | 3.5 N       |           |           |           |
| 25 Max. force for press fits (static)   |                  |           |           | 44 N        |           |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           | 15 N        |           |           |           |
| <b>Other specifications</b>             |                  |           |           |             |           |           |           |
| 27 Number of poles                      |                  |           |           | 2           |           |           |           |
| 28 Weight                               |                  |           |           | 48 gr       |           |           |           |

**Gearbox combinations**

SVTG B 22

SVTG B 24

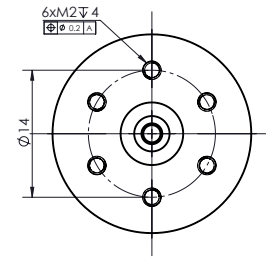
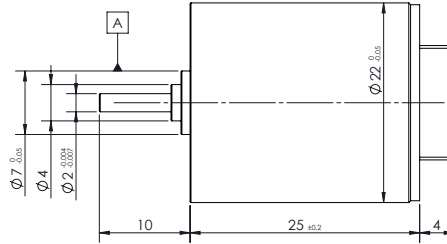
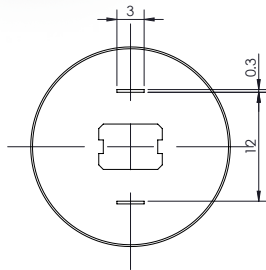
CORELESS  
BRUSHED DC



ATOM DC Series

## SVTN B 01-2225 Graphite brushes

8.1 Watt



V 3

| Values                                  | Unit             | SVTN B 01 | 2225-06.. | 2225-12..   | 2225-18.. | 2225-24.. |
|-----------------------------------------|------------------|-----------|-----------|-------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |             |           |           |
| 1 Nominal voltage                       | V                | 6         | 12        | 18          | 24        |           |
| 2 No-load speed                         | rpm              | 13500     | 15800     | 11800       | 12000     |           |
| 3 No-load current                       | mA               | 100       | 90        | 60          | 45        |           |
| 4 Nominal speed                         | rpm              | 11340     | 13272     | 9676        | 9960      |           |
| 5 Nominal torque                        | mNm              | 3.67      | 5.13      | 6.24        | 5.56      |           |
| 6 Nominal current                       | A                | 0.98      | 0.81      | 0.50        | 0.34      |           |
| 7 Stall torque                          | mNm              | 22.9      | 32.1      | 34.7        | 32.7      |           |
| 8 Stall current                         | A                | 5.60      | 4.60      | 2.50        | 1.80      |           |
| 9 Max. efficiency                       | %                | 75.1      | 74.0      | 71.4        | 70.9      |           |
| <b>Characteristics</b>                  |                  |           |           |             |           |           |
| 10 Terminal resistance                  | $\Omega$         | 1.07      | 2.61      | 7.20        | 13.33     |           |
| 11 Terminal inductance                  | mH               | 0.025     | 0.090     | 0.265       | 0.550     |           |
| 12 Torque constant                      | mNm/A            | 4.17      | 7.11      | 14.22       | 18.62     |           |
| 13 Speed constant                       | rpm/V            | 2250.0    | 1316.7    | 655.6       | 500.0     |           |
| 14 Speed/torque gradient                | rpm/mNm          | 588.9     | 492.7     | 340.2       | 367.2     |           |
| 15 Mechanical time constant             | ms               | 18.07     | 15.12     | 10.44       | 11.27     |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 2.93      | 2.93      | 2.97        | 2.93      |           |
| <b>Mechanical data</b>                  |                  |           |           |             |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |           | 20 K/W      |           |           |
| 18 Thermal resistance winding-housing   |                  |           |           | 6.0 K/W     |           |           |
| 19 Thermal time constant winding        |                  |           |           | 10.2 s      |           |           |
| 20 Thermal time constant motor          |                  |           |           | 313 s       |           |           |
| 21 Ambient temperature                  |                  |           |           | -20...+85°C |           |           |
| 22 Max. permissible winding temperature |                  |           |           | +100°C      |           |           |
| 23 Max. permissible speed               |                  |           |           | 15800 rpm   |           |           |
| 24 Max. axial load (dynamic)            |                  |           |           | 3.5 N       |           |           |
| 25 Max. force for press fits (static)   |                  |           |           | 44 N        |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           | 15 N        |           |           |
| <b>Other specifications</b>             |                  |           |           |             |           |           |
| 27 Number of poles                      |                  |           |           | 2           |           |           |
| 28 Weight                               |                  |           |           | 48 gr       |           |           |

### Gearbox combinations

SVTG B 22

SVTG B 24



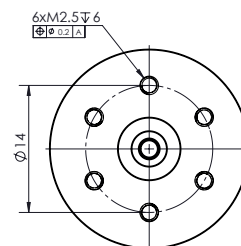
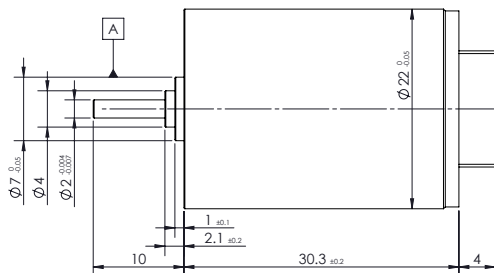
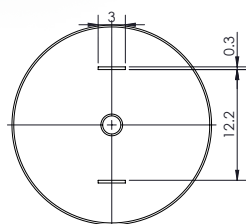
ATOM DC Series

**SVTN B 01-2230** Metal brushes

5.5 Watt



servotecnica



V 3

| Values                                  | Unit             | SVTN B 01 | 2230-06.. | 2230-09..   | 2230-12.. | 2230-15.. | 2230-24.. |
|-----------------------------------------|------------------|-----------|-----------|-------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |             |           |           |           |
| 1 Nominal voltage                       | V                | 6         | 9         | 12          | 15        | 24        |           |
| 2 No-load speed                         | rpm              | 8300      | 12200     | 10200       | 11000     | 9000      |           |
| 3 No-load current                       | mA               | 48        | 60        | 24          | 8         | 6         |           |
| 4 Nominal speed                         | rpm              | 7387      | 10858     | 9078        | 9790      | 8010      |           |
| 5 Nominal torque                        | mNm              | 2,81      | 2,39      | 2,73        | 2,7       | 1,37      |           |
| 6 Nominal current                       | A                | 0,46      | 0,41      | 0,27        | 0,22      | 0,06      |           |
| 7 Stall torque                          | mNm              | 25,6      | 21,7      | 24,9        | 24,5      | 12,4      |           |
| 8 Stall current                         | A                | 3,8       | 3,2       | 2,26        | 1,9       | 0,5       |           |
| 9 Max. efficiency                       | %                | 78,8      | 74,5      | 80,4        | 87,4      | 79,3      |           |
| <b>Characteristics</b>                  |                  |           |           |             |           |           |           |
| 10 Terminal resistance                  | Ω                | 1,58      | 2,81      | 5,31        | 7,89      | 48        |           |
| 11 Terminal inductance                  | mH               | 0,095     | 0,16      | 0,36        | 0,58      | 3,1       |           |
| 12 Torque constant                      | mNm/A            | 6,82      | 6,91      | 11,12       | 12,97     | 25,2      |           |
| 13 Speed constant                       | rpm/V            | 1383,3    | 1355,6    | 850         | 733,3     | 375       |           |
| 14 Speed/torque gradient                | rpm/mNm          | 324,6     | 562,1     | 410,4       | 448,4     | 724,1     |           |
| 15 Mechanical time constant             | ms               | 8,94      | 13,83     | 10,63       | 11,9      | 20,18     |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 2,63      | 2,35      | 2,47        | 2,54      | 2,75      |           |
| <b>Mechanical data</b>                  |                  |           |           |             |           |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |           | 20 K/W      |           |           |           |
| 18 Thermal resistance winding-housing   |                  |           |           | 6.0 K/W     |           |           |           |
| 19 Thermal time constant winding        |                  |           |           | 10.2 s      |           |           |           |
| 20 Thermal time constant motor          |                  |           |           | 313 s       |           |           |           |
| 21 Ambient temperature                  |                  |           |           | -20...+85°C |           |           |           |
| 22 Max. permissible winding temperature |                  |           |           | +100°C      |           |           |           |
| 23 Max. permissible speed               |                  |           |           | 12200 rpm   |           |           |           |
| 24 Max. axial load (dynamic)            |                  |           |           | 3,5 N       |           |           |           |
| 25 Max. force for press fits (static)   |                  |           |           | 44 N        |           |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           | 15 N        |           |           |           |
| <b>Other specifications</b>             |                  |           |           |             |           |           |           |
| 27 Number of poles                      |                  |           |           | 2           |           |           |           |
| 28 Weight                               |                  |           |           | 54 gr       |           |           |           |

**Gearbox combinations**

SVTG B 22

SVTG B 24

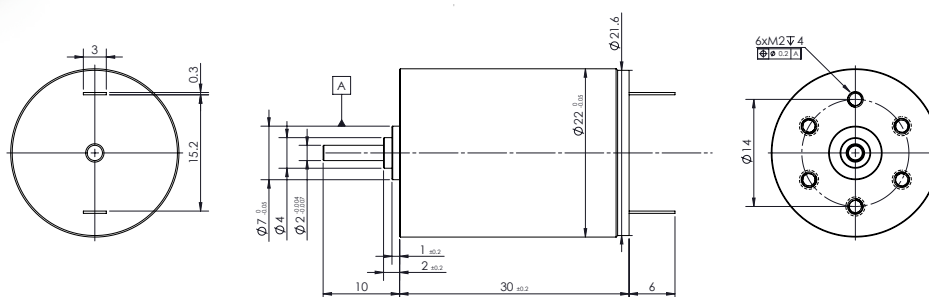
CORELESS  
BRUSHED DC



ATOM DC Series

## SVTN B 01-2230 Graphite brushes

7 Watt



V 3

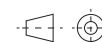
| Values                                  | Unit             | SVTN B 01 | 2230-06.. | 2230-12.. | 2230-18..   | 2230-24.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-------------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |             |           |
| 1 Nominal voltage                       | V                | 6         |           | 12        | 18          | 24        |
| 2 No-load speed                         | rpm              | 11300     |           | 12200     | 10800       | 11000     |
| 3 No-load current                       | mA               | 90        |           | 65        | 45          | 30        |
| 4 Nominal speed                         | rpm              | 9492      |           | 10248     | 9234        | 9405      |
| 5 Nominal torque                        | mNm              | 3,91      |           | 5,22      | 5,79        | 5,26      |
| 6 Nominal current                       | A                | 0,88      |           | 0,63      | 0,42        | 0,29      |
| 7 Stall torque                          | mNm              | 24,45     |           | 32,6      | 39,96       | 36,26     |
| 8 Stall current                         | A                | 5         |           | 3,6       | 2,6         | 1,8       |
| 9 Max. efficiency                       | %                | 74,97     |           | 74,93     | 75,42       | 75,85     |
| <b>Characteristics</b>                  |                  |           |           |           |             |           |
| 10 Terminal resistance                  | $\Omega$         | 1,2       |           | 3,33      | 6,92        | 13,33     |
| 11 Terminal inductance                  | mH               | 0,19      |           | 0,403     | 0,85        | 1,6       |
| 12 Torque constant                      | mNm/A            | 4,98      |           | 9,22      | 15,64       | 20,49     |
| 13 Speed constant                       | rpm/V            | 1883,3    |           | 1016,7    | 600         | 458,3     |
| 14 Speed/torque gradient                | rpm/mNm          | 462,2     |           | 374,2     | 270,3       | 303,3     |
| 15 Mechanical time constant             | ms               | 13,05     |           | 11,08     | 7,9         | 9,09      |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 2,7       |           | 2,83      | 2,79        | 2,54      |
| <b>Mechanical data</b>                  |                  |           |           |           |             |           |
| 17 Thermal resistance housing-ambient   |                  |           |           |           | 20 K/W      |           |
| 18 Thermal resistance winding-housing   |                  |           |           |           | 6.0 K/W     |           |
| 19 Thermal time constant winding        |                  |           |           |           | 10.2 s      |           |
| 20 Thermal time constant motor          |                  |           |           |           | 314 s       |           |
| 21 Ambient temperature                  |                  |           |           |           | -20...+85°C |           |
| 22 Max. permissible winding temperature |                  |           |           |           | +100°C      |           |
| 23 Max. permissible speed               |                  |           |           |           | 12200 rpm   |           |
| 24 Max. axial load (dynamic)            |                  |           |           |           | 3,5 N       |           |
| 25 Max. force for press fits (static)   |                  |           |           |           | 44 N        |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           |           | 15 N        |           |
| <b>Other specifications</b>             |                  |           |           |           |             |           |
| 27 Number of poles                      |                  |           |           |           | 2           |           |
| 28 Weight                               |                  |           |           |           | 54 gr       |           |

### Gearbox combinations

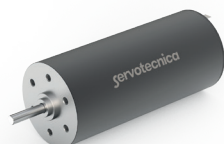
SVTG B 22

SVTG B 24

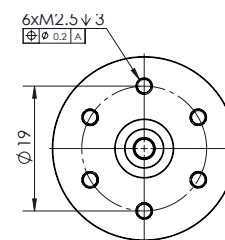
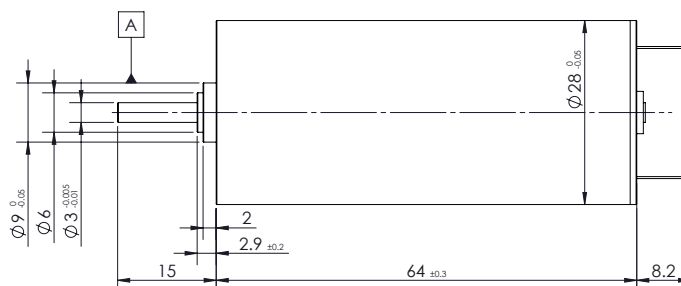
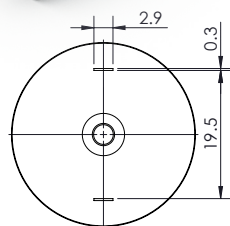
35 Watt



servotecnica



ATOM DC Series

**SVTN B 01-2864** Graphite brushes

V 3

| Values                                  | Unit             | SVTN B 01<br>2864-06.. | 2864-12..   | 2864-24.. |
|-----------------------------------------|------------------|------------------------|-------------|-----------|
| <b>Motor Data</b>                       |                  |                        |             |           |
| 1 Nominal voltage                       | V                | 6                      | 12          | 24        |
| 2 No-load speed                         | rpm              | 7500                   | 7300        | 7300      |
| 3 No-load current                       | mA               | 320                    | 240         | 64        |
| 4 Nominal speed                         | rpm              | 6675                   | 6497        | 6497      |
| 5 Nominal torque                        | mNm              | 19,63                  | 26,46       | 32,71     |
| 6 Nominal current                       | A                | 2,92                   | 1,95        | 1,11      |
| 7 Stall torque                          | mNm              | 178,5                  | 240,5       | 297,4     |
| 8 Stall current                         | A                | 24                     | 15,8        | 9,6       |
| 9 Max. efficiency                       | %                | 78,2                   | 76,9        | 84,3      |
| <b>Characteristics</b>                  |                  |                        |             |           |
| 10 Terminal resistance                  | Ω                | 0,25                   | 0,76        | 2,5       |
| 11 Terminal inductance                  | mH               | 0,03                   | 0,09        | 0,28      |
| 12 Torque constant                      | mNm/A            | 7,54                   | 15,46       | 31,19     |
| 13 Speed constant                       | rpm/V            | 1250                   | 608,3       | 304,2     |
| 14 Speed/torque gradient                | rpm/mNm          | 42                     | 30,3        | 24,5      |
| 15 Mechanical time constant             | ms               | 7,02                   | 6,56        | 4,97      |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 15,94                  | 20,63       | 19,32     |
| <b>Mechanical data</b>                  |                  |                        |             |           |
| 17 Thermal resistance housing-ambient   |                  |                        | 8 K/W       |           |
| 18 Thermal resistance winding-housing   |                  |                        | 3 K/W       |           |
| 19 Thermal time constant winding        |                  |                        | 30 s        |           |
| 20 Thermal time constant motor          |                  |                        | 600 s       |           |
| 21 Ambient temperature                  |                  |                        | -20...+85°C |           |
| 22 Max. permissible winding temperature |                  |                        | +100°C      |           |
| 23 Max. permissible speed               |                  |                        | 7500 rpm    |           |
| 24 Max. axial load (dynamic)            |                  |                        | 7,5 N       |           |
| 25 Max. force for press fits (static)   |                  |                        | 100 N       |           |
| 26 Max. radial load, 5mm from flange    |                  |                        | 25 N        |           |
| <b>Other specifications</b>             |                  |                        |             |           |
| 27 Number of poles                      |                  |                        | 2           |           |
| 28 Weight                               |                  |                        | 200 gr      |           |

**Gearbox combinations**

SVTG B 28

SVTG B 32

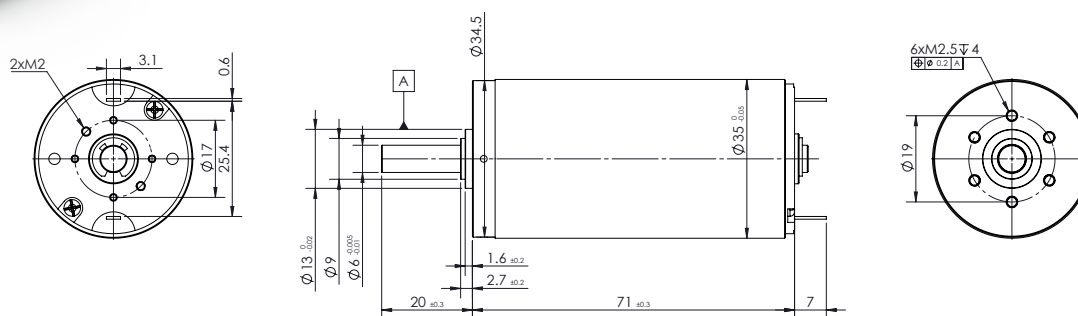
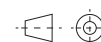
CORELESS  
BRUSHED DC



ATOM DC Series

## SVTN B 01-3571 Graphite brushes

85 Watt



V 3

| Values                                  | Unit             | SVTN B 01 | 3571-12.. | 3571-15.. | 3571-18..   | 3571-24.. | 3571-48.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |             |           |           |
| 1 Nominal voltage                       | V                |           | 12        | 15        | 18          | 24        | 48        |
| 2 No-load speed                         | rpm              |           | 7400      | 7100      | 6600        | 7900      | 7600      |
| 3 No-load current                       | mA               |           | 250       | 160       | 150         | 150       | 80        |
| 4 Nominal speed                         | rpm              |           | 6771      | 6497      | 6039        | 7229      | 6118      |
| 5 Nominal torque                        | mNm              |           | 115,17    | 81,76     | 82,35       | 117,62    | 125,69    |
| 6 Nominal current                       | A                |           | 7,71      | 4,23      | 3,32        | 4,22      | 2,17      |
| 7 Stall torque                          | mNm              |           | 1355      | 961,9     | 968,8       | 1383,8    | 1256,9    |
| 8 Stall current                         | A                |           | 88        | 48        | 37,5        | 48        | 21        |
| 9 Max. efficiency                       | %                |           | 89,6      | 88,8      | 87,8        | 89,1      | 88        |
| <b>Characteristics</b>                  |                  |           |           |           |             |           |           |
| 10 Terminal resistance                  | Ω                |           | 0,14      | 0,31      | 0,48        | 0,5       | 2,3       |
| 11 Terminal inductance                  | mH               |           | 0,05      | 0,12      | 0,17        | 0,19      | 0,8       |
| 12 Torque constant                      | mNm/A            |           | 15,44     | 20,11     | 25,94       | 28,92     | 60,1      |
| 13 Speed constant                       | rpm/V            |           | 616,7     | 473,3     | 366,7       | 329,2     | 158,3     |
| 14 Speed/torque gradient                | rpm/mNm          |           | 5,5       | 7,4       | 6,8         | 5,7       | 6         |
| 15 Mechanical time constant             | ms               |           | 4,57      | 5,87      | 5,43        | 4,48      | 5,06      |
| 16 Rotor inertia                        | gcm <sup>2</sup> |           | 79,98     | 76,01     | 76,06       | 74,80     | 79,98     |
| <b>Mechanical data</b>                  |                  |           |           |           |             |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |           |           | 6.2 K/W     |           |           |
| 18 Thermal resistance winding-housing   |                  |           |           |           | 2 K/W       |           |           |
| 19 Thermal time constant winding        |                  |           |           |           | 30.1 s      |           |           |
| 20 Thermal time constant motor          |                  |           |           |           | 707 s       |           |           |
| 21 Ambient temperature                  |                  |           |           |           | -20...+85°C |           |           |
| 22 Max. permissible winding temperature |                  |           |           |           | +100°C      |           |           |
| 23 Max. permissible speed               |                  |           |           |           | 7900 rpm    |           |           |
| 24 Max. axial load (dynamic)            |                  |           |           |           | 7.5 N       |           |           |
| 25 Max. force for press fits (static)   |                  |           |           |           | 100 N       |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           |           | 25 N        |           |           |
| <b>Other specifications</b>             |                  |           |           |           |             |           |           |
| 27 Number of poles                      |                  |           |           |           | 2           |           |           |
| 28 Weight                               |                  |           |           |           | 360 gr      |           |           |

### Gearbox combinations

SVTG B 36

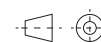
SVTG B 42



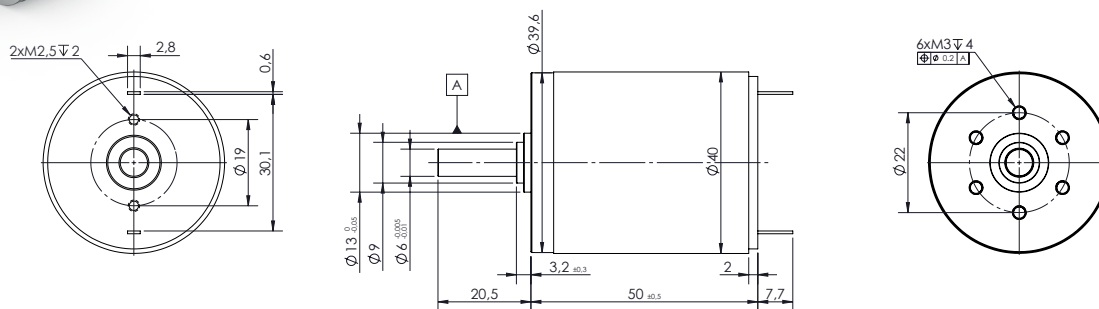
ATOM DC Series

**SVTN B 01-4050** Graphite brushes

87 Watt



servotecnica



V 3

| Values                                  | Unit             | SVTN B 01 | 4050-12.. | 4050-15..   | 4050-24.. | 4050-36.. | 4050-48.. |
|-----------------------------------------|------------------|-----------|-----------|-------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |             |           |           |           |
| 1 Nominal voltage                       | V                | 12        | 15        | 24          | 36        | 48        |           |
| 2 No-load speed                         | rpm              | 7600      | 7600      | 7850        | 8000      | 8000      |           |
| 3 No-load current                       | mA               | 260       | 200       | 150         | 60        | 60        |           |
| 4 Nominal speed                         | rpm              | 6612      | 6612      | 6712        | 6640      | 7000      |           |
| 5 Nominal torque                        | mNm              | 57,79     | 57,83     | 77,05       | 72,18     | 74,34     |           |
| 6 Nominal current                       | A                | 4,13      | 3,29      | 2,81        | 1,75      | 1,37      |           |
| 7 Stall torque                          | mNm              | 444,5     | 444,8     | 531,4       | 424,6     | 594,8     |           |
| 8 Stall current                         | A                | 30        | 24        | 18,5        | 10        | 10,5      |           |
| 9 Max. efficiency                       | %                | 82,2      | 82,6      | 82,8        | 85,1      | 85,5      |           |
| <b>Characteristics</b>                  |                  |           |           |             |           |           |           |
| 10 Terminal resistance                  | Ω                | 0,4       | 0,63      | 1,3         | 3,6       | 4,57      |           |
| 11 Terminal inductance                  | mH               | 0,043     | 0,087     | 0,18        | 0,32      | 0,51      |           |
| 12 Torque constant                      | mNm/A            | 14,95     | 18,69     | 28,96       | 42,71     | 56,64     |           |
| 13 Speed constant                       | rpm/V            | 633,3     | 506,7     | 327,1       | 222,2     | 166,7     |           |
| 14 Speed/torque gradient                | rpm/mNm          | 17,1      | 17,1      | 14,8        | 18,8      | 13,5      |           |
| 15 Mechanical time constant             | ms               | 6         | 6,56      | 5,75        | 6,92      | 4,94      |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 33,54     | 36,66     | 37,14       | 35,08     | 35,08     |           |
| <b>Mechanical data</b>                  |                  |           |           |             |           |           |           |
| 17 Thermal resistance housing-ambient   |                  |           |           | 4.9 K/W     |           |           |           |
| 18 Thermal resistance winding-housing   |                  |           |           | 2 K/W       |           |           |           |
| 19 Thermal time constant winding        |                  |           |           | 38 s        |           |           |           |
| 20 Thermal time constant motor          |                  |           |           | 780 s       |           |           |           |
| 21 Ambient temperature                  |                  |           |           | -20...+85°C |           |           |           |
| 22 Max. permissible winding temperature |                  |           |           | +100°C      |           |           |           |
| 23 Max. permissible speed               |                  |           |           | 9500 rpm    |           |           |           |
| 24 Max. axial load (dynamic)            |                  |           |           | 9 N         |           |           |           |
| 25 Max. force for press fits (static)   |                  |           |           | 170 N       |           |           |           |
| 26 Max. radial load, 5mm from flange    |                  |           |           | 80 N        |           |           |           |
| <b>Other specifications</b>             |                  |           |           |             |           |           |           |
| 27 Number of poles                      |                  |           |           | 2           |           |           |           |
| 28 Weight                               |                  |           |           | 290 gr      |           |           |           |

**Gearbox combinations**

SVTG B 42

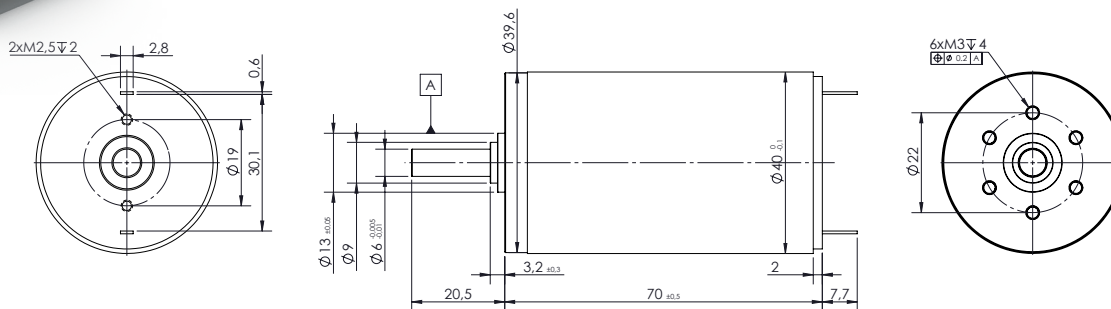
CORELESS  
BRUSHED DC



ATOM DC Series

## SVTN B 01-4070 Graphite brushes

145 Watt



V 3

| Values                                  | Unit             | SVTN B 01<br>4070-12.. | 4070-24.. | 4070-36..   | 4070-48.. | 4070-48.. |
|-----------------------------------------|------------------|------------------------|-----------|-------------|-----------|-----------|
| <b>Motor Data</b>                       |                  |                        |           |             |           |           |
| 1 Nominal voltage                       | V                | 12                     | 24        | 36          | 48        | 48        |
| 2 No-load speed                         | rpm              | 8200                   | 7600      | 7500        | 7600      | 2200      |
| 3 No-load current                       | mA               | 500                    | 180       | 180         | 100       | 18        |
| 4 Nominal speed                         | rpm              | 7585                   | 7030      | 6900        | 6992      | 1606      |
| 5 Nominal torque                        | mNm              | 161,41                 | 181,25    | 189,36      | 196,86    | 172,37    |
| 6 Nominal current                       | A                | 12,09                  | 6,2       | 4,33        | 3,37      | 0,85      |
| 7 Stall torque                          | mNm              | 2152,1                 | 2416,7    | 2367        | 2460,7    | 638,4     |
| 8 Stall current                         | A                | 155                    | 80,5      | 52          | 41        | 3,1       |
| 9 Max. efficiency                       | %                | 89                     | 90,8      | 88,6        | 90,4      | 85,3      |
| <b>Characteristics</b>                  |                  |                        |           |             |           |           |
| 10 Terminal resistance                  | $\Omega$         | 0,08                   | 0,3       | 0,69        | 1,17      | 15,5      |
| 11 Terminal inductance                  | mH               | 0,016                  | 0,083     | 0,18        | 0,34      | 4,08      |
| 12 Torque constant                      | mNm/A            | 13,93                  | 30,09     | 45,68       | 60,16     | 207,1     |
| 13 Speed constant                       | rpm/V            | 683,3                  | 316,7     | 208,3       | 158,3     | 45,8      |
| 14 Speed/torque gradient                | rpm/mNm          | 3,8                    | 3,1       | 3,2         | 3,1       | 3,4       |
| 15 Mechanical time constant             | ms               | 5,6                    | 4,42      | 4,3         | 4,05      | 4,31      |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 140,23                 | 134,1     | 137,14      | 125,21    | 119,52    |
| <b>Mechanical data</b>                  |                  |                        |           |             |           |           |
| 17 Thermal resistance housing-ambient   |                  |                        |           | 4.7 K/W     |           |           |
| 18 Thermal resistance winding-housing   |                  |                        |           | 1.9 K/W     |           |           |
| 19 Thermal time constant winding        |                  |                        |           | 41.5 s      |           |           |
| 20 Thermal time constant motor          |                  |                        |           | 809 s       |           |           |
| 21 Ambient temperature                  |                  |                        |           | -20...+85°C |           |           |
| 22 Max. permissible winding temperature |                  |                        |           | +100°C      |           |           |
| 23 Max. permissible speed               |                  |                        |           | 7600 rpm    |           |           |
| 24 Max. axial load (dynamic)            |                  |                        |           | 9 N         |           |           |
| 25 Max. force for press fits (static)   |                  |                        |           | 170 N       |           |           |
| 26 Max. radial load, 5mm from flange    |                  |                        |           | 80 N        |           |           |
| <b>Other specifications</b>             |                  |                        |           |             |           |           |
| 27 Number of poles                      |                  |                        |           | 2           |           |           |
| 28 Weight                               |                  |                        |           | 485 gr      |           |           |

### Gearbox combinations

SVTG B 42



## Notes

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# **FLAT Series**

## **SVTM F**

Outrunner Brushless DC Motors

FLAT  
BRUSHLESS

FLAT  
BRUSHLESS

# FLAT Series SVTM F

## Outrunner Brushless DC Motors



Customizable



Compact



High torque



The natural geometry of the outrunner Brushless Flat Motors, as well as the iron core winding, are the perfect fit for applications requiring high-torque in reduced dimensions.

Simplified design, high-end material selection, and automated manufacturing make the Flat Motors a high-performance solution at a competitive price.

Our vocation in listening to the client's requirements has led us to develop a customization-minded offer, focusing on specific application requirements such as integrated feedbacks, special cables and the geometry of shafts and flanges.

## Benefits

High power density

High torque

High efficiency

Cost-effective

Compact

Customizable

## Product code

SVTM F ○○ - ◇◇◇◇◇ - ◇◇ - □ - △◇☆

F Series

○ Diameter  
 ø20mm [01]; ø32mm [02];  
 ø45mm [03]; ø60mm [04];  
 ø90mm [05]

◇ Nominal torque

◇ Nominal voltage

□ Shaft  
 Single (standard) [S];  
 Double [D]\*

△ Connection  
 Wires with connector (standard on SVTM F 04) or  
 flexprint (standard on SVTM F 01, SVTM F 02) [W];  
 PCB with connectors (standard on SVTM F 03, SVTM F 05) [C]

◇ Feedback  
 Hall sensors (standard) [H];  
 Integrated incremental encoder with Hall sensors [E]\*\*

☆ Customization

\*\* Only available for SVTM F 03-0.130, SVTM F 04 and SVTM F 05

## Features

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Winding               | 3 phases                                        |
| Operating temperature | -20° +55° (other temperature ranges on request) |
| Insulation class      | B, 130°C                                        |
| Magnets               | Neodymium                                       |
| Design technology     | Outer rotor                                     |

## Feedback

Hall Sensor (standard)

Integrated incremental encoder (available on SVTM F 03, SVTM F 04, SVTM F 05)\*

## Customizations

Integrated feedback

Flange shape

Shaft

Connectors

Wires

\* Please contact factory for more details

## Table explanation

### 1 Nominal voltage

It is the applied voltage between two powered phases in block commutation. All nominal data (lines 2 – 9) refer to this voltage. Lower and higher voltages are permissible, provided that limits are not exceeded.

### 2 No load speed

It is the speed at which the unloaded motor runs with the nominal voltage applied. It is proportional to the applied voltage.

### 3 No load current

This is the typical current that the unloaded motor draws when operating at nominal voltage. No load friction depends heavily on temperature. It decreases in extended operation and increases at lower temperatures.

### 4 Nominal speed

It is the speed set for operation at nominal voltage and nominal torque at a motor temperature of 25°C.

### 5 Nominal torque

It is the torque generated for operation at nominal voltage and nominal current at a motor temperature of 25°C. It is at the limit of the motor's continuous operation range. Higher torques heat up the winding too much.

### 6 Nominal current

It is the current in the active phase the nominal torque at the given nominal speed (= max. permissible continuous load current). The maximum winding temperature is reached at 25°C ambient temperature in continuous operation with Nominal current.

### 6 Peak torque

### 7 Peak current

Stall torque is the linearly calculated load torque for motors that causes the shaft to stall at nominal voltage. This torque often cannot be achieved due to saturation effects. Stall current is the quotient from nominal voltage and the motor's terminal resistance. Stall current is equivalent to stall torque. With larger motors, Stall current cannot be reached due to the amplifier's current limits.

### 8 Line to line resistance

It is determined by the resistance at 25 °C between two motor phase.

### 9 Line to line inductance

It is the winding inductance between two motor phase

### 10 Terminal inductance

It is the winding inductance between two motor phase.

### 11 Back EMF constant

It indicates the theoretical no load speed per volt of applied voltage, disregarding friction losses.

### 12 Speed constant

It indicates the theoretical no load speed per volt of applied voltage, disregarding friction losses.

### 13 Speed/torque gradient

The speed/torque gradient is an indicator of the motor's performance. It is based on the quotient of ideal no load speed and ideal stall torque (tolerance  $\pm 20\%$ ).

### 14 Mechanical time constant

It is the time required for the rotor to accelerate from standstill to 63% of its no load speed.

### 15 Shaft radial play

Radial play is the bearing's radial movement.

### 16 Shaft axial play

Axial play is the bearing's radial movement. A spring is utilized to preload the motor's bearings.

### 17 Thermal resistance winding-housing

Characteristic values of thermal contact resistance without additional heat sinking. Lines 17 and 18 combined define the maximum heating at a given power loss (load). Thermal resistance  $R_{th2}$  on motors with metal flanges can decrease by up to 80% if the motor is coupled directly to a good heat-conducting.

### 18 Thermal time constant winding

These are the typical reaction times for a temperature change of winding and motor. It can be seen that the motor reacts much more sluggishly in thermal terms than the winding. The values are calculated from the product of thermal capacity and given heat resistances.

### 19 Operation ambient

Operating temperature range. This derives from the heat reliability of the materials.

### 20 Ambient temperature

Operating temperature range. This derives from the heat reliability of the materials.

### 21 Max. permissible winding temperature

Maximum permissible winding temperature.

### 22 Max. permissible speed

Is the maximum recommended speed based on thermal and mechanical perspectives. A reduced service life can be expected at higher speeds.

### 23 Radial play

Radial play is the bearing's radial movement

### 24 Max. axial load (dynamics)

Dynamic: axial loading permissible in operation. If different values apply for traction and thrust, the smaller value is given.

### 25 Max force for press fits (static)

Maximum axial force applying to the shaft at standstill if the force is not input at the other shaft end. This is not possible for motors with only one shaft end.

### 26 Max. radial load

The value is given for a typical distance from the front flange. As the distance increases, this value decreases.

### 27 Number of pole pairs

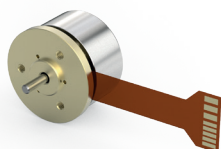
Number of north poles of the permanent magnet. The phase streams and commutation signals pass through per revolution p cycles. Servo-controllers require the correct details of the number of pole pairs.

### 28 Number of phases

All motors have three phases.

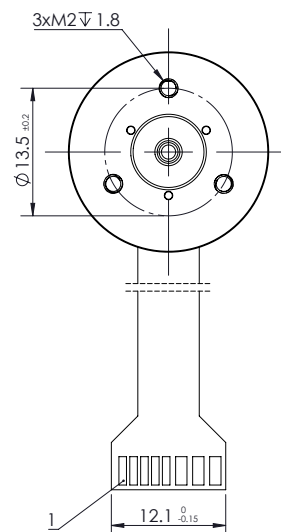
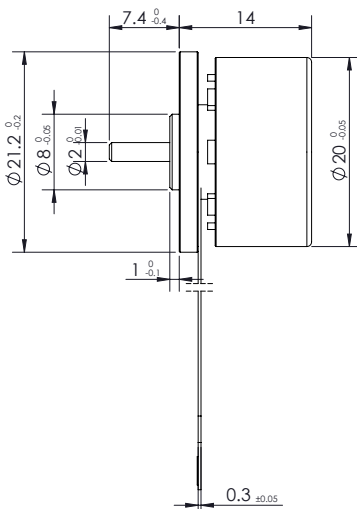
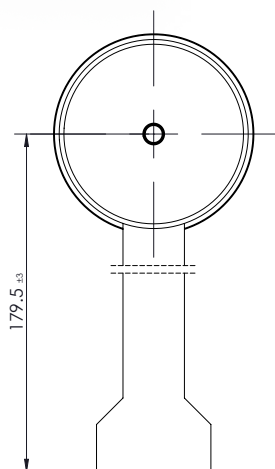
### 29 Weight

[illegible]



## Flat Series SVTM F 01

5 Watt



V 3

### Flying leads

Mating: MOLEX 52207-1133

|      |                  |
|------|------------------|
| PIN1 | Vhall (5-24 VDC) |
| PIN2 | Hall sensor HC   |
| PIN3 | Hall sensor HA   |
| PIN4 | Hall sensor HB   |
| PIN5 | GND              |
| PIN6 | Motor winding MC |
| PIN7 | Motor winding MB |
| PIN8 | Motor winding MA |

### Drive combinations

E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

### Gearbox combinations

Please contact factory for more details

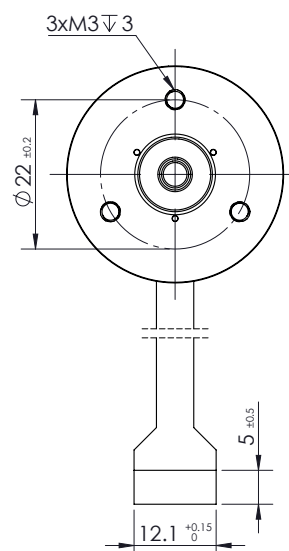
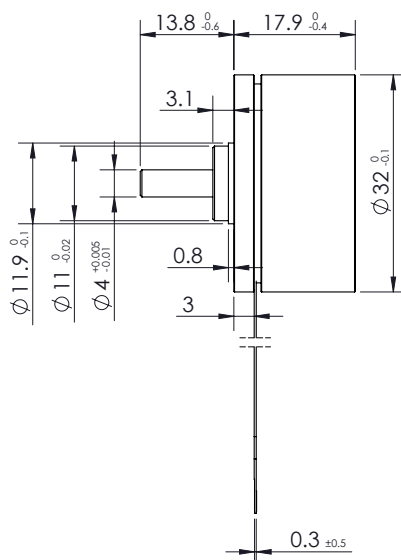
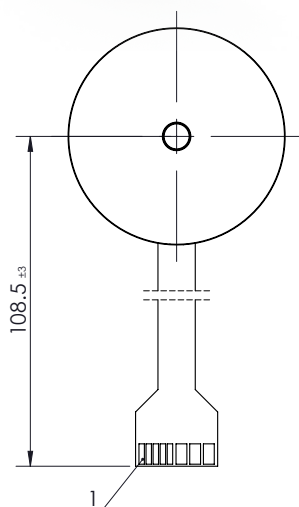
| Values                                           | Units             | Tolerance | SVTM F 01<br>12 VDC                        | 24 VDC |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|--------|
| <b>Motor data</b>                                |                   |           |                                            |        |
| 1 Nominal voltage                                | VDC               |           | 12                                         | 24     |
| 2 No load speed                                  | rpm               | ±10%      | 9530                                       | 9530   |
| 3 No load current                                | mA                |           | 23                                         | 12     |
| 4 Nominal speed                                  | rpm               | ±10%      | 5170                                       | 5220   |
| 5 Nominal torque                                 | mNm               |           | 7.59                                       | 7.74   |
| 6 Nominal current                                | A                 |           | 0.63                                       | 0.32   |
| 7 Peak torque                                    | mNm               |           | 19                                         | 20     |
| 8 Peak current                                   | A                 | ±10%      | 1.62                                       | 0.85   |
| <b>Characteristics</b>                           |                   |           |                                            |        |
| 9 Line to line resistance                        | ohms@25°C         | ±10%      | 7.2                                        | 26.1   |
| 10 Line to line inductance                       | mH                | ±20%      | 0.62                                       | 2.6    |
| 11 Torque constant                               | mNm/A             | ±10%      | 12                                         | 24     |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 0.89                                       | 1.78   |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           |                                            | 5.1    |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |        |
| 14 Max axial-force                               | N                 |           |                                            | 4.8    |
| 15 Max radial-force*                             | N                 |           |                                            | 14     |
| 16 Shaft radial play                             | mm @4N            |           |                                            | 0.02   |
| 17 Shaft axial play                              | mm @4N            |           |                                            | 0.14   |
| <b>Other specifications</b>                      |                   |           |                                            |        |
| 18 Number of poles                               | #                 |           |                                            | 8      |
| 19 Weight                                        | g                 |           |                                            | 23     |
| 20 Operation ambient                             | °C                |           | -20 +50 Humidity max 85% (no condensation) |        |

\*@ 5mm from the flange





# Flat Series SVTM F 02



V 3

## Flying leads

Mating: MOLEX 52207-1133

|      |                  |
|------|------------------|
| PIN1 | Vhall (5-24 VDC) |
| PIN2 | Hall sensor HC   |
| PIN3 | Hall sensor HA   |
| PIN4 | Hall sensor HB   |
| PIN5 | GND              |
| PIN6 | Motor winding MC |
| PIN7 | Motor winding MB |
| PIN8 | Motor winding MA |

## Drive combinations

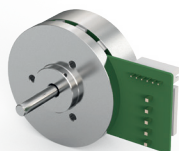
E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

## Gearbox combinations

Please contact factory for more details

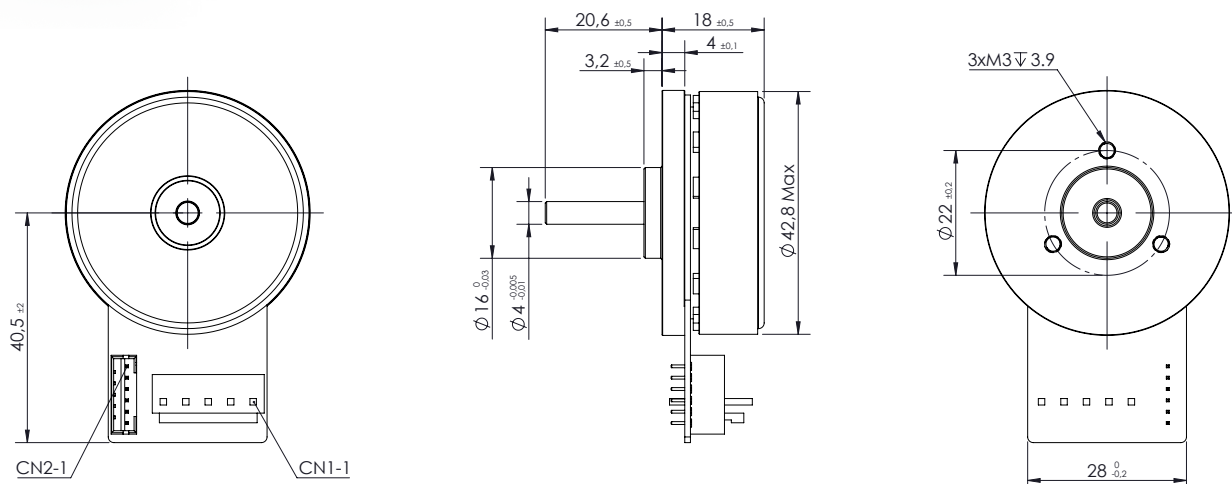
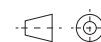
| Values                                           | Units             | Tolerance | SVTM F 02<br>9 VDC                         | 12 VDC | 24 VDC | 48 VDC |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|--------|--------|--------|
| <b>Motor data</b>                                |                   |           |                                            |        |        |        |
| 1 Nominal voltage                                | VDC               |           | 9                                          | 12     | 24     | 48     |
| 2 No load speed                                  | rpm               | ±10%      | 3750                                       | 4650   | 4530   | 4800   |
| 3 No load current                                | mA                |           | < 0.3                                      | < 0.37 | < 0.37 | < 0.37 |
| 4 Nominal speed                                  | rpm               | ±10%      | 2100                                       | 2800   | 2760   | 2950   |
| 5 Nominal torque                                 | mNm               |           | 24.6                                       | 25.1   | 25.5   | 24.7   |
| 6 Nominal current                                | A                 |           | 1.07                                       | 1      | 0.37   | 0.257  |
| 7 Peak torque                                    | mNm               |           | 73.8                                       | 75.3   | 76.5   | 74.1   |
| 8 Peak current                                   | A                 | ±10%      | 3.2                                        | 3      | 1.59   | 0.97   |
| <b>Characteristics</b>                           |                   |           |                                            |        |        |        |
| 9 Line to line resistance                        | ohms@25°C         | ±10%      | 3.2                                        | 3.2    | 13.7   | 53     |
| 10 Line to line inductance                       | mH                | ±20%      | 1.20                                       | 1.21   | 4.86   | 27.8   |
| 11 Torque constant                               | mNm/A             | ±10%      | 23                                         | 24.67  | 48.2   | 96.1   |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 1.7                                        | 1.8    | 3.57   | 7.1    |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           |                                            |        | 35     |        |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |        |        |        |
| 14 Max axial-force                               | N                 |           |                                            |        | 4.8    |        |
| 15 Max radial-force*                             | N                 |           |                                            |        | 14     |        |
| 16 Shaft radial play                             | mm @4N            |           |                                            |        | 0.02   |        |
| 17 Shaft axial play                              | mm @4N            |           |                                            |        | 0.14   |        |
| <b>Other specifications</b>                      |                   |           |                                            |        |        |        |
| 18 Number of poles                               | #                 |           |                                            |        | 8      |        |
| 19 Weight                                        | g                 |           |                                            |        | 50     |        |
| 20 Operation ambient                             | °C                |           | -20 +50 Humidity max 85% (no condensation) |        |        |        |

\* @ 5mm from the flange



## Flat Series SVTM F 03

26 Watt



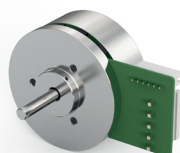
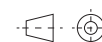
V 3

| Connector 1                |                  | Connector 2                 |                   |
|----------------------------|------------------|-----------------------------|-------------------|
| JST B5P-VH                 |                  | JST B6B-PH-K-S              |                   |
| Mating: JST VHR-5N (power) |                  | Mating: ST PHR-6 (feedback) |                   |
| PIN1                       | GND              | PIN1                        | GND               |
| PIN2                       | Motor winding MA | PIN2                        | Vhall (4.5-18VDC) |
| PIN3                       | Motor winding MB | PIN3                        | Hall sensor HC    |
| PIN4                       | Motor winding MC | PIN4                        | Hall sensor HA    |
| PIN5                       | GND              | PIN5                        | Hall sensor HB    |
|                            |                  | PIN6                        | GND               |

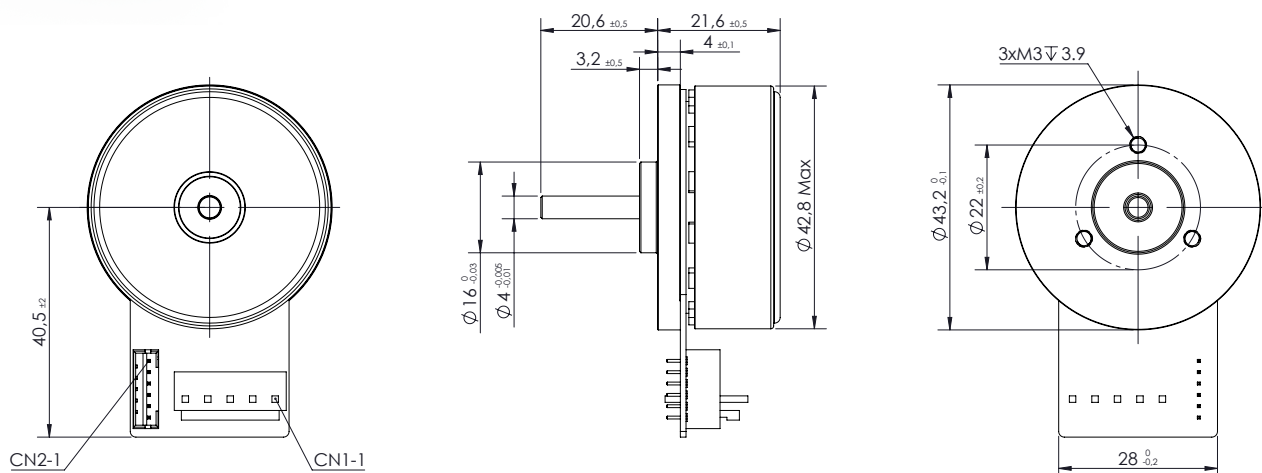
| Drive combinations                            |
|-----------------------------------------------|
| E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%) |
| Gearbox combinations                          |
| Please contact factory for more details       |

| Values                                           | Units             | Tolerance | SVTM F 03-0.050<br>24 VDC                  |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|
| <b>Motor data</b>                                |                   |           |                                            |
| 1 Nominal voltage                                | VDC               |           | 24                                         |
| 2 No load speed                                  | rpm               | ±10%      | 6500                                       |
| 3 No load current                                | mA                |           | < 0.3                                      |
| 4 Nominal speed                                  | rpm               | ±10%      | 5000                                       |
| 5 Nominal torque                                 | mNm               |           | 50                                         |
| 6 Nominal current                                | A                 |           | 1.58                                       |
| 7 Peak torque                                    | mNm               |           | 150                                        |
| 8 Peak current                                   | A                 | ±10%      | 4.8                                        |
| <b>Characteristics</b>                           |                   |           |                                            |
| 9 Line to line resistance                        | ohms@25°C         | ±10%      | 1.47                                       |
| 10 Line to line inductance                       | mH                | ±20%      | 0.61                                       |
| 11 Torque constant                               | mNm/A             | ±10%      | 35.5                                       |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 2.61                                       |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           | 99                                         |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |
| 14 Max axial-force                               | N                 |           | 10                                         |
| 15 Max radial-force*                             | N                 |           | 28                                         |
| 16 Shaft radial play                             | mm @4N            |           | 0.02                                       |
| 17 Shaft axial play                              | mm @4N            |           | 0.14                                       |
| <b>Other specifications</b>                      |                   |           |                                            |
| 18 Number of poles                               | #                 |           | 16                                         |
| 19 Weight                                        | g                 |           | 80                                         |
| 20 Operation ambient                             | °C                |           | -25 +55 Humidity max 85% (no condensation) |

\*@ 5mm from the flange



# Flat Series SVTM F 03



V 3

**Connector 1**  
JST B5P-VH  
Mating: JST VHR-5N (power)

|      |                  |      |                   |
|------|------------------|------|-------------------|
| PIN1 | GND              | PIN1 | GND               |
| PIN2 | Motor winding MA | PIN2 | Vhall (4.5-18VDC) |
| PIN3 | Motor winding MB | PIN3 | Hall sensor HA    |
| PIN4 | Motor winding MC | PIN4 | Hall sensor HC    |
| PIN5 | GND              | PIN5 | Hall sensor HB    |
|      |                  | PIN6 | GND               |

**Drive combinations**

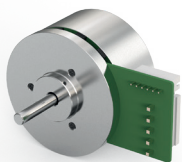
E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

**Gearbox combinations**

Please contact factory for more details

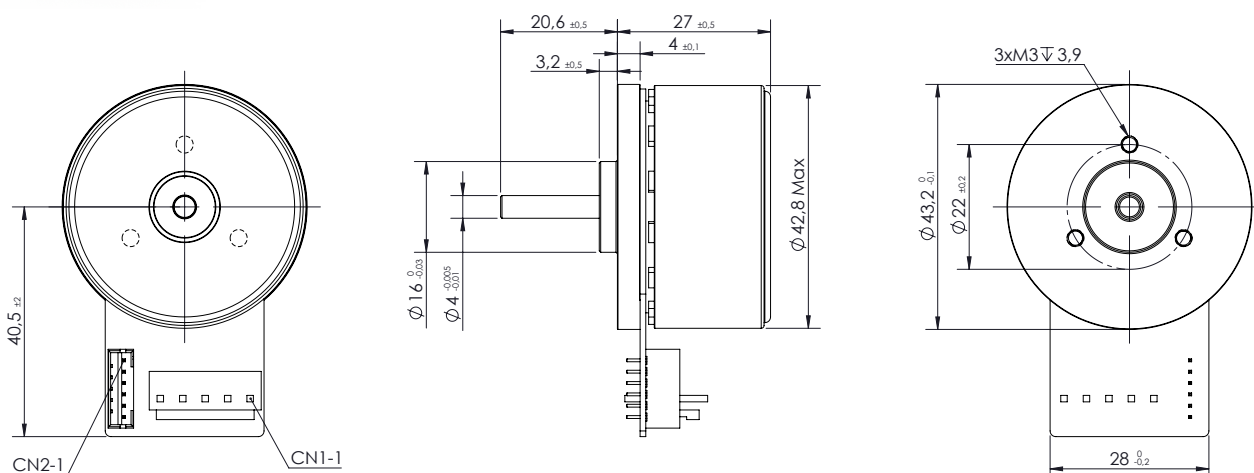
| Values                                           | Units             | Tolerance | SVTM F 03-0.084<br>24 VDC                  |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|
| <b>Motor data</b>                                |                   |           |                                            |
| 1 Nominal voltage                                | VDC               |           | 24                                         |
| 2 No load speed                                  | rpm               | ±10%      | 6700                                       |
| 3 No load current                                | mA                |           | < 0.4                                      |
| 4 Nominal speed                                  | rpm               | ±10%      | 5260                                       |
| 5 Nominal torque                                 | mNm               |           | 84                                         |
| 6 Nominal current                                | A                 |           | 2.36                                       |
| 7 Peak torque                                    | mNm               |           | 250                                        |
| 8 Peak current                                   | A                 | ±10%      | 7                                          |
| <b>Characteristics</b>                           |                   |           |                                            |
| 9 Line to line resistance                        | ohms@25°C         | ±10%      | 0.7                                        |
| 10 Line to line inductance                       | mH                | ±20%      | 0.33                                       |
| 11 Torque constant                               | mNm/A             | ±10%      | 33.5                                       |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 2.53                                       |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           | 135                                        |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |
| 14 Max axial-force                               | N                 |           | 10                                         |
| 15 Max radial-force*                             | N                 |           | 28                                         |
| 16 Shaft radial play                             | mm @4N            |           | 0.02                                       |
| 17 Shaft axial play                              | mm @4N            |           | 0.14                                       |
| <b>Other specifications</b>                      |                   |           |                                            |
| 18 Number of poles                               | #                 |           | 16                                         |
| 19 Weight                                        | g                 |           | 120                                        |
| 20 Operation ambient                             | °C                |           | -25 +55 Humidity max 85% (no condensation) |

\*@ 5mm from the flange



## Flat Series SVTM F 03

66 Watt



V 3

| Connector 1                |                  | Connector 2                 |                   |
|----------------------------|------------------|-----------------------------|-------------------|
| JST B5P-VH                 |                  | JST B6B-PH-K-S              |                   |
| Mating: JST VHR-5N (power) |                  | Mating: ST PHR-6 (feedback) |                   |
| PIN1                       | GND              | PIN1                        | GND               |
| PIN2                       | Motor winding MA | PIN2                        | Vhall (4.5-18VDC) |
| PIN3                       | Motor winding MB | PIN3                        | Hall sensor HA    |
| PIN4                       | Motor winding MC | PIN4                        | Hall sensor HC    |
| PIN5                       | GND              | PIN5                        | Hall sensor HB    |
|                            |                  | PIN6                        | GND               |

**Drive combinations**  
E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

**Optional encoder**  
Integrated incremental encoder with Hall sensors

Resolution 1024ppr, TTL

Channels A<sub>A</sub>/B<sub>B</sub>/

Length increase +2mm

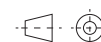
Please contact factory for more details

**Gearbox combinations**

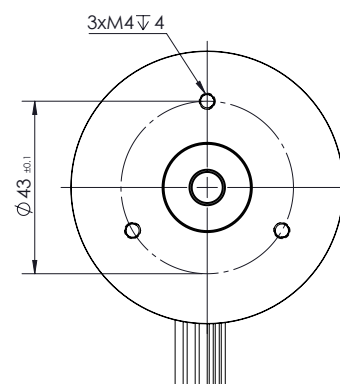
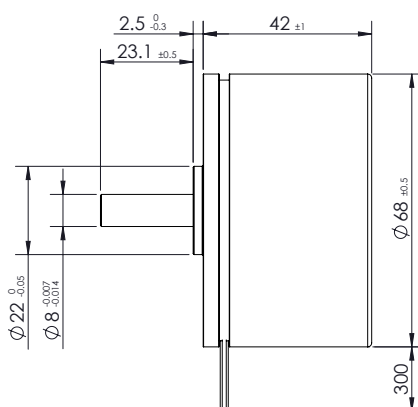
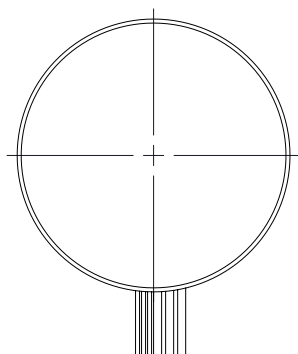
Please contact factory for more details

| Values                                           | Units             | Tolerance | SVTM F 03-0130<br>24 VDC                   |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|
| <b>Motor data</b>                                |                   |           |                                            |
| 1 Nominal voltage                                | VDC               |           | 24                                         |
| 2 No load speed                                  | rpm               | ±10%      | 6100                                       |
| 3 No load current                                | mA                |           | < 0.5                                      |
| 4 Nominal speed                                  | rpm               | ±10%      | 4840                                       |
| 5 Nominal torque                                 | mNm               |           | 130                                        |
| 6 Nominal current                                | A                 |           | 3.26                                       |
| 7 Peak torque                                    | mNm               |           | 390                                        |
| 8 Peak current                                   | A                 | ±10%      | 9.5                                        |
| <b>Characteristics</b>                           |                   |           |                                            |
| 9 Line to line resistance                        | ohms@25°C         | ±10%      | 0.56                                       |
| 10 Line to line inductance                       | mH                | ±20%      | 0.27                                       |
| 11 Torque constant                               | mNm/A             | ±10%      | 36.9                                       |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 2.75                                       |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           | 181                                        |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |
| 14 Max axial-force                               | N                 |           | 10                                         |
| 15 Max radial-force*                             | N                 |           | 28                                         |
| 16 Shaft radial play                             | mm @4N            |           | 0.02                                       |
| 17 Shaft axial play                              | mm @4N            |           | 0.14                                       |
| <b>Other specifications</b>                      |                   |           |                                            |
| 18 Number of poles                               | #                 |           | 16                                         |
| 19 Weight                                        | g                 |           | 150                                        |
| 20 Operation ambient                             | °C                |           | -25 +55 Humidity max 85% (no condensation) |

\*@ 5mm from the flange



# Flat Series SVTM F 04



V 3

## Flying leads

|       |        |                  |
|-------|--------|------------------|
| AWG26 | Red    | Vhall (5 VDC)    |
| AWG26 | Green  | Hall sensor HB   |
| AWG26 | Blue   | Hall sensor HA   |
| AWG26 | White  | Hall sensor HC   |
| AWG26 | Black  | GND              |
| AWG18 | Yellow | Motor winding MA |
| AWG18 | Red    | Motor winding MB |
| AWG18 | Black  | Motor winding MC |

## Drive combinations

E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

## Optional encoder

Integrated incremental encoder with Hall sensors

Resolution 4096ppr, TTL

Channels A,A/,B,B/,I,I/

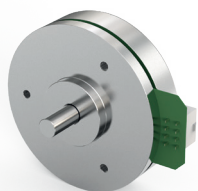
Please contact factory for more details

## Gearbox combinations

Please contact factory for more details

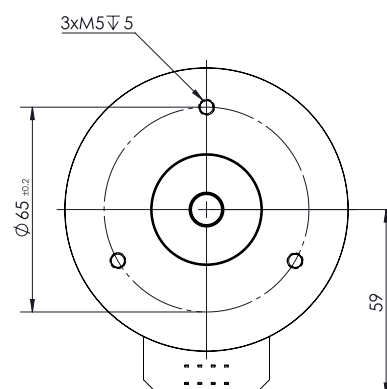
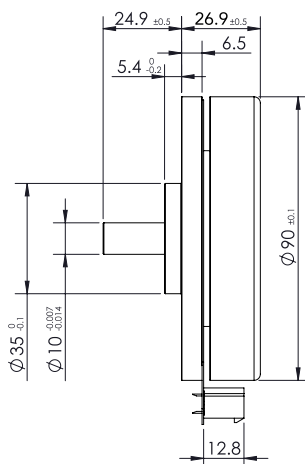
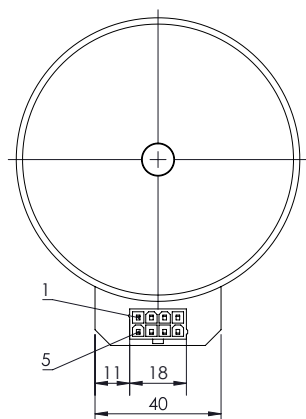
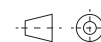
| Values                                           | Units             | Tolerance | SVTM F 04<br>24 VDC                        |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|
| <b>Motor data</b>                                |                   |           |                                            |
| 1 Nominal voltage                                | VDC               |           | 24                                         |
| 2 No load speed                                  | rpm               | ±10%      | 4400                                       |
| 3 No load current                                | mA                |           | 0.65                                       |
| 4 Nominal speed                                  | rpm               | ±10%      | 3700                                       |
| 5 Nominal torque                                 | mNm               |           | 290                                        |
| 6 Nominal current                                | A                 |           | 5.6                                        |
| 7 Peak torque                                    | mNm               |           | 870                                        |
| 8 Peak current                                   | A                 | ±10%      | 17                                         |
| <b>Characteristics</b>                           |                   |           |                                            |
| 9 Line to line resistance                        | ohms@25°C         | ±10%      | 0.25                                       |
| 10 Line to line inductance                       | mH                | ±20%      | 0.2                                        |
| 11 Torque constant                               | mNm/A             | ±10%      | 54                                         |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 4.0                                        |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           | 1000                                       |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |
| 14 Max axial-force                               | N                 |           | 10                                         |
| 15 Max radial-force*                             | N                 |           | 28                                         |
| 16 Shaft radial play                             | mm @4N            |           | 0.02                                       |
| 17 Shaft axial play                              | mm @4N            |           | 0.08                                       |
| <b>Other specifications</b>                      |                   |           |                                            |
| 18 Number of poles                               | #                 |           | 14                                         |
| 19 Weight                                        | g                 |           | 500                                        |
| 20 Operation ambient                             | °C                |           | -25 +55 Humidity max 85% (no condensation) |

\* @ 10mm from the flange



## Flat Series SVTM F 05

130 Watt



V 3

### Connector

MOLEX 39-28-1083

Mating: Molex 039012080

|      |                  |
|------|------------------|
| PIN1 | Hall sensor HA   |
| PIN2 | Hall sensor HB   |
| PIN3 | Vhall (5-24 VDC) |
| PIN4 | Motor winding MC |
| PIN5 | Hall sensor HC   |
| PIN6 | GND              |
| PIN7 | Motor winding MA |
| PIN8 | Motor winding MB |

### Drive combinations

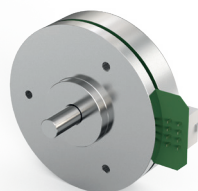
E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

### Gearbox combinations

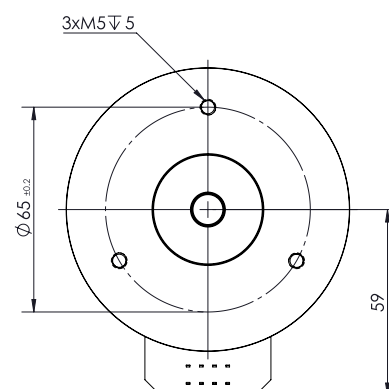
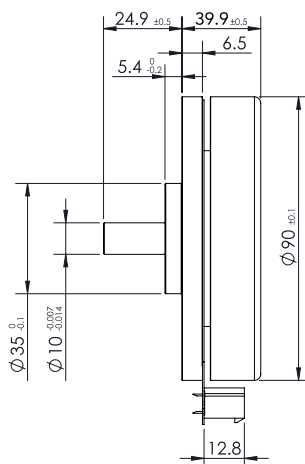
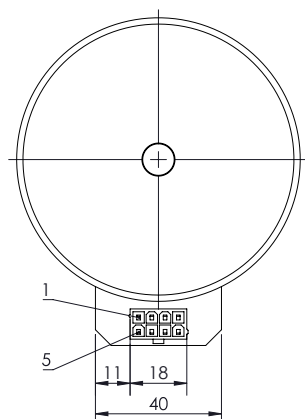
Please contact factory for more details

| Values                                           | Units             | Tolerance | SVTM F 05-0.457<br>24 VDC                  |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|
| <b>Motor data</b>                                |                   |           |                                            |
| 1 Nominal voltage                                | VDC               |           | 24                                         |
| 2 No load speed                                  | rpm               | ±10%      | 3300                                       |
| 3 No load current                                | mA                |           | 0.7                                        |
| 4 Nominal speed                                  | rpm               | ±10%      | 2700                                       |
| 5 Nominal torque                                 | mNm               |           | 457                                        |
| 6 Nominal current                                | A                 |           | 6.8                                        |
| 7 Peak torque                                    | mNm               |           | 1600                                       |
| 8 Peak current                                   | A                 | ±10%      | 23                                         |
| <b>Characteristics</b>                           |                   |           |                                            |
| 9 Line to line resistance                        | ohms@20°C         | ±10%      | 0.21                                       |
| 10 Line to line inductance                       | mH                | ±20%      | 0.19                                       |
| 11 Torque constant                               | mNm/A             | ±10%      | 63                                         |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 5.2                                        |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           | 3000                                       |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |
| 14 Max axial-force                               | N                 |           | 45                                         |
| 15 Max radial-force*                             | N                 |           | 110                                        |
| 16 Shaft radial play                             | mm @4N            |           | 0.02                                       |
| 17 Shaft axial play                              | mm @4N            |           | 0.08                                       |
| 18 Length (L)                                    | mm                |           | 26.9±05                                    |
| <b>Other specifications</b>                      |                   |           |                                            |
| 19 Number of poles                               | #                 |           | 22                                         |
| 20 Weight                                        | g                 |           | 600                                        |
| 21 Operation ambient                             | °C                |           | -25 +55 Humidity max 85% (no condensation) |

\*@ 10mm from the flange



# Flat Series SVTM F 05



## Connector

MOLEX 39-28-1083

Mating: Molex 039012080

|      |                  |
|------|------------------|
| PIN1 | Hall sensor HA   |
| PIN2 | Hall sensor HB   |
| PIN3 | Vhall (5-24 VDC) |
| PIN4 | Motor winding MC |
| PIN5 | Hall sensor HC   |
| PIN6 | GND              |
| PIN7 | Motor winding MA |
| PIN8 | Motor winding MB |

## Drive combinations

E50 / E40 (Vout 90%) or E55 / E45 (Vout 100%)

## Optional encoder

Integrated incremental encoder with Hall sensors

Resolution 4096ppr, TTL

Channels A,A/,B,B/,I,I/

Length increase +2mm

Please contact factory for more details

## Gearbox combinations

Please contact factory for more details

| Values                                           | Units             | Tolerance | SVTM F 05-0.964<br>48 VDC                  |
|--------------------------------------------------|-------------------|-----------|--------------------------------------------|
| <b>Motor data</b>                                |                   |           |                                            |
| 1 Nominal voltage                                | VDC               |           | 48                                         |
| 2 No load speed                                  | rpm               | ±10%      | 1900                                       |
| 3 No load current                                | mA                |           | 0.35                                       |
| 4 Nominal speed                                  | rpm               | ±10%      | 1670                                       |
| 5 Nominal torque                                 | mNm               |           | 964                                        |
| 6 Nominal current                                | A                 |           | 4.3                                        |
| 7 Peak torque                                    | mNm               |           | 3000                                       |
| 8 Peak current                                   | A                 | ±10%      | 13                                         |
| <b>Characteristics</b>                           |                   |           |                                            |
| 9 Line to line resistance                        | ohms@20°C         | ±10%      | 0.6                                        |
| 10 Line to line inductance                       | mH                | ±20%      | 0.7                                        |
| 11 Torque constant                               | mNm/A             | ±10%      | 241                                        |
| 12 Back EMF constant                             | Vrms/kRPM         | ±10%      | 17.9                                       |
| 13 Rotor inertia                                 | g cm <sup>2</sup> |           | 5000                                       |
| <b>Mechanical data (preloaded ball bearings)</b> |                   |           |                                            |
| 14 Max axial-force                               | N                 |           | 45                                         |
| 15 Max radial-force*                             | N                 |           | 110                                        |
| 16 Shaft radial play                             | mm @4N            |           | 0.02                                       |
| 17 Shaft axial play                              | mm @4N            |           | 0.08                                       |
| 18 Length (L)                                    | mm                |           | 39.9±05                                    |
| <b>Other specifications</b>                      |                   |           |                                            |
| 19 Number of poles                               | #                 |           | 22                                         |
| 20 Weight                                        | g                 |           | 1000                                       |
| 21 Operation ambient                             | °C                |           | -25 +55 Humidity max 85% (no condensation) |

\*@ 10mm from the flange

# **COSMOS**

## **SVTG**

Planetary gearboxes



## GEARBOXES

## GEARBOXES

# COSMOS SVTG

## Planetary gearboxes



Cost effective



Robust



Compact



The planetary gearboxes are characterized by a robust design and are employed for uses where high-performance and reduce dimensions are required.

The gear trains can be made of steel or plastic polymers, also in blended configurations when needed.

The gearboxes are lubricated according to the needs with reference to temperature and functionality. They are available with sleeve, ball or customized bearings.

Available also in personalized options designed upon request.

## Features

|                              |                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Gear materials               | Metal / Polymer                                                                                                 |
| Diameter                     | from 10mm to 42mm                                                                                               |
| Torque                       | from 0.2Nm to 45Nm                                                                                              |
| Operating temperature        | -20° +100°C (special lubrication might be needed)                                                               |
| Estimated operating lifetime | Lifetime depends on gearbox working conditions. Operating life span can vary between 1.000 to 3.000 work hours. |

## Product code

SVTG    -  -      -   

Bearings  
Sleeve [A]; Ball [B]



Diameter



Number of gear stages



Ratio



Type of motor  
Brushless [A]; Brushed [B]; Flat [F]



Motor diameter

## Benefits

Robust

Compact

Cost-effective

Low Noise

## Customizations

Flange

Shaft

Input-stage geartrain

Shape

Length/Diameter/D-Cut/...

Polymer (for quiet operation)

## Table explanation

### 1 Housing material

### 2 Geartrain material

Geartrain could be in metal and polymer to increase torque performance and reduce noise.

### 3 Max input speed (continuous operation)

It is based on service life considerations. If this value is greatly exceeded, the service life can be shortened, the gear heats up more and more noise is generated.

### 4 Bearing on output shaft

It is possible to choose a ball bearing or sleeve bearing depending on the application, as standard from size 22 is available only for ball bearings.

### 5 Max radial load (dynamics)

The value is given for a typical distance from the front flange. As the distance increases, this value decreases.

### 6 Max. axial load

Dynamic: axial loading permissible in operation. If different values apply for traction and thrust, the smaller value is given.

### 7 Max shaft press fit force

Maximum axial force applying to the shaft at standstill if the force is not input at the other shaft end. This is not possible for motors with only one shaft end.

### 8 Radial play

The radial measurement is always carried out under a test force that is smaller than the maximum radial load.

### 9 Axial play

The value for the axial play of a gear is determined between the two axial end positions of the output shaft.

### 10 Temperature range

The temperature range is -20°C and +125°C, but may be extended for some gears. Special lubrication can be supplied on request, even for other temperature ranges.

### 11 Number of stages

It states the number of gear stages engaged in series.

### 12 Reduction ratio

The reduction indicates the ratio by which the speed of the gear output shaft is smaller than the motor speed.

### 13 Gear length L [mm]

L describes the gearbox length (adapter flange included).

### 14 Continuous torque [Nm]

The continuous torque provides the maximum load permanently delivered to the output shaft. It can be exceeded, but it affects the service life.

### 15 Intermittent torque [Nm]

The short-time torque is the maximum torque that may be output on the output shaft.

### 16 Efficiency [%]

The specified efficiency is a maximum value that is valid for maximum continuous torque. The efficiency is stage-dependent and is related to the output torque and operating temperature.

### 17 No load backlash [°]

Gear backlash is the turning angle of the gear output shaft when the input shaft is blocked.

### 18 Weight [g]

# Table explanation

---

## 1 Housing material

## 2 Geartrain material

Geartrain could be in metal and polymer to increase torque performance and reduce noise.

## 3 Max input speed (continous operation)

It is based on service life considerations. If this value is greatly exceeded, the service life can be shortened, the gear heats up more and more noise is generated.

## 4 Bearing on output shaft

It is possible to choose a ball bearing or sleeve bearing depending on the application, as standard from size 22 is available only for ball bearings.

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The radial measurement is always carried out under a test force that is smaller than the maximum radial load.

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The temperature range is  $-20^{\circ}\text{C}$  and  $+125^{\circ}\text{C}$ , but may be extended for some gears. Special lubrication can be supplied on request, even for other temperature ranges.

## 11 Number of stages

It states the number of gear stages engaged in series.

## 12 Reduction ratio

The reduction indicates the ratio by which the speed of the gear output shaft is smaller than the motor speed.

## 13 Gear length L [mm]

L describes the gearbox length (adapter flange included).

## 14 Continuous torque [Nm]

The continuous torque provides the maximum load permanently delivered to the output shaft. It can be exceeded, but it affects the service life.

## 15 Intermittent torque [Nm]

The short-time torque is the maximum torque that may be output on the output shaft.

## 16 Efficiency [%]

The specified efficiency is a maximum value that is valid for maximum continuous torque. The efficiency is stage-dependent and is related to the output torque and operating temperature.

## 17 No load backlash [°]

Gear backlash is the turning angle of the gear output shaft when the input shaft is blocked.

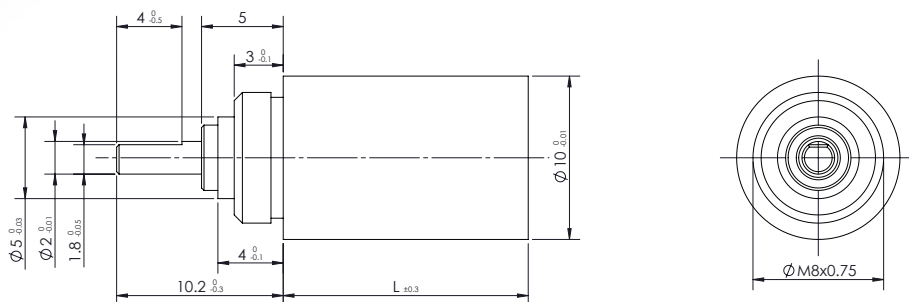
## 18 Weight [g]

## Notes

[illegible]



## COSMOS Series SVTG A 10



V 3

| A 10   |                                        |      |                 |       |      |       |        |
|--------|----------------------------------------|------|-----------------|-------|------|-------|--------|
| Values |                                        | Unit |                 |       |      |       |        |
| 1      | Housing material                       |      | Metal           |       |      |       |        |
| 2      | Geartrain material                     |      | Metal/Polymer   |       |      |       |        |
| 3      | Max input speed (continuous operation) | rpm  | ≤ 20.000        |       |      |       |        |
| 4      | Bearings on output shaft               |      | Sleeve bearings |       |      |       |        |
|        | Max shaft load                         |      |                 |       |      |       |        |
| 5      | Radial (5mm from mounting face)        | N    | ≤ 10            |       |      |       |        |
| 6      | Axial                                  | N    | ≤ 8             |       |      |       |        |
| 7      | Max shaft press fit force              | N    | ≤ 10            |       |      |       |        |
|        | Shaft play                             |      |                 |       |      |       |        |
| 8      | Radial                                 | mm   | ≤ 0.1           |       |      |       |        |
| 9      | Axial                                  | mm   | ≤ 0.2           |       |      |       |        |
| 10     | Operating temperature range            | °C   | -20 +125        |       |      |       |        |
| 11     | Number of gear stages                  |      | 1               | 2     | 3    | 4     | 5      |
| 12     | Reduction ratio                        |      | 4:1             | 16:1  | 64:1 | 256:1 | 1024:1 |
| 13     | Gearhead Lenght L                      | mm   | 11              | 13.8  | 16.6 | 19.4  | 22.2   |
| 14     | Continuous torque                      | Nm   | 0.01            | 0.025 | 0.1  | 0.15  | 0.15   |
| 15     | Intermittent torque                    | Nm   | 0.02            | 0.05  | 0.15 | 0.2   | 0.2    |
| 16     | Max Efficiency                         | %    | 90              | 81    | 73   | 65    | 59     |
| 17     | No-Load Backlash                       | °    | 1               | 1.2   | 1.2  | 1.5   | 1.5    |
| 18     | Weight                                 | g    | 5               | 6.3   | 7.5  | 8.8   | 10     |

### Motor combinations

#### SVTN A - Brushless

SVTN A 01-1220\*

SVTN A 01-1230\*

SVTN A 03-1228\*

#### SVTN B - Brushed

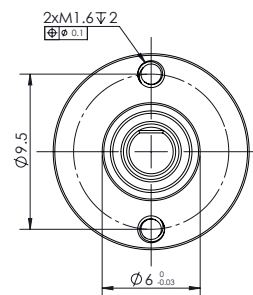
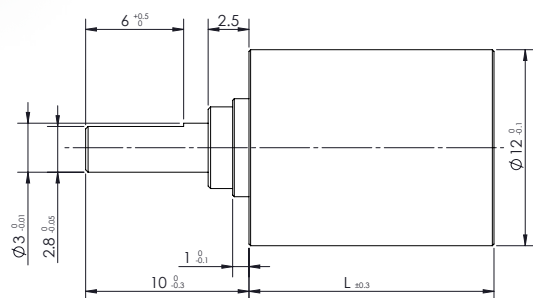
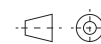
SVTN B 01-1219\*

SVTN B 01-1331\*

\*On request



## COSMOS Series SVTG A 12



V 3

| A 12   |                                        |     |                                 |      |      |       |        |
|--------|----------------------------------------|-----|---------------------------------|------|------|-------|--------|
| Values | Unit                                   |     |                                 |      |      |       |        |
| 1      | Housing material                       |     | Metal                           |      |      |       |        |
| 2      | Geartrain material                     |     | Metal/Polymer                   |      |      |       |        |
| 3      | Max input speed (continuous operation) | rpm | ≤ 20.000                        |      |      |       |        |
| 4      | Bearings on output shaft               |     | Sleeve bearings/Ball bearings** |      |      |       |        |
|        | Max shaft load                         |     |                                 |      |      |       |        |
| 5      | Radial (5mm from mounting face)        | N   | ≤ 10                            |      |      |       |        |
| 6      | Axial                                  | N   | ≤ 8                             |      |      |       |        |
| 7      | Max shaft press fit force              | N   | ≤ 10                            |      |      |       |        |
|        | Shaft play                             |     |                                 |      |      |       |        |
| 8      | Radial                                 | mm  | ≤ 0.1                           |      |      |       |        |
| 9      | Axial                                  | mm  | ≤ 0.2                           |      |      |       |        |
| 10     | Operating temperature range            | °C  | -20 +125                        |      |      |       |        |
| 11     | Number of gear stages                  |     | 1                               | 2    | 3    | 4     | 5      |
| 12     | Reduction ratio                        |     | 3.9:1                           | 14:1 | 42:1 | 146:1 | 650:1  |
|        |                                        |     | 4.6:1                           | 16:1 | 54:1 | 187:1 | 946:1  |
|        |                                        |     |                                 | 18:1 | 61:1 | 282:1 | 1345:1 |
|        |                                        |     |                                 | 21:1 | 72:1 | 342:1 | 1661:1 |
|        |                                        |     |                                 |      | 84:1 | 387:1 | 2094:1 |
|        |                                        |     |                                 |      | 98:1 | 454:1 | 2586:1 |
|        |                                        |     |                                 |      |      | 560:1 | 3194:1 |
| 13     | Gearhead Lenght L                      | mm  | 13,3                            | 16,1 | 18,9 | 21,7  | 24,5   |
| 14     | Continuous torque                      | Nm  | 0,2                             | 0,2  | 0,3  | 0,3   | 0,35   |
| 15     | Intermittent torque                    | Nm  | 0,3                             | 0,3  | 0,45 | 0,45  | 0,5    |
| 16     | Max Efficiency                         | %   | 90                              | 81   | 73   | 65    | 59     |
| 17     | No-Load Backlash                       | °   | 1                               | 1.2  | 1.2  | 1.5   | 1.5    |
| 18     | Weight                                 | g   | 7                               | 10   | 13   | 16,5  | 20     |

### Motor combinations

#### SVTN A - Brushless

SVTN A 01-1220\*

SVTN A 01-1230\*

SVTN A 03-1228\*

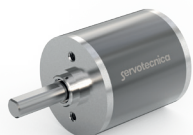
#### SVTN B - Brushed

SVTN B 01-1219\*

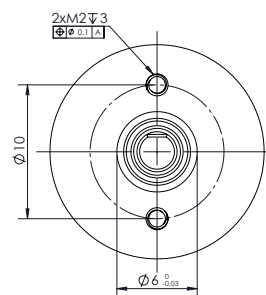
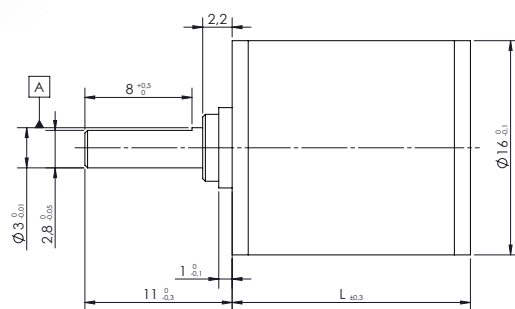
SVTN B 01-1331\*

\*On request

\*\*Optional



## COSMOS Series SVTG A 16



V 3

| A 16           |                                        |      |                                |      |       |       |        |
|----------------|----------------------------------------|------|--------------------------------|------|-------|-------|--------|
| Values         |                                        | Unit |                                |      |       |       |        |
| 1              | Housing material                       |      | Metal                          |      |       |       |        |
| 2              | Geartrain material                     |      | Metal/Polymer                  |      |       |       |        |
| 3              | Max input speed (continuous operation) | rpm  | ≤ 20.000                       |      |       |       |        |
| 4              | Bearings on output shaft               |      | Sleeve bearings/Ball bearings* |      |       |       |        |
| Max shaft load |                                        |      |                                |      |       |       |        |
| 5              | Radial (5mm from mounting face)        | N    | ≤ 10                           |      |       |       |        |
| 6              | Axial                                  | N    | ≤ 8                            |      |       |       |        |
| 7              | Max shaft press fit force              | N    | ≤ 10                           |      |       |       |        |
| Shaft play     |                                        |      |                                |      |       |       |        |
| 8              | Radial                                 | mm   | ≤ 0.1                          |      |       |       |        |
| 9              | Axial                                  | mm   | ≤ 0.2                          |      |       |       |        |
| 10             | Operating temperature range            | °C   | -20 +125                       |      |       |       |        |
| 11             | Number of gear stages                  |      | 1                              | 2    | 3     | 4     | 5      |
| 12             | Reduction ratio                        |      | 3.8:1                          | 14:1 | 54:1  | 206:1 | 1012:1 |
|                |                                        |      | 4.3:1                          | 16:1 | 70:1  | 267:1 | 1152:1 |
|                |                                        |      | 5.1:1                          | 18:1 | 80:1  | 304:1 | 1311:1 |
|                |                                        |      |                                | 22:1 | 94:1  | 407:1 | 1492:1 |
|                |                                        |      |                                |      | 111:1 | 479:1 | 1596:1 |
|                |                                        |      |                                |      | 131:1 | 664:1 | 2067:1 |
|                |                                        |      |                                |      |       |       | 2434:1 |
| 13             | Gearhead Lenght L                      | mm   | 17.8                           | 21.4 | 25    | 28.6  | 32.2   |
| 14             | Continuous torque                      | Nm   | 0.2                            | 0.2  | 0.3   | 0.3   | 0.35   |
| 15             | Intermittent torque                    | Nm   | 0.3                            | 0.3  | 0.45  | 0.45  | 0.5    |
| 16             | Max Efficiency                         | %    | 90                             | 81   | 73    | 65    | 59     |
| 17             | No-Load Backlash                       | °    | 1                              | 1.5  | 1.5   | 2     | 2      |
| 18             | Weight                                 | g    | 15                             | 20   | 25    | 30    | 35     |

### Motor combinations

#### SVTN A - Brushless

SVTN A 01-1630

SVTN A 01-1636

SVTN A 03-1638

#### SVTN B - Brushed

SVTN B 01-1524

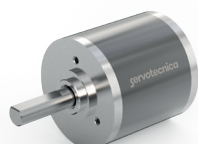
SVTN B 01-1640

SVTN B 01-1725

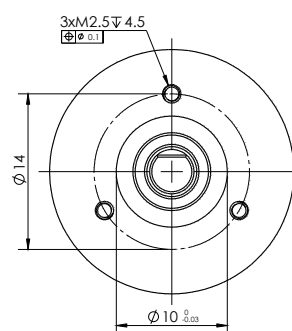
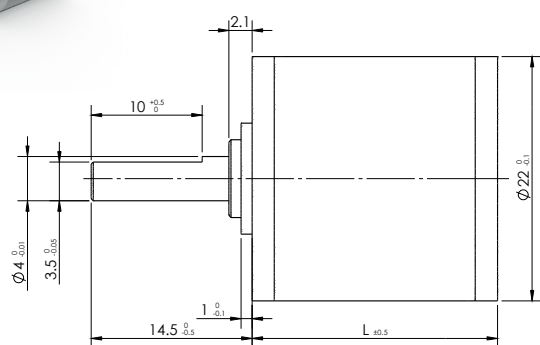
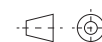
SVTN B 01-1740

\*Optional





## COSMOS Series SVTG B 22



V 3

| B 22           |                                        |  |               |          |      |      |      |       |       |       |        |        |    |
|----------------|----------------------------------------|--|---------------|----------|------|------|------|-------|-------|-------|--------|--------|----|
| Values         |                                        |  | Unit          |          |      |      |      |       |       |       |        |        |    |
| 1              | Housing material                       |  | Metal         |          |      |      |      |       |       |       |        |        |    |
| 2              | Geartrain material                     |  | Metal/Polymer |          |      |      |      |       |       |       |        |        |    |
| 3              | Max input speed (continuous operation) |  | rpm           | ≤ 10.000 |      |      |      |       |       |       |        |        |    |
| 4              | Bearings on output shaft               |  | Ball bearings |          |      |      |      |       |       |       |        |        |    |
| Max shaft load |                                        |  |               |          |      |      |      |       |       |       |        |        |    |
| 5              | Radial (5mm from mounting face)        |  | N             | ≤ 50     |      |      |      |       |       |       |        |        |    |
| 6              | Axial                                  |  | N             | ≤ 50     |      |      |      |       |       |       |        |        |    |
| 7              | Max shaft press fit force              |  | N             | ≤ 100    |      |      |      |       |       |       |        |        |    |
| Shaft play     |                                        |  |               |          |      |      |      |       |       |       |        |        |    |
| 8              | Radial                                 |  | mm            | ≤ 0.1    |      |      |      |       |       |       |        |        |    |
| 9              | Axial                                  |  | mm            | ≤ 0.2    |      |      |      |       |       |       |        |        |    |
| 10             | Operating temperature range            |  | °C            | -20 +125 |      |      |      |       |       |       |        |        |    |
| 11             | Number of gear stages                  |  | 1             |          | 2    |      | 3    |       | 4     |       | 5      |        |    |
| 12             | Reduction ratio                        |  | 3.6:1         | 5.5:1    | 13:1 | 22:1 | 46:1 | 101:1 | 182:1 | 405:1 | 729:1  | 1936:1 |    |
|                |                                        |  | 4.0:1         |          | 14:1 |      | 51:1 | 121:1 | 204:1 | 466:1 | 816:1  | 2286:1 |    |
|                |                                        |  |               |          | 16:1 |      | 59:1 |       | 263:1 | 557:1 | 1024:1 | 2662:1 |    |
|                |                                        |  |               |          | 18:1 |      | 64:1 |       | 302:1 |       | 1209:1 |        |    |
|                |                                        |  |               |          |      |      | 74:1 |       | 339:1 |       | 1557:1 |        |    |
|                |                                        |  |               |          |      |      | 85:1 |       |       |       |        |        |    |
| 13             | Gearhead Lenght L                      |  | mm            | 22.1     | 28.5 | 27.6 | 32.6 | 31.4  | 36.4  | 35.2  | 40.2   | 39     | 44 |
| 14             | Continuous torque                      |  | Nm            | 0.3      | 0.3  |      | 0.5  |       | 0.5   |       | 0.75   |        |    |
| 15             | Intermittent torque                    |  | Nm            | 0.5      | 0.5  |      | 0.8  |       | 0.8   |       | 1      |        |    |
| 16             | Max Efficiency                         |  | %             | 90       | 81   |      | 73   |       | 65    |       | 59     |        |    |
| 17             | No-Load Backlash                       |  | °             | 1        | 1.5  |      | 1.5  |       | 2     |       | 2      |        |    |
| 18             | Weight                                 |  | g             | 30       | 35   |      | 46   |       | 55    |       | 65     |        |    |

### Motor combinations

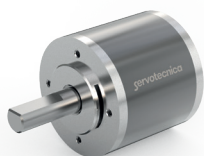
#### SVTN A - Brushless

SVTN A 01-2040  
SVTN A 01-2232  
SVTN A 01-2240  
SVTN A 01-2248  
SVTN A 01-2260  
SVTN A 03-2238  
SVTN A 03-2246

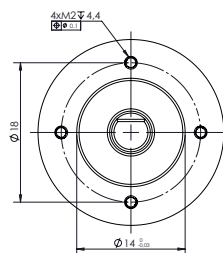
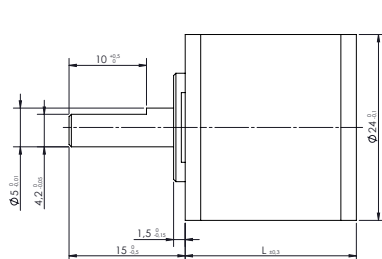
#### SVTN B - Brushed

SVTN B 01-2225  
SVTN B 01-2230

\*Optional



## COSMOS Series SVTG B 24



V 3

| B 24   |                                        |  |               |          |      |      |      |       |       |       |        |      |
|--------|----------------------------------------|--|---------------|----------|------|------|------|-------|-------|-------|--------|------|
| Values |                                        |  | Unit          |          |      |      |      |       |       |       |        |      |
| 1      | Housing material                       |  | Metal         |          |      |      |      |       |       |       |        |      |
| 2      | Geartrain material                     |  | Metal/Polymer |          |      |      |      |       |       |       |        |      |
| 3      | Max input speed (continuous operation) |  | rpm           | ≤ 10.000 |      |      |      |       |       |       |        |      |
| 4      | Bearings on output shaft               |  | Ball bearings |          |      |      |      |       |       |       |        |      |
|        | Max shaft load                         |  |               |          |      |      |      |       |       |       |        |      |
| 5      | Radial (5mm from mounting face)        |  | N             | ≤ 50     |      |      |      |       |       |       |        |      |
| 6      | Axial                                  |  | N             | ≤ 50     |      |      |      |       |       |       |        |      |
| 7      | Max shaft press fit force              |  | N             | ≤ 100    |      |      |      |       |       |       |        |      |
|        | Shaft play                             |  |               |          |      |      |      |       |       |       |        |      |
| 8      | Radial                                 |  | mm            | ≤ 0.1    |      |      |      |       |       |       |        |      |
| 9      | Axial                                  |  | mm            | ≤ 0.2    |      |      |      |       |       |       |        |      |
| 10     | Operating temperature range            |  | °C            | -20 +125 |      |      |      |       |       |       |        |      |
| 11     | Number of gear stages                  |  | 1             | 2        |      | 3    |      | 4     |       | 5     |        |      |
| 12     | Reduction ratio                        |  | 3.3:1         | 12:1     | 17:1 | 36:1 | 56:1 | 119:1 | 408:1 | 660:1 | 1036:1 |      |
|        |                                        |  | 4.3:1         | 14:1     | 22:1 | 47:1 | 95:1 | 154:1 | 493:1 | 741:1 | 1346:1 |      |
|        |                                        |  |               |          |      | 61:1 |      | 200:1 |       | 857:1 | 1628:1 |      |
|        |                                        |  |               |          |      | 79:1 |      | 260:1 |       |       | 1748:1 |      |
|        |                                        |  |               |          |      |      |      | 337:1 |       |       | 2114:1 |      |
| 13     | Gearhead Lenght L                      |  | mm            | 22.1     | 26.2 | 30.8 | 32   | 36.6  | 36.1  | 40.7  | 40.2   | 44.8 |
| 14     | Continuous torque                      |  | Nm            | 0.5      | 0.8  | 1.5  |      | 1.8   |       | 2.5   |        |      |
| 15     | Intermittent torque                    |  | Nm            | 1        | 1.5  | 2    |      | 2.5   |       | 3.5   |        |      |
| 16     | Max Efficiency                         |  | %             | 90       | 81   | 73   |      | 65    |       | 59    |        |      |
| 17     | No-Load Backlash                       |  | °             | 1        | 1.5  | 1.5  |      | 2     |       | 2     |        |      |
| 18     | Weight                                 |  | g             | 35       | 41   | 52   |      | 59    |       | 68    |        |      |

### Motor combinations

#### SVTN A - Brushless

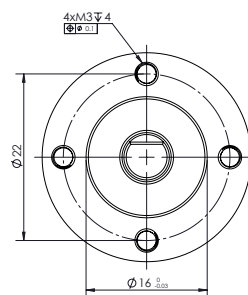
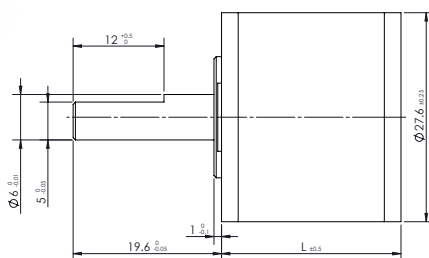
SVTN A 01-2232  
SVTN A 01-2240  
SVTN A 01-2248  
SVTN A 01-2260  
SVTN A 01-2446  
SVTN A 01-2453  
SVTN A 03-2238  
SVTN A 03-2246  
SVTN A 03-2452  
SVTN A 03-2459

#### SVTN B - Brushed

SVTN B 01-2225  
SVTN B 01-2230



## COSMOS Series SVTG B 28



V 3

| B 28   |                                        |      |               |       |      |       |       |       |       |        |        |
|--------|----------------------------------------|------|---------------|-------|------|-------|-------|-------|-------|--------|--------|
| Values |                                        | Unit |               |       |      |       |       |       |       |        |        |
| 1      | Housing material                       |      | Metal         |       |      |       |       |       |       |        |        |
| 2      | Geartrain material                     |      | Metal/Polymer |       |      |       |       |       |       |        |        |
| 3      | Max input speed (continuous operation) | rpm  | ≤ 10.000      |       |      |       |       |       |       |        |        |
| 4      | Bearings on output shaft               |      | Ball bearings |       |      |       |       |       |       |        |        |
|        | Max shaft load                         |      |               |       |      |       |       |       |       |        |        |
| 5      | Radial (5mm from mounting face)        | N    | ≤ 50          |       |      |       |       |       |       |        |        |
| 6      | Axial                                  | N    | ≤ 50          |       |      |       |       |       |       |        |        |
| 7      | Max shaft press fit force              | N    | ≤ 100         |       |      |       |       |       |       |        |        |
|        | Shaft play                             |      |               |       |      |       |       |       |       |        |        |
| 8      | Radial                                 | mm   | ≤ 0.1         |       |      |       |       |       |       |        |        |
| 9      | Axial                                  | mm   | ≤ 0.2         |       |      |       |       |       |       |        |        |
| 10     | Operating temperature range            | °C   | -20 +125      |       |      |       |       |       |       |        |        |
| 11     | Number of gear stages                  |      | 1             | 2     | 3    | 4     | 5     |       |       |        |        |
| 12a    | Reduction ratio ("A" combination)      |      | 3.6:1         | 5.5:1 | 16:1 | 46:1  | 101:1 | 182:1 | 405:1 | 729:1  | 1936:1 |
|        |                                        |      | 4.0:1         |       | 18:1 | 51:1  | 121:1 | 204:1 | 466:1 | 816:1  | 2286:1 |
|        |                                        |      |               |       | 21:1 | 59:1  |       | 263:1 | 557:1 | 1024:1 | 2662:1 |
|        |                                        |      |               |       |      | 64:1  |       | 302:1 |       | 1209:1 |        |
|        |                                        |      |               |       |      | 74:1  |       | 339:1 |       | 1557:1 |        |
|        |                                        |      |               |       |      | 85:1  |       |       |       |        |        |
| 13a    | Gearhead Lenght L ("A" combination)    | mm   | 28.7          | 34.2  | 33.2 | 37.7  | 44.2  | 42.2  | 48.7  | 46.7   | 53.2   |
| 12b    | Reduction ratio ("B" combination)      |      | 3.6:1         |       | 16:1 | 46:1  |       | 182:1 |       | 729:1  |        |
|        |                                        |      | 4.0:1         |       | 18:1 | 51:1  |       | 204:1 |       | 816:1  |        |
|        |                                        |      | 5.5:1         |       | 21:1 | 59:1  |       | 263:1 |       | 1024:1 |        |
|        |                                        |      |               |       |      | 64:1  |       | 302:1 |       | 1209:1 |        |
|        |                                        |      |               |       |      | 74:1  |       | 339:1 |       | 1557:1 |        |
|        |                                        |      |               |       |      | 85:1  |       | 405:1 |       | 1936:1 |        |
|        |                                        |      |               |       |      | 101:1 |       | 466:1 |       | 2286:1 |        |
|        |                                        |      |               |       |      | 121:1 |       | 557:1 |       | 2662:1 |        |
| 13b    | Gearhead Lenght L ("B" combination)    | mm   | 23.7          |       | 29.2 | 33.7  |       | 38.2  |       | 42.7   |        |
| 12c    | Reduction ratio ("C" combination)      |      | 3.6:1         | 4.0:1 | 16:1 | 46:1  |       | 182:1 |       | 729:1  |        |
|        |                                        |      |               | 5.5:1 | 18:1 | 51:1  |       | 204:1 |       | 816:1  |        |
|        |                                        |      |               |       | 21:1 | 59:1  |       | 263:1 |       | 1024:1 |        |
|        |                                        |      |               |       |      | 64:1  |       | 302:1 |       | 1209:1 |        |
|        |                                        |      |               |       |      | 74:1  |       | 339:1 |       | 1557:1 |        |
|        |                                        |      |               |       |      | 85:1  |       | 405:1 |       | 1936:1 |        |
|        |                                        |      |               |       |      | 101:1 |       | 466:1 |       | 2286:1 |        |
|        |                                        |      |               |       |      | 121:1 |       | 557:1 |       | 2662:1 |        |
| 13c    | Gearhead Lenght L ("C" combination)    | mm   | 28.7          | 34.2  | 38.7 | 43.2  |       | 47.7  |       | 52.2   |        |
| 14     | Continuous torque                      | Nm   | 0.5           |       | 1    | 3     |       | 3     |       | 3      |        |
| 15     | Intermittent torque                    | Nm   | 0.8           |       | 2    | 4     |       | 4     |       | 4      |        |
| 16     | Max Efficiency                         | %    | 90            |       | 81   | 73    |       | 65    |       | 59     |        |
| 17     | No-Load Backlash                       | °    | 1             |       | 1.2  | 1.2   |       | 1.5   |       | 1.5    |        |
| 18     | Weight                                 | g    | 50            |       | 65   | 85    |       | 95    |       | 110    |        |

### Motor combinations "A"

| SVTN A - Brushless | SVTN B - Brushed |
|--------------------|------------------|
| SVTN A 01-2845     | SVTN B 01-2864   |
| SVTN A 01-2854     |                  |
| SVTN A 01-2864     |                  |
| SVTN A 03-2854     |                  |
| SVTN A 03-2863     |                  |

### Motor combinations "B"

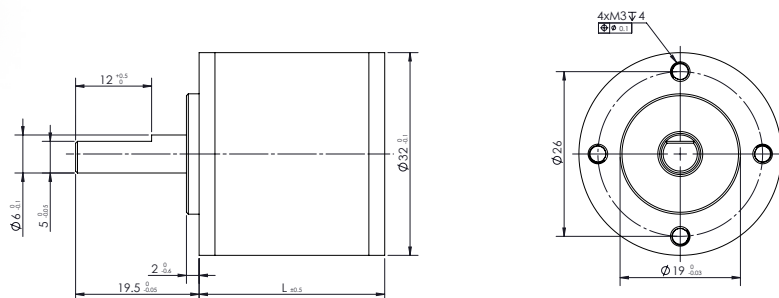
| SVTN A - Brushless | SVTN B - Brushed |
|--------------------|------------------|
| SVTN A 01-2446     | SVTN B 01-2642   |
| SVTN A 01-2453     |                  |
| SVTN A 03-2452     |                  |
| SVTN A 03-2459     |                  |

### Motor combinations "C"

| SVTN A - Brushless |
|--------------------|
| SVTN A 01-3242     |
| SVTN A 01-3260     |
| SVTN A 01-3270     |
| SVTN A 03-3270     |



## COSMOS Series SVTG B 32



V 3

| B 32           |                                            |  |      |               |       |      |      |       |       |       |       |       |        |        |        |
|----------------|--------------------------------------------|--|------|---------------|-------|------|------|-------|-------|-------|-------|-------|--------|--------|--------|
| Values         |                                            |  | Unit |               |       |      |      |       |       |       |       |       |        |        |        |
| 1              | Housing material                           |  |      | Metal         |       |      |      |       |       |       |       |       |        |        |        |
| 2              | Geartrain material                         |  |      | Metal/Polymer |       |      |      |       |       |       |       |       |        |        |        |
| 3              | Max input speed (continuous operation) rpm |  |      | ≤ 10.000      |       |      |      |       |       |       |       |       |        |        |        |
| 4              | Bearings on output shaft                   |  |      | Ball bearings |       |      |      |       |       |       |       |       |        |        |        |
| Max shaft load |                                            |  |      |               |       |      |      |       |       |       |       |       |        |        |        |
| 5              | Radial (5mm from mounting face)            |  | N    | ≤ 100         |       |      |      |       |       |       |       |       |        |        |        |
| 6              | Axial                                      |  | N    | ≤ 80          |       |      |      |       |       |       |       |       |        |        |        |
| 7              | Max shaft press fit force                  |  | N    | ≤ 120         |       |      |      |       |       |       |       |       |        |        |        |
| Shaft play     |                                            |  |      |               |       |      |      |       |       |       |       |       |        |        |        |
| 8              | Radial                                     |  | mm   | ≤ 0.1         |       |      |      |       |       |       |       |       |        |        |        |
| 9              | Axial                                      |  | mm   | ≤ 0.2         |       |      |      |       |       |       |       |       |        |        |        |
| 10             | Operating temperature range                |  | °C   | -20 +125      |       |      |      |       |       |       |       |       |        |        |        |
| 11             | Number of gear stages                      |  |      | 1             | 2     |      | 3    |       | 4     |       |       | 5     |        |        |        |
| 12a            | Reduction ratio (“A” combination)          |  |      | 3.1:1         | 4.8:1 | 10:1 | 15:1 | 30:1  | 46:1  | 159:1 | 223:1 | 412:1 | 694:1  | 2548:1 |        |
|                |                                            |  |      | 4.0:1         |       |      | 19:1 | 51:1  | 62:1  | 178:1 | 266:1 |       | 765:1  | 3174:1 |        |
|                |                                            |  |      |               |       |      | 23:1 |       | 72:1  |       | 298:1 |       | 856:1  |        |        |
|                |                                            |  |      |               |       |      |      |       | 80:1  |       | 344:1 |       | 989:1  |        |        |
|                |                                            |  |      |               |       |      |      |       | 92:1  |       |       |       | 1429:1 |        |        |
|                |                                            |  |      |               |       |      |      |       | 111:1 |       |       |       | 1836:1 |        |        |
| 13a            | Gearhead Lenght L (“A” combination)        |  | mm   | 29.3          | 38.8  | 38.1 | 42.6 | 44.4  | 48.9  | 50.7  | 55.2  | 57.2  | 61.5   | 63.5   |        |
| 12b            | Reduction ratio (“B” combination)          |  |      | 3.1:1         | 5.7:1 | 10:1 | 23:1 | 30:1  |       | 159:1 |       | 412:1 |        | 694:1  | 3174:1 |
|                |                                            |  |      | 4.0:1         |       | 15:1 |      | 46:1  |       | 178:1 |       |       |        | 765:1  |        |
|                |                                            |  |      | 4.8:1         |       | 19:1 |      | 51:1  |       | 223:1 |       |       |        | 856:1  |        |
|                |                                            |  |      |               |       |      |      | 62:1  |       | 266:1 |       |       |        | 989:1  |        |
|                |                                            |  |      |               |       |      |      | 72:1  |       | 298:1 |       |       |        | 1429:1 |        |
|                |                                            |  |      |               |       |      |      | 80:1  |       | 344:1 |       |       |        | 1846:1 |        |
|                |                                            |  |      |               |       |      |      | 92:1  |       |       |       |       |        | 2548:1 |        |
|                |                                            |  |      |               |       |      |      | 111:1 |       |       |       |       |        |        |        |
| 13b            | Gearhead Lenght L (“B” combination)        |  |      | 29.3          | 38.8  | 38.1 | 44.6 | 44.4  |       | 50.7  |       | 57.2  |        | 57     | 63.5   |
| 14             | Continuous torque                          |  | Nm   | 1             | 1.5   |      | 2.5  |       | 3     |       | 5     |       |        |        |        |
| 15             | Intermittent torque                        |  | Nm   | 2             | 3     |      | 5    |       | 6     |       | 7.5   |       |        |        |        |
| 16             | Max Efficiency                             |  | %    | 90            | 81    |      | 73   |       | 65    |       | 59    |       |        |        |        |
| 17             | No-Load Backlash                           |  | °    | 1             | 1.5   |      | 1.5  |       | 2     |       | 2     |       |        |        |        |
| 18             | Weight                                     |  | g    | 125           | 147   |      | 169  |       | 191   |       | 213   |       |        |        |        |

### Motor combinations "A"

#### SVTN A - Brushless

SVTN A 01-3242  
SVTN A 01-3260  
SVTN A 01-3270  
SVTN A 03-3270

### Motor combinations "B"

#### SVTN A - Brushless

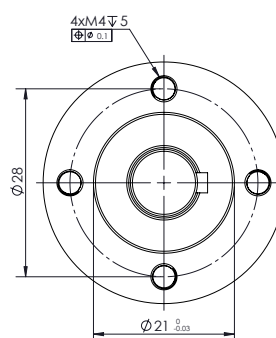
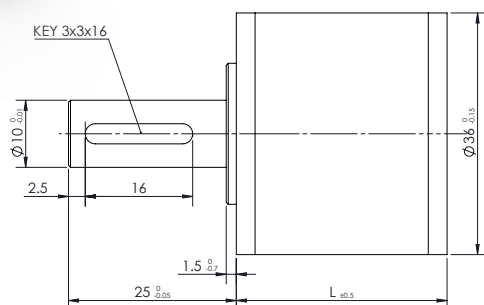
SVTN A 01-2845  
SVTN A 01-2854  
SVTN A 01-2864  
SVTN A 03-2854  
SVTN A 03-2863

#### SVTN B - Brushed

SVTN B 01-2864



## COSMOS Series SVTG B 36



V 3

| B 36           |                                        |  |    |               |          |      |      |       |       |       |       |        |        |
|----------------|----------------------------------------|--|----|---------------|----------|------|------|-------|-------|-------|-------|--------|--------|
| Values         |                                        |  |    | Unit          |          |      |      |       |       |       |       |        |        |
| 1              | Housing material                       |  |    | Metal         |          |      |      |       |       |       |       |        |        |
| 2              | Geartrain material                     |  |    | Metal/Polymer |          |      |      |       |       |       |       |        |        |
| 3              | Max input speed (continuous operation) |  |    | rpm           | ≤ 10.000 |      |      |       |       |       |       |        |        |
| 4              | Bearings on output shaft               |  |    | Ball bearings |          |      |      |       |       |       |       |        |        |
| Max shaft load |                                        |  |    |               |          |      |      |       |       |       |       |        |        |
| 5              | Radial (5mm from mounting face)        |  | N  | ≤ 100         |          |      |      |       |       |       |       |        |        |
| 6              | Axial                                  |  | N  | ≤ 80          |          |      |      |       |       |       |       |        |        |
| 7              | Max shaft press fit force              |  | N  | ≤ 120         |          |      |      |       |       |       |       |        |        |
| Shaft play     |                                        |  |    |               |          |      |      |       |       |       |       |        |        |
| 8              | Radial                                 |  | mm | ≤ 0.1         |          |      |      |       |       |       |       |        |        |
| 9              | Axial                                  |  | mm | ≤ 0.2         |          |      |      |       |       |       |       |        |        |
| 10             | Operating temperature range            |  | °C | -20 +125      |          |      |      |       |       |       |       |        |        |
| 11             | Number of gear stages                  |  |    | 1             | 2        |      | 3    |       | 4     |       | 5     |        |        |
| 12             | Reduction ratio                        |  |    | 3.7:1         | 6.5:1    | 14:1 | 30:1 | 53:1  | 142:1 | 198:1 | 661:1 | 1429:1 | 1285:1 |
|                |                                        |  |    | 4.7:1         |          | 17:1 |      | 66:1  | 169:1 | 246:1 | 920:1 | 1779:1 | 3083:1 |
|                |                                        |  |    |               |          | 22:1 |      | 82:1  | 197:1 | 306:1 |       | 2213:1 | 4294:1 |
|                |                                        |  |    |               |          |      |      | 102:1 | 241:1 | 381:1 |       |        | 5981:1 |
|                |                                        |  |    |               |          |      |      | 275:1 | 474:1 |       |       |        |        |
| 13a            | Gearhead Lenght L (“A” combination)    |  | mm | 31.4          | 39.4     | 42.7 | 50.7 | 50    | 58    | 57.3  | 65.3  | 64.6   | 72.6   |
| 13b            | Gearhead Lenght L (“B” combination)    |  | mm | 41.4          | 40.4     | 23.7 | 51.7 | 51    | 59    | 58.3  | 66.3  | 65.6   | 73.6   |
| 14             | Continuous torque                      |  | Nm | 4             | 8        |      | 16   |       | 16    |       | 20    |        |        |
| 15             | Intermittent torque                    |  | Nm | 5             | 12       |      | 25   |       | 25    |       | 30    |        |        |
| 16             | Max Efficiency                         |  | %  | 90            | 81       |      | 73   |       | 65    |       | 59    |        |        |
| 17             | No-Load Backlash                       |  | °  | 0.8           | 1        |      | 1    |       | 1.2   |       | 1.2   |        |        |
| 18             | Weight                                 |  | g  | 210           | 245      |      | 280  |       | 315   |       | 350   |        |        |

### Motor combinations "A"

#### SVTN A - Brushless

SVTN A 01-3242  
SVTN A 01-3260  
SVTN A 01-3270  
SVTN A 01-3660  
SVTN A 01-3670  
SVTN A 03-3270  
SVTN A 03-3673  
SVTN A 03-3683

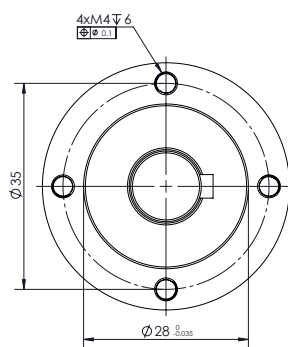
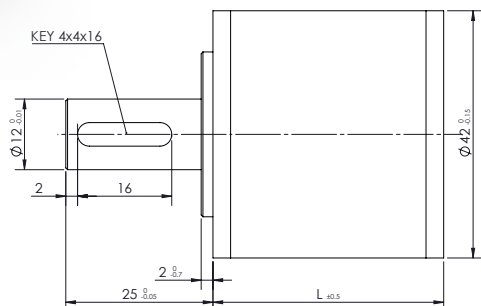
### Motor combinations "B"

#### SVTN B - Brushed

SVTN B 01-3571



## COSMOS Series SVTG B 42



V 3

| B 42           |                                        |               |          |      |      |       |       |       |         |        |      |
|----------------|----------------------------------------|---------------|----------|------|------|-------|-------|-------|---------|--------|------|
| Values         | Unit                                   |               |          |      |      |       |       |       |         |        |      |
| 1              | Housing material                       | Metal         |          |      |      |       |       |       |         |        |      |
| 2              | Geartrain material                     | Metal/Polymer |          |      |      |       |       |       |         |        |      |
| 3              | Max input speed (continuous operation) | rpm           | ≤ 10.000 |      |      |       |       |       |         |        |      |
| 4              | Bearings on output shaft               | Ball bearings |          |      |      |       |       |       |         |        |      |
| Max shaft load |                                        |               |          |      |      |       |       |       |         |        |      |
| 5              | Radial (5mm from mounting face)        | N             | ≤ 200    |      |      |       |       |       |         |        |      |
| 6              | Axial                                  | N             | ≤ 100    |      |      |       |       |       |         |        |      |
| 7              | Max shaft press fit force              | N             | ≤ 120    |      |      |       |       |       |         |        |      |
| Shaft play     |                                        |               |          |      |      |       |       |       |         |        |      |
| 8              | Radial                                 | mm            | ≤ 0.1    |      |      |       |       |       |         |        |      |
| 9              | Axial                                  | mm            | ≤ 0.2    |      |      |       |       |       |         |        |      |
| 10             | Operating temperature range            | °C            | -20 +125 |      |      |       |       |       |         |        |      |
| 11             | Number of gear stages                  | 1             | 2        | 3    | 4    | 5     |       |       |         |        |      |
| 12a            | Reduction ratio (“A” combination)      | 3.1:1         | 5.7:1    | 10:1 | 43:1 | 115:1 | 168:1 | 574:1 | 807:1   | 1834:1 |      |
|                |                                        | 4.2:1         |          | 12:1 | 54:1 | 159:1 | 225:1 | 661:1 | 1080:1  | 2300:1 |      |
|                |                                        |               |          | 15:1 | 72:1 |       | 301:1 | 762:1 | 1434:1  | 3301:1 |      |
|                |                                        |               |          | 20:1 | 83:1 |       | 400:1 |       |         | 4060:1 |      |
|                |                                        |               |          |      | 96:1 |       | 461:1 |       |         | 5247:1 |      |
| 12b            | Gearhead Lenght L (“A” combination)    | mm            | 39.2     | 41.7 | 51.2 | 60.2  | 62.7  | 75.2  | 77.7    | 84.2   | 86.7 |
| 13a            | Reduction ratio (“B” combination)      | 3.1:1         | 5.7:1    | 10:1 | 43:1 | 115:1 | 168:1 | 574:1 | 806.5:1 | 1834:1 |      |
|                |                                        | 4.2:1         |          | 12:1 | 54:1 | 159:1 | 225:1 | 661:1 | 1080:1  | 2300:1 |      |
|                |                                        |               |          | 15:1 | 72:1 |       | 301:1 | 762:1 | 1434:1  | 3301:1 |      |
|                |                                        |               |          | 20:1 | 83:1 |       | 400:1 |       |         | 4060:1 |      |
|                |                                        |               |          |      | 96:1 |       | 461:1 |       |         | 5247:1 |      |
| 13b            | Gearhead Lenght L (“B” combination)    | mm            | 34.2     | 39.2 | 46.2 | 55.2  | 60.2  | 70.2  | 75.2    | 79.2   | 84.2 |
| 18             | Continuous torque                      | Nm            | 3        |      | 12   | 16    |       | 25    |         | 25     |      |
| 19             | Intermittent torque                    | Nm            | 5        |      | 20   | 25    |       | 36    |         | 36     |      |
| 20             | Max Efficiency                         | %             | 90       |      | 81   | 73    |       | 65    |         | 59     |      |
| 21             | No-Load Backlash                       | °             | 0.8      |      | 1    | 1     |       | 1.2   |         | 1.2    |      |
| 22             | Weight                                 | g             | 250      |      | 345  | 405   |       | 490   |         | 580    |      |

### Motor combinations "A"

#### SVTN A - Brushless

SVTN A 01-4058  
SVTN A 01-4070  
SVTN A 01-4088

#### SVTN B - Brushed

SVTN B 01-4050  
SVTN B 01-4070

### Motor combinations "B"

#### SVTN A - Brushless

SVTN A 01-3660  
SVTN A 01-3670  
SVTN A 03-3673  
SVTN A 03-3683

#### SVTN B - Brushed

SVTN B 01 3571

## Notes

[illegible]

# ACCESSORIES



# Contents

|                    |            |
|--------------------|------------|
| Encoders           | p. 118-119 |
| Drives             | p. 120-139 |
| PCB Board & Cables | p. 140-141 |

# Encoders

## Magnetic Incremental Encoders



Cost effective



Robust



Compact

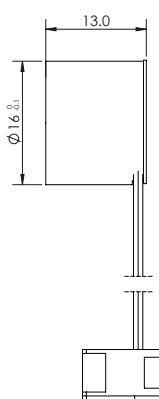
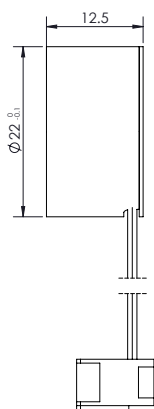
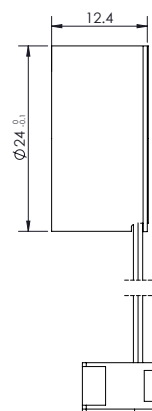


Thanks to incremental magnetic encoders (single ended and line driver), you can obtain a reliable control of speed and position.

\*As an option, incremental optic encoders are available for high resolution needs.

## Features

|                       |                                        |
|-----------------------|----------------------------------------|
| Housing               | Engineering plastic                    |
| Operating temperature | -40° +125° C                           |
| Signal                | 3 or 5 channels: ABI; A A/, B B/, I I/ |
| Resolution            | from 25 to 1024 ppr                    |
| Supply Voltage        | 5 VDC                                  |
| Max speed             | 28.000 rpm                             |

EN 16A,  
EN 16ALEN 22A, EN 22AL  
EN 22B, EN 22BLEN 24B,  
EN 24BL

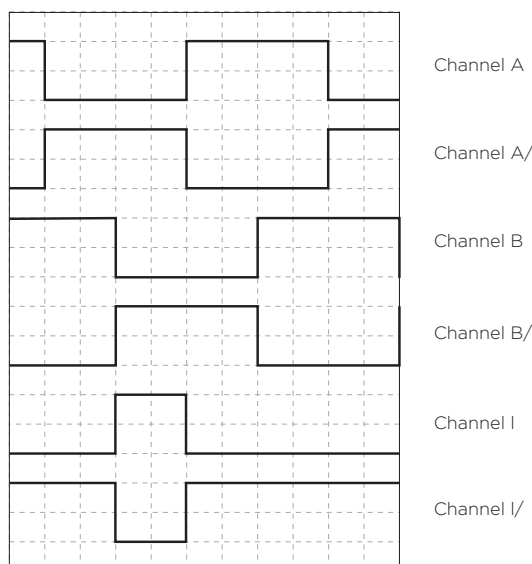
| Electric Data                 | Unit              | EN Series        | EN ..L Series   |
|-------------------------------|-------------------|------------------|-----------------|
| 1 Output signal               |                   | TTL single ended | TTL line driver |
| 2 Number of channels          | #                 | 3                | 5               |
| 3 Supply voltage              | VDC               | 5                | 5               |
| 4 Counts per revolution       | ppr               |                  | up to 1024      |
| 5 Max. speed                  | rpm               | 28000            | 28000           |
| 6 Phase shift, Channel A to B | deg.              |                  | 90              |
| 7 Index pulse width           | deg.              |                  | 90              |
| 8 Interia of code disc        | g/cm <sup>2</sup> |                  | 0,7             |
| 9 Operating temperature range | °C                |                  | -40..+125       |

## Features &amp; Configuration

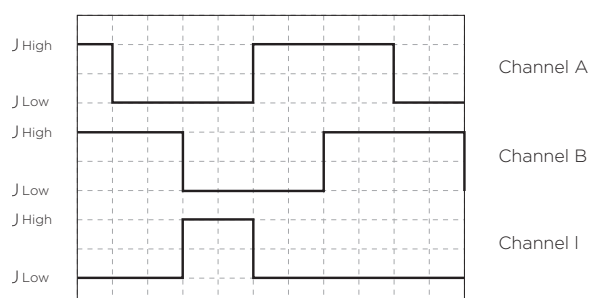
- Magnetic rotary encoder chip.
- Output interface: ABI.
- Configuration programmable: Zero position, ABI line per revolution.
- ABI binary programmable decimal and binary pulse count: 1000, 500, 400, 300, 200, 100, 50, 25, 1024, 512, 256 ppr.

## Output signal

## Connection

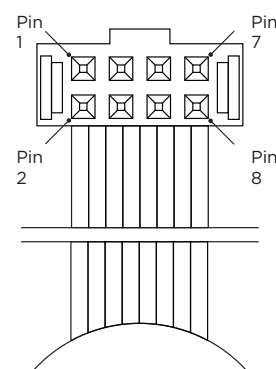


Direction of rotation: CCW viewed from front shaft end



| Connection | EN16; EN22A;<br>EN22B; EN24 | EN16L; EN22AL;<br>EN22BL; EN24L | PVC   |
|------------|-----------------------------|---------------------------------|-------|
| Pin 1      | GND                         | GND                             | AWG28 |
| Pin 2      | Vcc                         | Vcc                             | AWG28 |
| Pin 3      | NC                          | I-                              | AWG28 |
| Pin 4      | I+                          | I+                              | AWG28 |
| Pin 5      | NC                          | B-                              | AWG28 |
| Pin 6      | B+                          | B+                              | AWG28 |
| Pin 7      | NC                          | A-                              | AWG28 |
| Pin 8      | A+                          | A+                              | AWG28 |

Connector: Standard DIN 41651 IDC, 8 pins, dual row 2.54x2.54mm.  
Mating connector: Molex 7024-60801 or compatible



# Servo Drives

DC and BLDC Motors

CANopen EtherCAT®

PROFINET®



Position Velocity Torque control



PLC



Extended temperature



In the industrial environment, high-performance drives must be used to ensure the electric motors' high performance and energy efficiency. Each drive controls motor operation according to specific control algorithms. Servotecnica offers servo drives with EtherCAT, Profinet, and CANopen protocols, supply voltages up to 60VDC.

## Benefits

Programmable

Compact

Cost-effective

## Features

|                       |                             |
|-----------------------|-----------------------------|
| Control mode          | Position, velocity, torque  |
| Fieldbus              | CANopen, EtherCAT, Profinet |
| Supply Voltage        | 9..60 VDC                   |
| I/O                   | Analog and digital          |
| Operating temperature | -40° +70° C                 |

## SVTE-A-□○○-[Fieldbus]

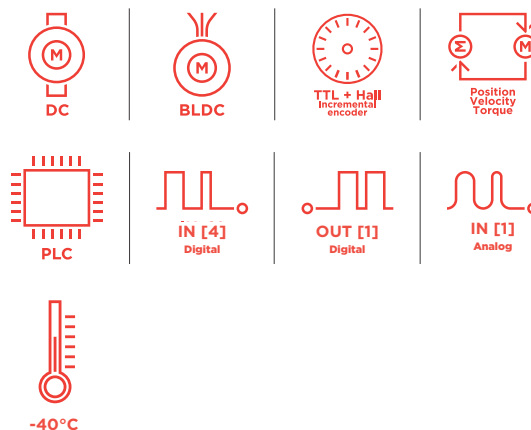
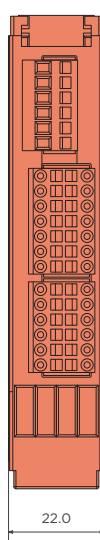
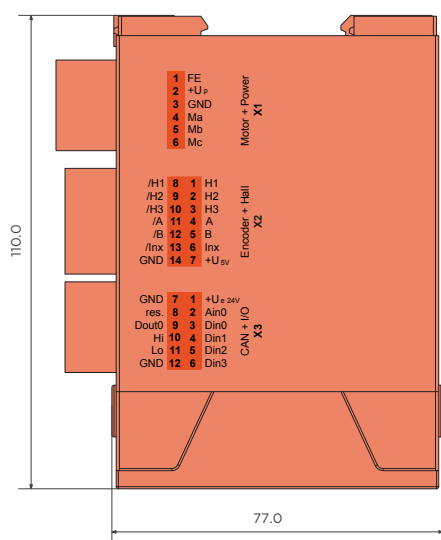
○ Model type

## Notes

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

# SVTE-A-E40-CanOpen Servo Drives

60VDC | 10A  
DC motors, BLDC motors



**CANopen**

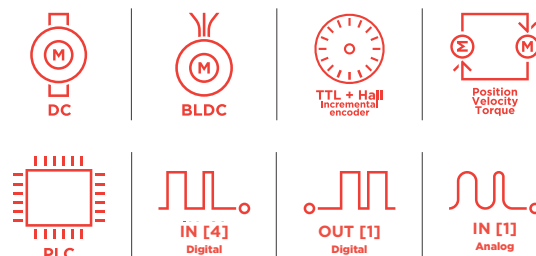
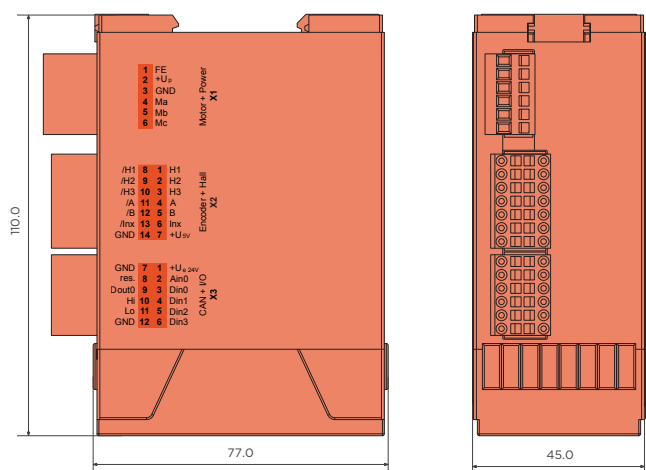
| Values                                              | Unit                                       |
|-----------------------------------------------------|--------------------------------------------|
| <b>Power</b>                                        |                                            |
| 1 Electronic supply voltage U <sub>e</sub>          | VDC 9..30                                  |
| 2 Power supply voltage U <sub>p</sub>               | VDC 9..60                                  |
| 3 Max. output current                               | A 30                                       |
| 4 Continuous output current @ U <sub>p</sub> =24VDC | A 10                                       |
| 5 Continuous output current @ U <sub>p</sub> =48VDC | A 8.5                                      |
| 6 Output voltage                                    | Up to 90%                                  |
| <b>Motor types</b>                                  |                                            |
| 7 DC motors                                         | yes                                        |
| 8 BLDC motors                                       | yes                                        |
| 9 Stepper motors                                    | no                                         |
| <b>Mechanical</b>                                   |                                            |
| 10 Size LxWxH                                       | mm 110 x 22.5 x 77                         |
| <b>CAN bus</b>                                      |                                            |
| 11 Protocol                                         | DS301                                      |
| 12 Device profile                                   | DS402                                      |
| 13 Galvanically isolated                            | yes                                        |
| <b>Incremental encoder</b>                          |                                            |
| 14 Input voltage (24VDC tolerant)                   | VDC 0..5                                   |
| 15 Signal type                                      | differential, open collector, single ended |
| <b>Hall sensors</b>                                 |                                            |
| 16 Input voltage (24VDC tolerant)                   | VDC 0..5                                   |
| 17 Signal type                                      | differential, open collector, single ended |
| <b>Digital input</b>                                |                                            |
| 18 Number                                           | 4 (Din0..3)                                |
| <b>Digital output</b>                               |                                            |
| 19 Number                                           | 1 (Dout0..1)                               |
| 20 Continuous output current                        | A 1.5 (Load: resistive, inductive)         |
| <b>Analog inputs</b>                                |                                            |
| 21 Number                                           | 1 (Ain0..1)                                |
| 22 Signal type                                      | 0..10 VDC, 12 Bit, single ended            |
| <b>Environment</b>                                  |                                            |
| 23 Operating temperature                            | °C -40...+70                               |

## Connection

| X1 Motor                 |         |                                                               |
|--------------------------|---------|---------------------------------------------------------------|
| 1                        | FE      | Functional earth                                              |
| 2                        | +Up     | Power supply voltage                                          |
| 3                        | GND     | Ground for power supply voltage                               |
| 4                        | Ma      | Motor phase A                                                 |
| 5                        | Mb      | Motor phase B                                                 |
| 6                        | Mc      | Motor phase C                                                 |
| X2 Hall and inc. encoder |         |                                                               |
| 1                        | H1      | Hall sensor 1                                                 |
| 2                        | H2      | Hall sensor 2                                                 |
| 3                        | H3      | Hall sensor 3                                                 |
| 4                        | A       | Inc. encoder, A channel                                       |
| 5                        | B       | Inc. encoder, B channel                                       |
| 6                        | Inx     | Inc. encoder, index channel                                   |
| 7                        | +U5V    | 5V output voltage for sensor supply<br>Sensors: encoder, hall |
| 8                        | /H1     | Hall sensor 1 inverted                                        |
| 9                        | /H2     | Hall sensor 2 inverted                                        |
| 10                       | /H3     | Hall sensor 3 inverted                                        |
| 11                       | /A      | Inc. encoder, A channel invert                                |
| 12                       | /B      | Inc. encoder, B channel inverted                              |
| 13                       | /Inx    | Inc. encoder, index channel inverted                          |
| 14                       | GND     | Ground for sensor supply (don't connect with system GND)      |
| X3 I/O's and CAN         |         |                                                               |
| 1                        | +Ue24V  | Electronic supply voltage                                     |
| 2                        | Ain0    | Analog input 0                                                |
| 3                        | Din0    | Digital input 0                                               |
| 4                        | Din1    | Digital input 1                                               |
| 5                        | Din2    | Digital input 2                                               |
| 6                        | Din3    | Digital input 3                                               |
| 7                        | GND     | Ground for electronic supply voltage                          |
| 8                        | res.    | Reserved                                                      |
| 9                        | Dout0   | Digital output 0                                              |
| 10                       | CAN Hi  | CAN High                                                      |
| 11                       | CAN Lo  | CAN Low                                                       |
| 12                       | CAN GND | CAN Ground                                                    |

# SVTE-A-E40-EtherCAT Servo Drives

60VDC | 10A  
DC motors, BLDC motors



CANopen | EtherCAT

| Values                                              | Unit                                       |
|-----------------------------------------------------|--------------------------------------------|
| <b>Power</b>                                        |                                            |
| 1 Electronic supply voltage U <sub>e</sub>          | VDC 9..30                                  |
| 2 Power supply voltage U <sub>p</sub>               | VDC 9..60                                  |
| 3 Max. output current                               | A 30                                       |
| 4 Continuous output current @ U <sub>p</sub> =24VDC | A 10                                       |
| 5 Continuous output current @ U <sub>p</sub> =48VDC | A 8.5                                      |
| 6 Output voltage                                    | Up to 90%                                  |
| <b>Motor types</b>                                  |                                            |
| 7 DC motors                                         | yes                                        |
| 8 BLDC motors                                       | yes                                        |
| 9 Stepper motors                                    | no                                         |
| <b>Mechanical</b>                                   |                                            |
| 10 Size LxWxH                                       | mm 110 x 45 x 77                           |
| <b>CAN bus</b>                                      |                                            |
| 11 Protocol                                         | DS301                                      |
| 12 Device profile                                   | DS402                                      |
| 13 Galvanically isolated                            | no                                         |
| <b>EtherCAT</b>                                     |                                            |
| 14 Type                                             | EtherCAT Slave                             |
| 15 Physical layer                                   | 100 Base-Tx EtherCAT                       |
| 16 Max. baudrate                                    | 100 Mbit/s                                 |
| 17 Number of ports                                  | 2xRJ45 (In,Out)                            |
| 18 Protocol                                         | CoE (CANopen over EtherCAT)                |
| <b>Incremental encoder</b>                          |                                            |
| 19 Input voltage (24VDC tolerant)                   | VDC 0..5                                   |
| 20 Signal type                                      | differential, open collector, single ended |
| <b>Hall sensors</b>                                 |                                            |
| 21 Input voltage (24VDC tolerant)                   | VDC 0..5                                   |
| 22 Signal type                                      | differential, open collector, single ended |
| <b>Digital input</b>                                |                                            |
| 23 Number                                           | 4 (Din0..3)                                |
| <b>Digital output</b>                               |                                            |
| 24 Number                                           | 1 (Dout0..1)                               |
| 25 Continuous output current                        | A 1.5 (Load: resistive, inductive)         |
| <b>Analog inputs</b>                                |                                            |
| 26 Number                                           | 1 (Ain0..1)                                |
| 27 Signal type - Ain0                               | 0..10 VDC, 12 Bit, single ended            |
| <b>Environment</b>                                  |                                            |
| 28 Operating temperature                            | °C -25...+70                               |

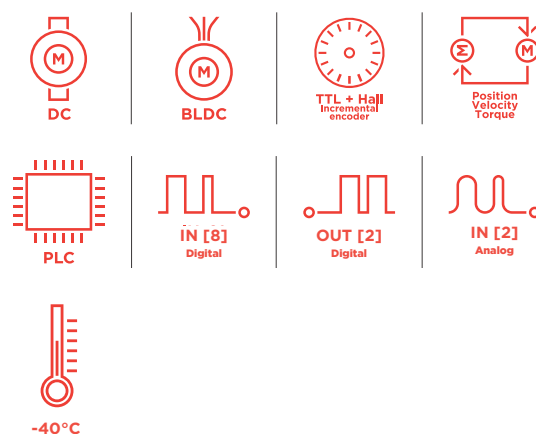
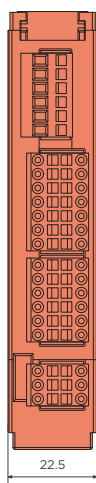
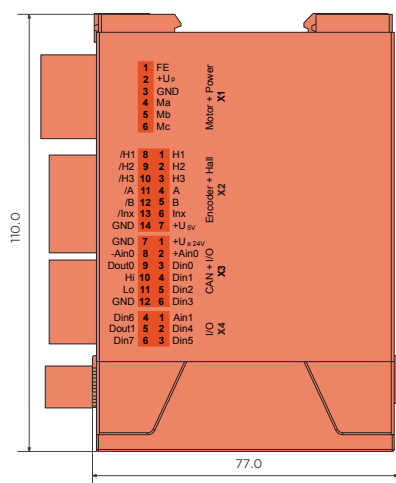


## Connection

|                                 |         |                                                               |
|---------------------------------|---------|---------------------------------------------------------------|
| <b>X1 Motor</b>                 |         |                                                               |
| 1                               | FE      | Functional earth                                              |
| 2                               | +Up     | Power supply voltage                                          |
| 3                               | GND     | Ground for power supply voltage                               |
| 4                               | Ma      | Motor phase A                                                 |
| 5                               | Mb      | Motor phase B                                                 |
| 6                               | Mc      | Motor phase C                                                 |
| <b>X2 Hall and inc. encoder</b> |         |                                                               |
| 1                               | H1      | Hall sensor 1                                                 |
| 2                               | H2      | Hall sensor 2                                                 |
| 3                               | H3      | Hall sensor 3                                                 |
| 4                               | A       | Inc. encoder, A channel                                       |
| 5                               | B       | Inc. encoder, B channel                                       |
| 6                               | Inx     | Inc. encoder, index channel                                   |
| 7                               | +U5V    | 5V output voltage for sensor supply<br>Sensors: encoder, hall |
| 8                               | /H1     | Hall sensor 1 inverted                                        |
| 9                               | /H2     | Hall sensor 2 inverted                                        |
| 10                              | /H3     | Hall sensor 3 inverted                                        |
| 11                              | /A      | Inc. encoder, A channel invert                                |
| 12                              | /B      | Inc. encoder, B channel inverted                              |
| 13                              | /Inx    | Inc. encoder, index channel inverted                          |
| 14                              | GND     | Ground for sensor supply (don't connect with system GND)      |
| <b>X3 I/O's and CAN</b>         |         |                                                               |
| 1                               | +Ue24V  | Electronic supply voltage                                     |
| 2                               | Ain0    | Analog input 0                                                |
| 3                               | Din0    | Digital input 0                                               |
| 4                               | Din1    | Digital input 1                                               |
| 5                               | Din2    | Digital input 2                                               |
| 6                               | Din3    | Digital input 3                                               |
| 7                               | GND     | Ground for electronic supply voltage                          |
| 8                               | res.    | Reserved                                                      |
| 9                               | Dout0   | Digital output 0                                              |
| 10                              | CAN Hi  | CAN High                                                      |
| 11                              | CAN Lo  | CAN Low                                                       |
| 12                              | CAN GND | CAN Ground                                                    |
| <b>X5 EtherCAT - In port</b>    |         |                                                               |
| <b>X6 EtherCAT - Out port</b>   |         |                                                               |

# SVTE-A-E45-CanOpen Servo Drives

60VDC | 10A  
DC motors, BLDC motors



CANopen

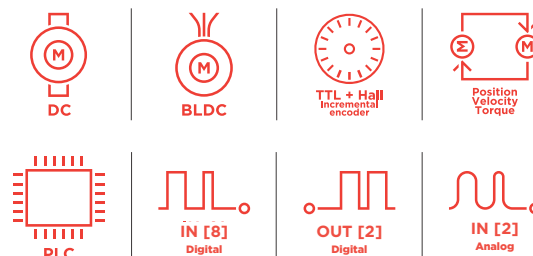
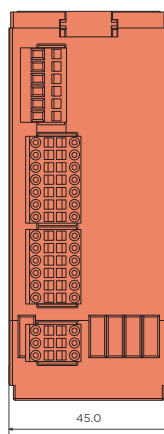
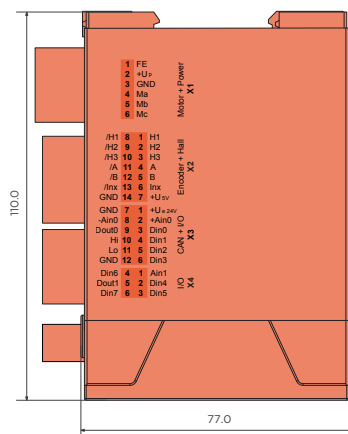
| Values                                              | Unit                                       |
|-----------------------------------------------------|--------------------------------------------|
| <b>Power</b>                                        |                                            |
| 1 Electronic supply voltage U <sub>e</sub>          | VDC 9..30                                  |
| 2 Power supply voltage U <sub>p</sub>               | VDC 9..60                                  |
| 3 Max. output current                               | A 50                                       |
| 4 Continuous output current @ U <sub>p</sub> =24VDC | A 10                                       |
| 5 Continuous output current @ U <sub>p</sub> =48VDC | A 8.5                                      |
| 6 Output voltage                                    | Up to 100%                                 |
| <b>Motor types</b>                                  |                                            |
| 7 DC motors                                         | yes                                        |
| 8 BLDC motors                                       | yes                                        |
| 9 Stepper motors                                    | no                                         |
| <b>Mechanical</b>                                   |                                            |
| 10 Size LxWxH                                       | mm 110 x 22.5 x 77                         |
| <b>CAN bus</b>                                      |                                            |
| 11 Protocol                                         | DS301                                      |
| 12 Device profile                                   | DS402                                      |
| 13 Galvanically isolated                            | no                                         |
| <b>Incremental encoder</b>                          |                                            |
| 14 Input voltage (24VDC tolerant)                   | V 0..5                                     |
| 15 Signal type                                      | differential, open collector, single ended |
| <b>Hall sensors</b>                                 |                                            |
| 16 Input voltage (24VDC tolerant)                   | V 0..5                                     |
| 17 Signal type                                      | differential, open collector, single ended |
| <b>Digital input</b>                                |                                            |
| 18 Number                                           | 8 (Din0..7)                                |
| <b>Digital output</b>                               |                                            |
| 19 Number                                           | 2 (Dout0..1)                               |
| 20 Continuous output current                        | A 1.5 (Load: resistive, inductive)         |
| <b>Analog inputs</b>                                |                                            |
| 21 Number                                           | 2 (Ain0..1)                                |
| 22 Signal type - Ain0                               | +/- 10 VDC, 12 Bit, differential           |
| 23 Signal type - Ain1                               | +/- 10 VDC, 12 Bit, single ended           |
| <b>Environment</b>                                  |                                            |
| 24 Operating temperature                            | °C -40...+70                               |

## Connection

|                                 |         |                                                               |
|---------------------------------|---------|---------------------------------------------------------------|
| <b>X1 Motor</b>                 |         |                                                               |
| 1                               | FE      | Functional earth                                              |
| 2                               | +Up     | Power supply voltage                                          |
| 3                               | GND     | Ground for power supply voltage                               |
| 4                               | Ma      | Motor phase A                                                 |
| 5                               | Mb      | Motor phase B                                                 |
| 6                               | Mc      | Motor phase C                                                 |
| <b>X2 Hall and inc. encoder</b> |         |                                                               |
| 1                               | H1      | Hall sensor 1                                                 |
| 2                               | H2      | Hall sensor 2                                                 |
| 3                               | H3      | Hall sensor 3                                                 |
| 4                               | A       | Inc. encoder, A channel                                       |
| 5                               | B       | Inc. encoder, B channel                                       |
| 6                               | Inx     | Inc. encoder, index channel                                   |
| 7                               | +U5V    | 5V output voltage for sensor supply<br>Sensors: encoder, hall |
| 8                               | /H1     | Hall sensor 1 inverted                                        |
| 9                               | /H2     | Hall sensor 2 inverted                                        |
| 10                              | /H3     | Hall sensor 3 inverted                                        |
| 11                              | /A      | Inc. encoder, A channel invert                                |
| 12                              | /B      | Inc. encoder, B channel inverted                              |
| 13                              | /Inx    | Inc. encoder, index channel inverted                          |
| 14                              | GND     | Ground for sensor supply (don't connect with system GND)      |
| <b>X3 I/O's and CAN</b>         |         |                                                               |
| 1                               | +Ue24V  | Electronic supply voltage                                     |
| 2                               | +Ain0   | Analog input 0, positive                                      |
| 3                               | Din0    | Digital input 0                                               |
| 4                               | Din1    | Digital input 1                                               |
| 5                               | Din2    | Digital input 2                                               |
| 6                               | Din3    | Digital input 3                                               |
| 7                               | GND     | Ground for electronic supply voltage                          |
| 8                               | -Ain0   | Analog input 0, negative                                      |
| 9                               | Dout0   | Digital output 0                                              |
| 10                              | CAN Hi  | CAN High                                                      |
| 11                              | CAN Lo  | CAN Low                                                       |
| 12                              | CAN GND | CAN Ground                                                    |
| <b>X4 I/O's</b>                 |         |                                                               |
| 1                               | Ain1    | Analog input 1                                                |
| 2                               | Din4    | Digital input 4                                               |
| 3                               | Din5    | Digital input 5                                               |
| 4                               | Din6    | Digital input 6                                               |
| 5                               | Dout1   | Digital output 1                                              |
| 6                               | Din7    | Digital input 7                                               |

# SVTE-A-E45-EtherCAT Servo Drives

60VDC | 10A  
DC motors, BLDC motors



CANopen | EtherCAT

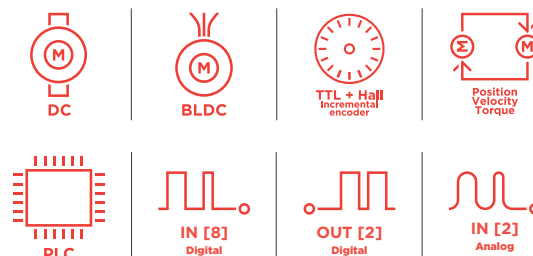
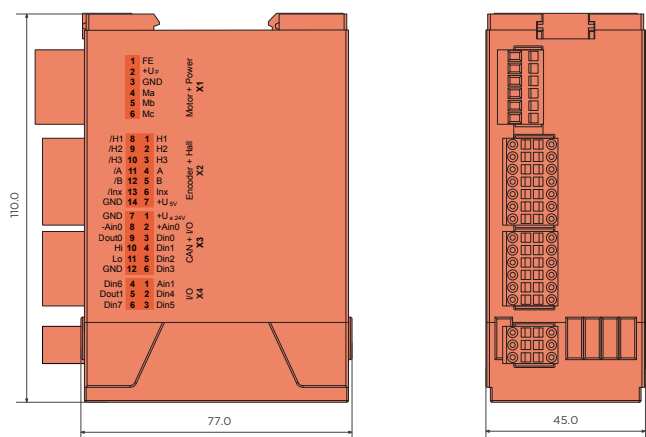
| Values                                 | Unit                                       |
|----------------------------------------|--------------------------------------------|
| <b>Power</b>                           |                                            |
| 1 Electronic supply voltage Ue         | VDC 9..30                                  |
| 2 Power supply voltage Up              | VDC 9..60                                  |
| 3 Max. output current                  | A 50                                       |
| 4 Continuous output current @ Up=24VDC | A 10                                       |
| 5 Continuous output current @ Up=48VDC | A 8.5                                      |
| 6 Output voltage                       | Up to 100%                                 |
| <b>Motor types</b>                     |                                            |
| 7 DC motors                            | yes                                        |
| 8 BLDC motors                          | yes                                        |
| 9 Stepper motors                       | no                                         |
| <b>Mechanical</b>                      |                                            |
| 10 Size LxWxH                          | mm 110 x 45 x 77                           |
| <b>CAN bus</b>                         |                                            |
| 11 Protocol                            | DS301                                      |
| 12 Device profile                      | DS402                                      |
| 13 Galvanically isolated               | no                                         |
| <b>EtherCAT</b>                        |                                            |
| 14 Type                                | EtherCAT Slave                             |
| 15 Physical layer                      | 100 Base-Tx EtherCAT                       |
| 16 Max. baudrate                       | 100 Mbit/s                                 |
| 17 Number of ports                     | 2xRJ45 (In,Out)                            |
| 18 Protocol                            | CoE (CANopen over EtherCAT)                |
| <b>Incremental encoder</b>             |                                            |
| 19 Input voltage (24VDC tolerant)      | VDC 0..5                                   |
| 20 Signal type                         | differential, open collector, single ended |
| <b>Hall sensors</b>                    |                                            |
| 21 Input voltage (24VDC tolerant)      | VDC 0..5                                   |
| 22 Signal type                         | differential, open collector, single ended |
| <b>Digital input</b>                   |                                            |
| 23 Number                              | 8 (Din0..7)                                |
| <b>Digital output</b>                  |                                            |
| 24 Number                              | 2 (Dout0..1)                               |
| 25 Continuous output current           | A 1.5 (Load: resistive, inductive)         |
| <b>Analog inputs</b>                   |                                            |
| 26 Number                              | 2 (Ain0..1)                                |
| 27 Signal type - Ain0                  | +/- 10 VDC, 12 Bit, differential           |
| 28 Signal type - Ain1                  | +/- 10 VDC, 12 Bit, single ended           |
| <b>Environment</b>                     |                                            |
| 29 Operating temperature               | °C -25...+70                               |

## Connection

|                                 |         |                                                               |
|---------------------------------|---------|---------------------------------------------------------------|
| <b>X1 Motor</b>                 |         |                                                               |
| 1                               | FE      | Functional earth                                              |
| 2                               | +Up     | Power supply voltage                                          |
| 3                               | GND     | Ground for power supply voltage                               |
| 4                               | Ma      | Motor phase A                                                 |
| 5                               | Mb      | Motor phase B                                                 |
| 6                               | Mc      | Motor phase C                                                 |
| <b>X2 Hall and inc. encoder</b> |         |                                                               |
| 1                               | H1      | Hall sensor 1                                                 |
| 2                               | H2      | Hall sensor 2                                                 |
| 3                               | H3      | Hall sensor 3                                                 |
| 4                               | A       | Inc. encoder, A channel                                       |
| 5                               | B       | Inc. encoder, B channel                                       |
| 6                               | Inx     | Inc. encoder, index channel                                   |
| 7                               | +U5V    | 5V output voltage for sensor supply<br>Sensors: encoder, hall |
| 8                               | /H1     | Hall sensor 1 inverted                                        |
| 9                               | /H2     | Hall sensor 2 inverted                                        |
| 10                              | /H3     | Hall sensor 3 inverted                                        |
| 11                              | /A      | Inc. encoder, A channel invert                                |
| 12                              | /B      | Inc. encoder, B channel inverted                              |
| 13                              | /Inx    | Inc. encoder, index channel inverted                          |
| 14                              | GND     | Ground for sensor supply (don't connect with system GND)      |
| <b>X3 I/O's and CAN</b>         |         |                                                               |
| 1                               | +Ue24V  | Electronic supply voltage                                     |
| 2                               | +Ain0   | Analog input 0, positive                                      |
| 3                               | Din0    | Digital input 0                                               |
| 4                               | Din1    | Digital input 1                                               |
| 5                               | Din2    | Digital input 2                                               |
| 6                               | Din3    | Digital input 3                                               |
| 7                               | GND     | Ground for electronic supply voltage                          |
| 8                               | -Ain0   | Analog input 0, negative                                      |
| 9                               | Dout0   | Digital output 0                                              |
| 10                              | CAN Hi  | CAN High                                                      |
| 11                              | CAN Lo  | CAN Low                                                       |
| 12                              | CAN GND | CAN Ground                                                    |
| <b>X4 I/O's</b>                 |         |                                                               |
| 1                               | Ain1    | Analog input 1                                                |
| 2                               | Din4    | Digital input 4                                               |
| 3                               | Din5    | Digital input 5                                               |
| 4                               | Din6    | Digital input 6                                               |
| 5                               | Dout1   | Digital output 1                                              |
| 6                               | Din7    | Digital input 7                                               |
| <b>X5 EtherCAT - In port</b>    |         |                                                               |
| <b>X6 EtherCAT - Out port</b>   |         |                                                               |

# SVTE-A-E45-Profinet Servo Drives

60VDC | 10A  
DC motors, BLDC motors



CANopen | PROFInet

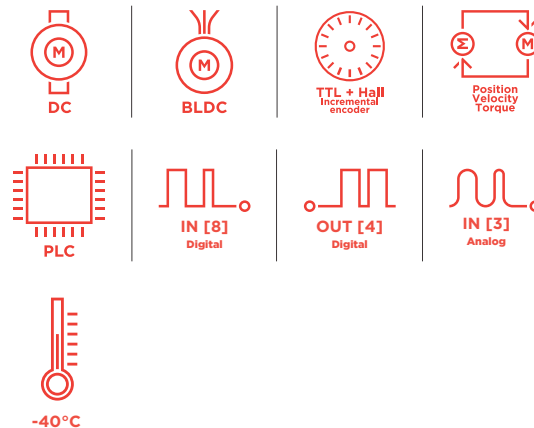
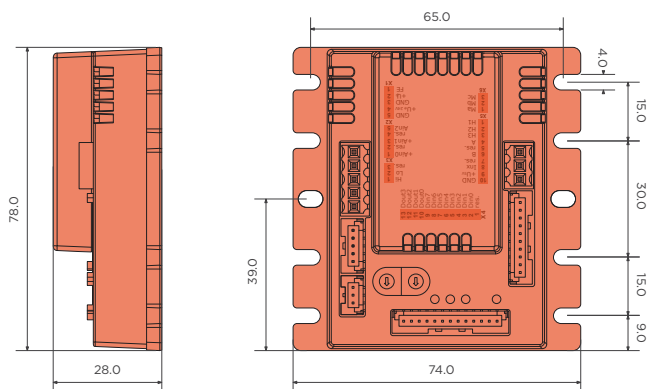
| Values                                 | Unit                                       |
|----------------------------------------|--------------------------------------------|
| <b>Power</b>                           |                                            |
| 1 Electronic supply voltage Ue         | VDC 9..30                                  |
| 2 Power supply voltage Up              | VDC 9..60                                  |
| 3 Max. output current                  | A 50                                       |
| 4 Continuous output current @ Up=24VDC | A 10                                       |
| 5 Continuous output current @ Up=48VDC | A 8.5                                      |
| 6 Output voltage                       | Up to 100%                                 |
| <b>Motor types</b>                     |                                            |
| 7 DC motors                            | yes                                        |
| 8 BLDC motors                          | yes                                        |
| 9 Stepper motors                       | no                                         |
| <b>Mechanical</b>                      |                                            |
| 10 Size LxWxH                          | mm 110 x 45 x 77                           |
| <b>CAN bus</b>                         |                                            |
| 11 Protocol                            | DS301                                      |
| 12 Device profile                      | DS402                                      |
| 13 Galvanically isolated               | no                                         |
| <b>Profinet</b>                        |                                            |
| 14 Type                                | Slave                                      |
| 15 Physical layer                      | 100 Base-Tx                                |
| 16 Max. baudrate                       | 100 Mbit/s                                 |
| 17 Number of ports                     | 2xRJ45 (PORT1,PORT2)                       |
| <b>Incremental encoder</b>             |                                            |
| 18 Input voltage (24VDC tolerant)      | VDC 0..5                                   |
| 19 Signal type                         | differential, open collector, single ended |
| <b>Hall sensors</b>                    |                                            |
| 20 Input voltage (24VDC tolerant)      | VDC 0..5                                   |
| 21 Signal type                         | differential, open collector, single ended |
| <b>Digital input</b>                   |                                            |
| 22 Number                              | 8 (Din0..7)                                |
| <b>Digital output</b>                  |                                            |
| 23 Number                              | 2 (Dout0..1)                               |
| 24 Continuous output current           | A 1.5 (Load: resistive, inductive)         |
| <b>Analog inputs</b>                   |                                            |
| 25 Number                              | 2 (Ain0..1)                                |
| 26 Signal type - Ain0                  | +/- 10 VDC, 12 Bit, differential           |
| 27 Signal type - Ain1                  | +/- 10 VDC, 12 Bit, single ended           |
| <b>Environment</b>                     |                                            |
| 28 Operating temperature               | °C -25...+40                               |

## Connection

|                                 |         |                                                               |
|---------------------------------|---------|---------------------------------------------------------------|
| <b>X1 Motor</b>                 |         |                                                               |
| 1                               | FE      | Functional earth                                              |
| 2                               | +Up     | Power supply voltage                                          |
| 3                               | GND     | Ground for power supply voltage                               |
| 4                               | Ma      | Motor phase A                                                 |
| 5                               | Mb      | Motor phase B                                                 |
| 6                               | Mc      | Motor phase C                                                 |
| <b>X2 Hall and inc. encoder</b> |         |                                                               |
| 1                               | H1      | Hall sensor 1                                                 |
| 2                               | H2      | Hall sensor 2                                                 |
| 3                               | H3      | Hall sensor 3                                                 |
| 4                               | A       | Inc. encoder, A channel                                       |
| 5                               | B       | Inc. encoder, B channel                                       |
| 6                               | Inx     | Inc. encoder, index channel                                   |
| 7                               | +U5V    | 5V output voltage for sensor supply<br>Sensors: encoder, hall |
| 8                               | /H1     | Hall sensor 1 inverted                                        |
| 9                               | /H2     | Hall sensor 2 inverted                                        |
| 10                              | /H3     | Hall sensor 3 inverted                                        |
| 11                              | /A      | Inc. encoder, A channel invert                                |
| 12                              | /B      | Inc. encoder, B channel inverted                              |
| 13                              | /Inx    | Inc. encoder, index channel inverted                          |
| 14                              | GND     | Ground for sensor supply (don't connect with system GND)      |
| <b>X3 I/O's and CAN</b>         |         |                                                               |
| 1                               | +Ue24V  | Electronic supply voltage                                     |
| 2                               | +Ain0   | Analog input 0, positive                                      |
| 3                               | Din0    | Digital input 0                                               |
| 4                               | Din1    | Digital input 1                                               |
| 5                               | Din2    | Digital input 2                                               |
| 6                               | Din3    | Digital input 3                                               |
| 7                               | GND     | Ground for electronic supply voltage                          |
| 8                               | -Ain0   | Analog input 0, negative                                      |
| 9                               | Dout0   | Digital output 0                                              |
| 10                              | CAN Hi  | CAN High                                                      |
| 11                              | CAN Lo  | CAN Low                                                       |
| 12                              | CAN GND | CAN Ground                                                    |
| <b>X4 I/O's</b>                 |         |                                                               |
| 1                               | Ain1    | Analog input 1                                                |
| 2                               | Din4    | Digital input 4                                               |
| 3                               | Din5    | Digital input 5                                               |
| 4                               | Din6    | Digital input 6                                               |
| 5                               | Dout1   | Digital output 1                                              |
| 6                               | Din7    | Digital input 7                                               |
| <b>X5 Profinet - PORT1</b>      |         |                                                               |
| <b>X6 Profinet - PORT2</b>      |         |                                                               |

# SVTE-A-E50-CanOpen Servo Drives

60VDC | 7.5A  
DC motors, BLDC motors



**CANopen**

| Values                                                             | Unit                               |
|--------------------------------------------------------------------|------------------------------------|
| <b>Power</b>                                                       |                                    |
| 1 Electronic supply voltage U <sub>e</sub>                         | VDC 9..30                          |
| 2 Power supply voltage U <sub>p</sub>                              | VDC 9..60                          |
| 3 Max. output current                                              | A 25                               |
| 4 Continuous output current @ U <sub>p</sub> =24VDC (certified UL) | A 7.5                              |
| 5 Continuous output current @ U <sub>p</sub> =60VDC (certified UL) | A 7                                |
| 6 Output voltage                                                   | Up to 90%                          |
| <b>Motor types</b>                                                 |                                    |
| 7 DC motors                                                        | Yes                                |
| 8 BLDC motors                                                      | Yes                                |
| 9 Stepper motors                                                   | No                                 |
| <b>Mechanical</b>                                                  |                                    |
| 10 Size LxWxH                                                      | mm 78 x 74 x 28                    |
| <b>CAN bus</b>                                                     |                                    |
| 11 Protocol                                                        | DS301                              |
| 12 Device profile                                                  | DS402                              |
| 13 Galvanically isolated                                           | no                                 |
| <b>Incremental encoder</b>                                         |                                    |
| 14 Input voltage                                                   | VDC 0..5                           |
| 15 Signal type                                                     | open collector, single ended       |
| <b>Hall sensors</b>                                                |                                    |
| 16 Input voltage                                                   | VDC 0..5                           |
| 17 Signal type                                                     | open collector, single ended       |
| <b>Digital input</b>                                               |                                    |
| 18 Number                                                          | 8 (Din0..7)                        |
| <b>Digital output</b>                                              |                                    |
| 19 Number                                                          | 4 (Dout0..3)                       |
| 20 Continuous output current                                       | A 0.3 (Load: resistive, inductive) |
| <b>Analog inputs</b>                                               |                                    |
| 21 Number                                                          | 3 (Ain0..2)                        |
| 22 Signal type - Ain0..1                                           | 0..10V, 12 Bit, Single Ended       |
| 23 Signal type - Ain2                                              | 0..5V, 12 Bit, Single Ended        |
| <b>Environment</b>                                                 |                                    |
| 24 Operating temperature                                           | °C -40..+70°C                      |

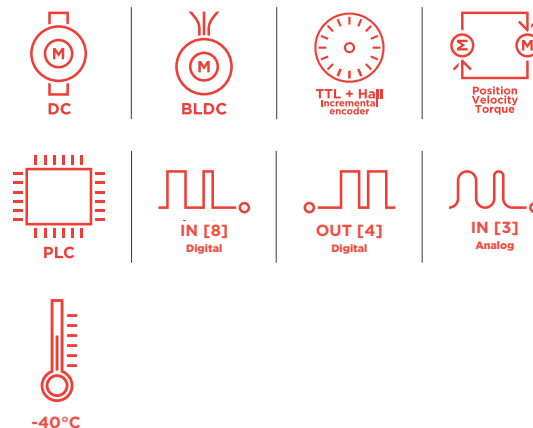
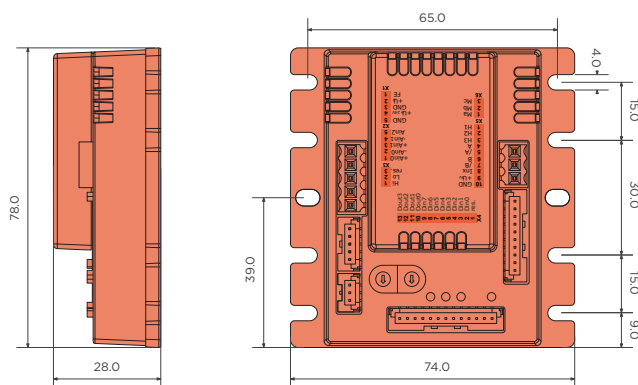


## Connection

|                                  |        |                                                          |
|----------------------------------|--------|----------------------------------------------------------|
| <b>X1 Supply</b>                 |        |                                                          |
| 1                                | FE     | Functional earth                                         |
| 2                                | +Up    | Power supply voltage                                     |
| 3                                | GND    | Ground for power supply voltage                          |
| 4                                | +Ue24V | Electronic supply voltage                                |
| 5                                | GND    | Ground for electronic supply voltage                     |
| <b>X2 Analog Inputs</b>          |        |                                                          |
| 1                                | Ain0   | Analog input 0                                           |
| 2                                | res.   | Reserved                                                 |
| 3                                | Ain1   | Analog input 1                                           |
| 4                                | res.   | Reserved                                                 |
| 5                                | Ain2   | Analog Input 2 (5V)                                      |
| <b>X3 CAN bus</b>                |        |                                                          |
| 1                                | CAN Hi | CAN High                                                 |
| 2                                | CAN Lo | CAN Low                                                  |
| 3                                | res.   | Reserved                                                 |
| <b>X4 Digital inputs/outputs</b> |        |                                                          |
| 1                                | res.   | Reserved                                                 |
| 2                                | Din0   | Digital input 0                                          |
| 3                                | Din1   | Digital input 1                                          |
| 4                                | Din2   | Digital input 2                                          |
| 5                                | Din3   | Digital input 3                                          |
| 6                                | Din4   | Digital input 4                                          |
| 7                                | Din5   | Digital input 5                                          |
| 8                                | Din6   | Digital input 6                                          |
| 9                                | Din7   | Digital input 7                                          |
| 10                               | Dout0  | Digital output 0                                         |
| 11                               | Dout1  | Digital output 1                                         |
| 12                               | Dout2  | Digital output 2                                         |
| 13                               | Dout3  | Digital output 3                                         |
| <b>X5 Hall and inc. encoder</b>  |        |                                                          |
| 1                                | H1     | Hall sensor 1                                            |
| 2                                | H2     | Hall sensor 2                                            |
| 3                                | H3     | Hall sensor 3                                            |
| 4                                | A      | Inc. encoder, A channel                                  |
| 5                                | res.   | Reserved                                                 |
| 6                                | B      | Inc. encoder, B channel                                  |
| 7                                | res.   | Reserved                                                 |
| 8                                | Inx    | Inc. encoder, index channel                              |
| 9                                | +U5V   | 5V output voltage for sensor supply                      |
| 10                               | GND    | Ground for sensor supply (don't connect with system GND) |
| <b>X6 Motor</b>                  |        |                                                          |
| 1                                | Ma     | Motor phase A                                            |
| 2                                | Mb     | Motor phase B                                            |
| 3                                | Mc     | Motor phase C                                            |

# SVTE-A-E55-CanOpen Servo Drives

60VDC | 10A  
DC motors, BLDC motors



CANopen

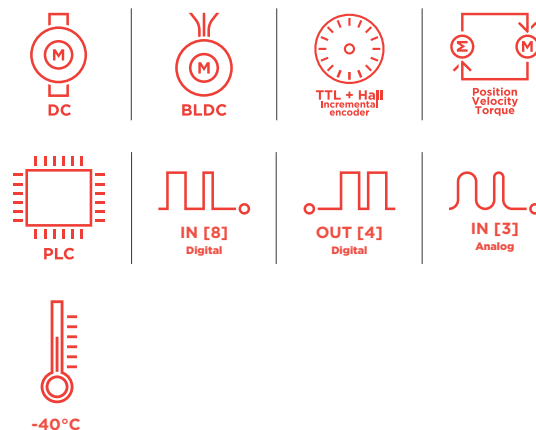
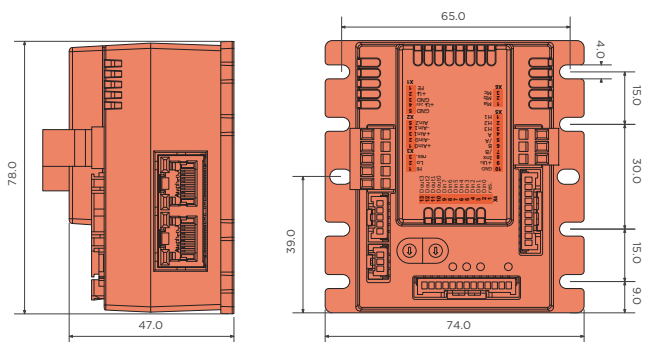
| Values                                              | Unit                                                                 |
|-----------------------------------------------------|----------------------------------------------------------------------|
| <b>Power</b>                                        |                                                                      |
| 1 Electronic supply voltage U <sub>e</sub>          | VDC 9..30                                                            |
| 2 Power supply voltage U <sub>p</sub>               | VDC 9..60                                                            |
| 3 Max. output current                               | A 50                                                                 |
| 4 Continuous output current @ U <sub>p</sub> =24VDC | A 10                                                                 |
| 5 Continuous output current @ U <sub>p</sub> =48VDC | A 8.5                                                                |
| 6 Output voltage                                    | Up to 100%                                                           |
| <b>Motor types</b>                                  |                                                                      |
| 7 DC motors                                         | yes                                                                  |
| 8 BLDC motors                                       | yes                                                                  |
| 9 Stepper motors                                    | no                                                                   |
| <b>Mechanical</b>                                   |                                                                      |
| 10 Size LxWxH                                       | mm 78 x 74 x 28                                                      |
| <b>CAN bus</b>                                      |                                                                      |
| 11 Protocol                                         | DS301                                                                |
| 12 Device profile                                   | DS402                                                                |
| 13 Galvanically isolated                            | no                                                                   |
| <b>Incremental encoder</b>                          |                                                                      |
| 14 Input voltage (24VDC tolerant)                   | VDC 0..5                                                             |
| 15 Signal type                                      | differential, open collector, single ended, 2,5 kOhm input impedance |
| <b>Hall sensor</b>                                  |                                                                      |
| 16 Input voltage                                    | VDC 0..5                                                             |
| 17 Signal type                                      | open collector, single ended, 5Vdc pull up intern 920 Ohm            |
| <b>Digital input</b>                                |                                                                      |
| 18 Number                                           | 8 (Din0..7)                                                          |
| <b>Digital output</b>                               |                                                                      |
| 19 Number                                           | 4 (Dout0..3)                                                         |
| 20 Continuous output current                        | A 0.3 (Load: resistive, inductive)                                   |
| <b>Analog inputs</b>                                |                                                                      |
| 21 Number                                           | 3 (Ain0..2)                                                          |
| 22 Signal type - Ain0..1                            | +/- 10VDC, 12 Bit, differential, 200 kOhm input impedance            |
| 23 Signal type - Ain2                               | 0..5 VDC, 12 Bit, single ended, 5VDC pull up intern 1,5 kOhm         |
| <b>Environment</b>                                  |                                                                      |
| 24 Operating temperature                            | °C -40...+70                                                         |

## Connection

|                                  |        |                                                          |
|----------------------------------|--------|----------------------------------------------------------|
| <b>X1 Supply</b>                 |        |                                                          |
| 1                                | FE     | Functional earth                                         |
| 2                                | +Up    | Power supply voltage                                     |
| 3                                | GND    | Ground for power supply voltage                          |
| 4                                | +Ue24V | Electronic supply voltage                                |
| 5                                | GND    | Ground for electronic supply voltage                     |
| <b>X2 Analog Inputs</b>          |        |                                                          |
| 1                                | +Ain0  | Analog input 0, positive                                 |
| 2                                | -Ain0  | Analog input 0, negative                                 |
| 3                                | +Ain1  | Analog input 1, positive                                 |
| 4                                | -Ain1  | Analog input 1, negative                                 |
| 5                                | Ain2   | Analog Input 2 (5V)                                      |
| <b>X3 CAN bus</b>                |        |                                                          |
| 1                                | CAN Hi | CAN High                                                 |
| 2                                | CAN Lo | CAN Low                                                  |
| 3                                | res.   | Reserved                                                 |
| <b>X4 Digital inputs/outputs</b> |        |                                                          |
| 1                                | res.   | Reserved                                                 |
| 2                                | Din0   | Digital input 0                                          |
| 3                                | Din1   | Digital input 1                                          |
| 4                                | Din2   | Digital input 2                                          |
| 5                                | Din3   | Digital input 3                                          |
| 6                                | Din4   | Digital input 4                                          |
| 7                                | Din5   | Digital input 5                                          |
| 8                                | Din6   | Digital input 6                                          |
| 9                                | Din7   | Digital input 7                                          |
| 10                               | Dout0  | Digital output 0                                         |
| 11                               | Dout1  | Digital output 1                                         |
| 12                               | Dout2  | Digital output 2                                         |
| 13                               | Dout3  | Digital output 3                                         |
| <b>X5 Hall and inc. encoder</b>  |        |                                                          |
| 1                                | H1     | Hall sensor 1                                            |
| 2                                | H2     | Hall sensor 2                                            |
| 3                                | H3     | Hall sensor 3                                            |
| 4                                | A      | Inc. encoder, A channel                                  |
| 5                                | /A     | Inc. encoder, A channel invert                           |
| 6                                | B      | Inc. encoder, B channel                                  |
| 7                                | /B     | Inc. encoder, B channel inverted                         |
| 8                                | Inx    | Inc. encoder, index channel                              |
| 9                                | +U5V   | 5V output voltage for sensor supply                      |
| 10                               | GND    | Ground for sensor supply (don't connect with system GND) |
| <b>X6 Motor</b>                  |        |                                                          |
| 1                                | Ma     | Motor phase A                                            |
| 2                                | Mb     | Motor phase B                                            |
| 3                                | Mc     | Motor phase C                                            |

# SVTE-A-E55-EtherCAT Servo Drives

60VDC | 8A  
DC motors, BLDC motors



CANopen | EtherCAT

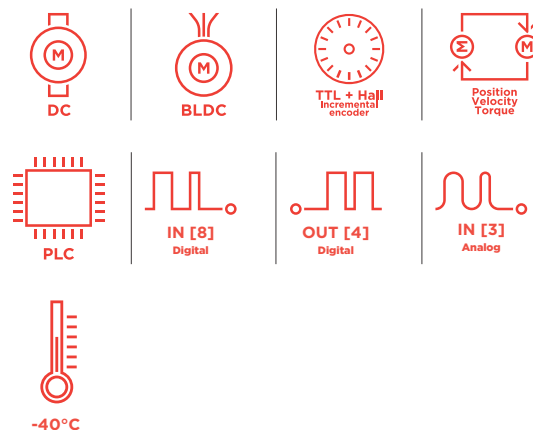
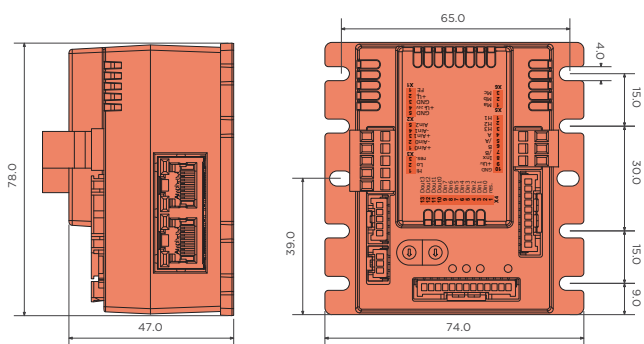
| Values                                     | Unit                                       |
|--------------------------------------------|--------------------------------------------|
| <b>Power</b>                               |                                            |
| 1 Electronic supply voltage U <sub>e</sub> | VDC 9..30                                  |
| 2 Power supply voltage U <sub>p</sub>      | VDC 9..60                                  |
| 3 Max. output current                      | A 50                                       |
| 4 Continuous output current                | A 8                                        |
| 5 Output voltage                           | Up to 100%                                 |
| <b>Motor types</b>                         |                                            |
| 6 DC motors                                | yes                                        |
| 7 BLDC motors                              | yes                                        |
| 8 Stepper motors                           | no                                         |
| <b>Mechanical</b>                          |                                            |
| 9 Size LxWxH                               | mm 78x74x47                                |
| <b>CAN bus</b>                             |                                            |
| 10 Protocol                                | DS301                                      |
| 11 Device profile                          | DS402                                      |
| 12 Galvanically isolated                   | no                                         |
| <b>EtherCAT</b>                            |                                            |
| 13 Type                                    | EtherCAT Slave                             |
| 14 Physical layer                          | 100 Base-Tx EtherCAT                       |
| 15 Max. baudrate                           | 100 Mbit/s                                 |
| 16 Number of ports                         | 2xRJ45 (In,Out)                            |
| 17 Protocol                                | CoE (CANopen over EtherCAT)                |
| <b>Incremental encoder</b>                 |                                            |
| 18 Input voltage (24VDC tolerant)          | 0..5                                       |
| 19 Signal type                             | differential, open collector, single ended |
| <b>Hall sensors</b>                        |                                            |
| 20 Input voltage                           | 0..5                                       |
| 21 Signal type                             | open collector, single ended               |
| <b>Digital input</b>                       |                                            |
| 22 Number                                  | 8 (Din0..7)                                |
| <b>Digital output</b>                      |                                            |
| 23 Number                                  | 4 (Dout0..3)                               |
| 24 Continuous output current               | A 0.3 (Load: resistive, inductive)         |
| <b>Analog inputs</b>                       |                                            |
| 25 Number                                  | 3 (Ain0..2)                                |
| 26 Signal type - Ain0..1                   | +/- 10 VDC, 12 Bit, differential           |
| 27 Signal type - Ain2                      | 0..5VDC, 12 Bit, single ended              |
| <b>Environment</b>                         |                                            |
| 28 Operating temperature                   | °C -40...+70                               |

## Connection

|                                  |        |                                                          |
|----------------------------------|--------|----------------------------------------------------------|
| <b>X1 Supply</b>                 |        |                                                          |
| 1                                | FE     | Functional earth                                         |
| 2                                | +Up    | Power supply voltage                                     |
| 3                                | GND    | Ground for power supply voltage                          |
| 4                                | +Ue24V | Electronic supply voltage                                |
| 5                                | GND    | Ground for electronic supply voltage                     |
| <b>X2 Analog Inputs</b>          |        |                                                          |
| 1                                | +Ain0  | Analog input 0, positive                                 |
| 2                                | -Ain0  | Analog input 0, negative                                 |
| 3                                | +Ain1  | Analog input 1, positive                                 |
| 4                                | -Ain1  | Analog input 1, negative                                 |
| 5                                | Ain2   | Analog Input 2 (5V)                                      |
| <b>X3 CAN bus</b>                |        |                                                          |
| 1                                | CAN Hi | CAN High                                                 |
| 2                                | CAN Lo | CAN Low                                                  |
| 3                                | res.   | Reserved                                                 |
| <b>X4 Digital inputs/outputs</b> |        |                                                          |
| 1                                | res.   | Reserved                                                 |
| 2                                | Din0   | Digital input 0                                          |
| 3                                | Din1   | Digital input 1                                          |
| 4                                | Din2   | Digital input 2                                          |
| 5                                | Din3   | Digital input 3                                          |
| 6                                | Din4   | Digital input 4                                          |
| 7                                | Din5   | Digital input 5                                          |
| 8                                | Din6   | Digital input 6                                          |
| 9                                | Din7   | Digital input 7                                          |
| 10                               | Dout0  | Digital output 0                                         |
| 11                               | Dout1  | Digital output 1                                         |
| 12                               | Dout2  | Digital output 2                                         |
| 13                               | Dout3  | Digital output 3                                         |
| <b>X5 Hall and inc. encoder</b>  |        |                                                          |
| 1                                | H1     | Hall sensor 1                                            |
| 2                                | H2     | Hall sensor 2                                            |
| 3                                | H3     | Hall sensor 3                                            |
| 4                                | A      | Inc. encoder, A channel                                  |
| 5                                | /A     | Inc. encoder, A channel invert                           |
| 6                                | B      | Inc. encoder, B channel                                  |
| 7                                | /B     | Inc. encoder, B channel inverted                         |
| 8                                | Inx    | Inc. encoder, index channel                              |
| 9                                | +U5V   | 5V output voltage for sensor supply                      |
| 10                               | GND    | Ground for sensor supply (don't connect with system GND) |
| <b>X6 Motor</b>                  |        |                                                          |
| 1                                | Ma     | Motor phase A                                            |
| 2                                | Mb     | Motor phase B                                            |
| 3                                | Mc     | Motor phase C                                            |
| <b>X7 EtherCAT - In port</b>     |        |                                                          |
| <b>X8 EtherCAT - Out port</b>    |        |                                                          |

# SVTE-A-E55-Profinet Servo Drives

60VDC | 9A  
DC motors, BLDC motors



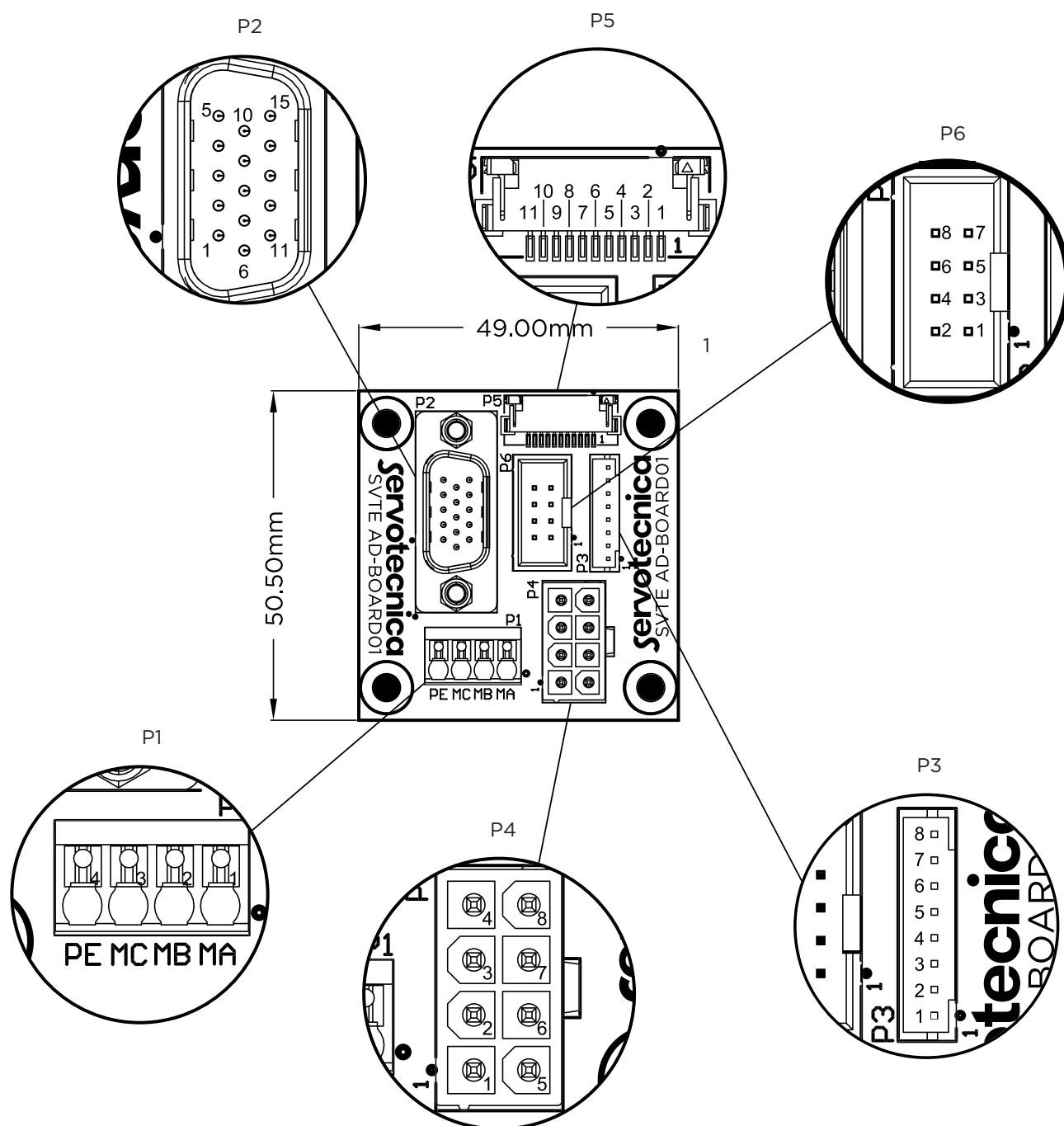
CANopen | PROFINET

| Values                                 | Unit                                                                 |
|----------------------------------------|----------------------------------------------------------------------|
| <b>Power</b>                           |                                                                      |
| 1 Electronic supply voltage Ue         | VDC 9..30                                                            |
| 2 Power supply voltage Up              | VDC 9..60                                                            |
| 3 Max. output current                  | A 50                                                                 |
| 4 Continuous output current @ Up=24VDC | A 9                                                                  |
| 5 Continuous output current @ Up=48VDC | A 8                                                                  |
| 6 Output voltage                       | Up to 100%                                                           |
| <b>Motor types</b>                     |                                                                      |
| 7 DC motors                            | yes                                                                  |
| 8 BLDC motors                          | yes                                                                  |
| 9 Stepper motors                       | no                                                                   |
| <b>Mechanical</b>                      |                                                                      |
| 10 Size LxWxH                          | mm 78 x 74 x 47                                                      |
| <b>CAN bus</b>                         |                                                                      |
| 11 Protocol                            | DS301                                                                |
| 12 Device profile                      | DS402                                                                |
| 13 Galvanically isolated               | no                                                                   |
| <b>Profinet</b>                        |                                                                      |
| 14 Type                                | Slave                                                                |
| 15 Physical layer                      | 100 Base-Tx                                                          |
| 16 Max. baudrate                       | 100 Mbit/s                                                           |
| 17 Number of ports                     | 2xRJ45 (PORT1, PORT2)                                                |
| <b>Incremental encoder</b>             |                                                                      |
| 18 Input voltage (24VDC tolerant)      | VDC 0..5                                                             |
| 19 Signal type                         | differential, open collector, single ended, 2.5 kOhm input impedance |
| <b>Hall sensors</b>                    |                                                                      |
| 20 Input voltage                       | VDC 0..5                                                             |
| 21 Signal type                         | open collector, single ended, 5VDC pull up intern 920 Ohm            |
| <b>Digital input</b>                   |                                                                      |
| 22 Number                              | 8 (Din0..7)                                                          |
| <b>Digital output</b>                  |                                                                      |
| 23 Number                              | 4 (Dout0..3)                                                         |
| 24 Continuous output current           | A 0.3 (Load: resistive, inductive)                                   |
| <b>Analog inputs</b>                   |                                                                      |
| 25 Number                              | 3 (Ain0..2)                                                          |
| 26 Signal type - Ain0..1               | +/- 10 VDC, 12 Bit, differential, 20 kOhm input impedance            |
| 27 Signal type - Ain2                  | 0.5 VDC, 12 Bit, single ended, 5VDC pull up intern 1.5 kOhm          |
| <b>Environment</b>                     |                                                                      |
| 28 Operating temperature               | °C -40...+70                                                         |

## Connection

|                                  |        |                                                          |
|----------------------------------|--------|----------------------------------------------------------|
| <b>X1 Supply</b>                 |        |                                                          |
| 1                                | FE     | Functional earth                                         |
| 2                                | +Up    | Power supply voltage                                     |
| 3                                | GND    | Ground for power supply voltage                          |
| 4                                | +Ue24V | Electronic supply voltage                                |
| 5                                | GND    | Ground for electronic supply voltage                     |
| <b>X2 Analog Inputs</b>          |        |                                                          |
| 1                                | +Ain0  | Analog input 0, positive                                 |
| 2                                | -Ain0  | Analog input 0, negative                                 |
| 3                                | +Ain1  | Analog input 1, positive                                 |
| 4                                | -Ain1  | Analog input 1, negative                                 |
| 5                                | Ain2   | Analog Input 2 (5V)                                      |
| <b>X3 CAN bus</b>                |        |                                                          |
| 1                                | CAN Hi | CAN High                                                 |
| 2                                | CAN Lo | CAN Low                                                  |
| 3                                | res.   | Reserved                                                 |
| <b>X4 Digital inputs/outputs</b> |        |                                                          |
| 1                                | res.   | Reserved                                                 |
| 2                                | Din0   | Digital input 0                                          |
| 3                                | Din1   | Digital input 1                                          |
| 4                                | Din2   | Digital input 2                                          |
| 5                                | Din3   | Digital input 3                                          |
| 6                                | Din4   | Digital input 4                                          |
| 7                                | Din5   | Digital input 5                                          |
| 8                                | Din6   | Digital input 6                                          |
| 9                                | Din7   | Digital input 7                                          |
| 10                               | Dout0  | Digital output 0                                         |
| 11                               | Dout1  | Digital output 1                                         |
| 12                               | Dout2  | Digital output 2                                         |
| 13                               | Dout3  | Digital output 3                                         |
| <b>X5 Hall and inc. encoder</b>  |        |                                                          |
| 1                                | H1     | Hall sensor 1                                            |
| 2                                | H2     | Hall sensor 2                                            |
| 3                                | H3     | Hall sensor 3                                            |
| 4                                | A      | Inc. encoder, A channel                                  |
| 5                                | /A     | Inc. encoder, A channel invert                           |
| 6                                | B      | Inc. encoder, B channel                                  |
| 7                                | /B     | Inc. encoder, B channel inverted                         |
| 8                                | Inx    | Inc. encoder, index channel                              |
| 9                                | +U5V   | 5V output voltage for sensor supply                      |
| 10                               | GND    | Ground for sensor supply (don't connect with system GND) |
| <b>X6 Motor</b>                  |        |                                                          |
| 1                                | Ma     | Motor phase A                                            |
| 2                                | Mb     | Motor phase B                                            |
| 3                                | Mc     | Motor phase C                                            |
| <b>X7 Profinet - In port</b>     |        |                                                          |
| <b>X8 Profinet - Out port</b>    |        |                                                          |

# PCB Board & Cables





## PCB Board - SVTE AD-BOARD01

| PIN   | Connection P2 |
|-------|---------------|
| 1     | +5VD          |
| 2     | GND           |
| 3     | N.C.          |
| 4     | H1+           |
| 5     | N.C.          |
| 6     | I+            |
| 7     | B+            |
| 8     | A+            |
| 9     | H3 +          |
| 10    | H2 +          |
| 11    | I /           |
| 12    | B/            |
| 13    | A/            |
| 14    | N.C.          |
| 15    | N.C.          |
| 16/17 | SHIELD        |

| PIN   | Connection P5 |
|-------|---------------|
| 1     | +5VD          |
| 2     | H3+           |
| 3     | H1+           |
| 4     | H2+           |
| 5     | GND           |
| 6/7   | Phase - C     |
| 8/9   | Phase - B     |
| 10/11 | Phase - A     |

| PIN | Connection P6 |
|-----|---------------|
| 1   | GND           |
| 2   | +5VD          |
| 3   | I /           |
| 4   | I+            |
| 5   | B /           |
| 6   | B+            |
| 7   | A/            |
| 8   | A+            |

| PIN | Connection P3 |
|-----|---------------|
| 1   | +5VD          |
| 2   | H1+           |
| 3   | H2+           |
| 4   | H3+           |
| 5   | GND           |
| 6   | Phase - A     |
| 7   | Phase - B     |
| 8   | Phase - C     |

| PIN | Connection P4 |
|-----|---------------|
| 1   | Phase - B     |
| 2   | +5VD          |
| 3   | H1+           |
| 4   | H3+           |
| 5   | Phase - A     |
| 6   | Phase - C     |
| 7   | GND           |
| 8   | H2+           |

| PIN | Connection P1 |
|-----|---------------|
| 1   | Phase - A     |
| 2   | Phase - B     |
| 3   | Phase - C     |
| 4   | PE            |

## Cables

| Model                                           | Length [m] | Electronics |
|-------------------------------------------------|------------|-------------|
| Encoder cable e4x for svtn/svtm low voltage 1mt | 1          | SVTE-A-E4x  |
| Encoder cable e4x for svtn/svtm low voltage 3mt | 3          | SVTE-A-E4x  |
| Encoder cable e5x for svtn/svtm low voltage 1mt | 1          | SVTE-A-E5x  |
| Encoder cable e5x for svtn/svtm low voltage 3mt | 3          | SVTE-A-E5x  |

# Contacts

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**Hello,**  
how can I help you?

