

# **ATOM EC Series**

## **SVTN A 01**

Coreless BLDC motors  
2 Pole Brushless DC Motors

[illegible]

# 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]

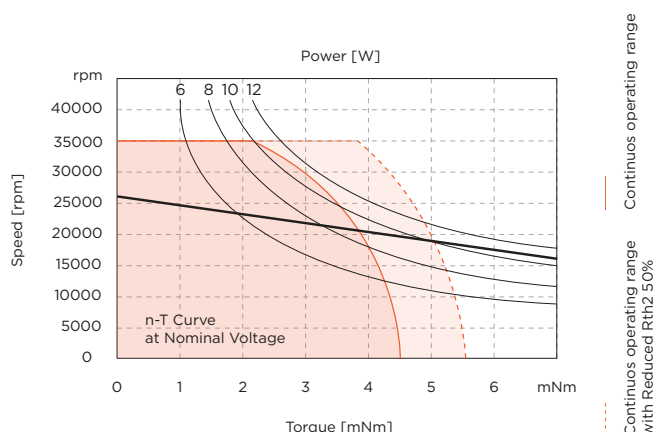
Describes the max. possible output power in continuous operation in steady state with a thermal reduction of the  $R_{th2}$  value by 50 %. The value is independent of the continuous torque, responds linearly to the cooling factor and can be exceeded if the motor is operated intermittently, for example,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

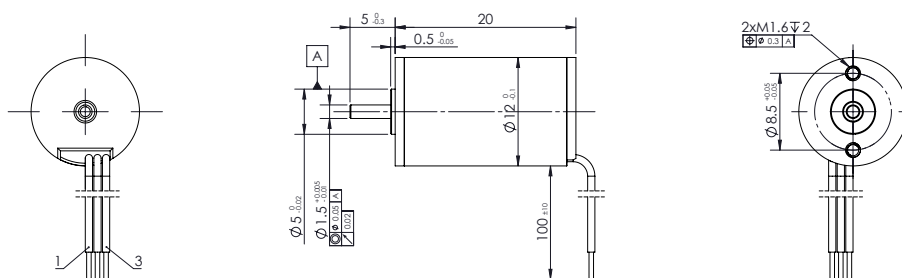
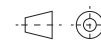
All motors have three phases.

### 30 Weight



# ATOM EC Series SVTN A 01-1220

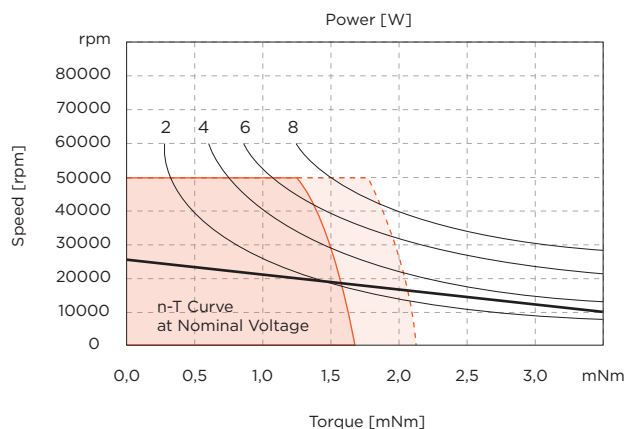
8 Watt



v3.1

| 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 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



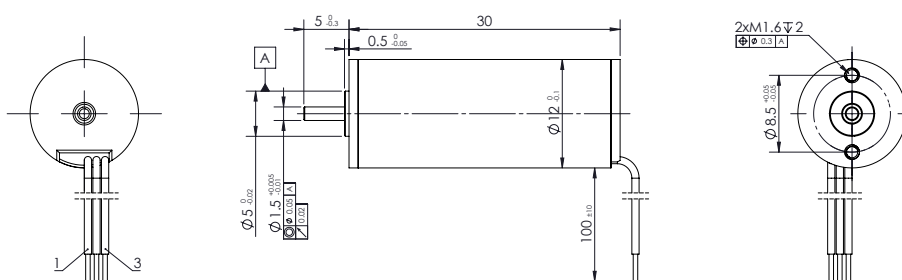
# ATOM EC Series

## SVTN A 01-1230

15 Watt



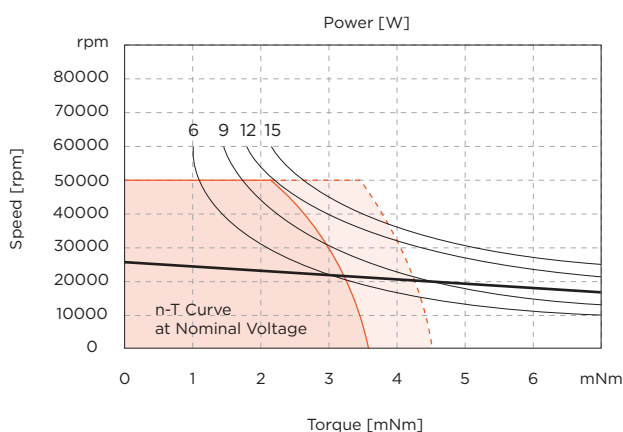
servotecnica

CORELESS  
BRUSHLESS

v3.1

| Values                                  | Unit             | SVTN A 01    | 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\*

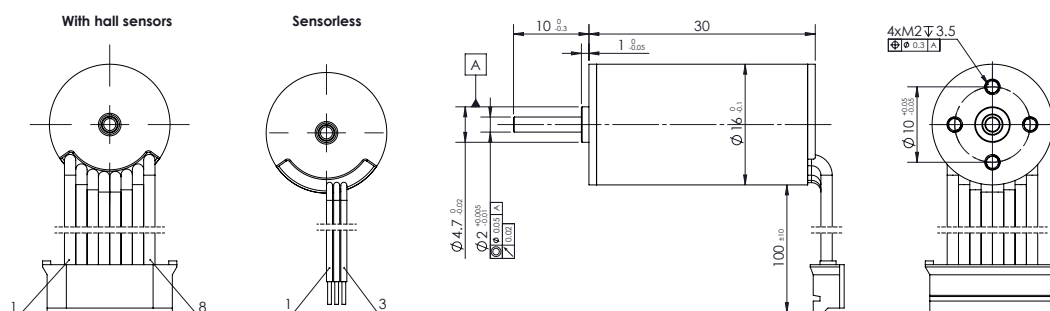
SVTG A 12\*

\*On request



# ATOM EC Series SVTN A 01-1630

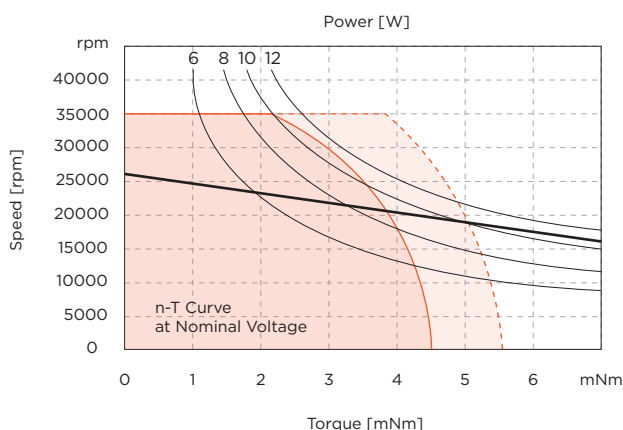
12 Watt



v3.1

| Values                                  | Unit             | SVTN A 01    | 1630-12.. | 1630-18.. | 1630-24.. |
|-----------------------------------------|------------------|--------------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |              |           |           |           |
| 1 Nominal voltage                       | V                | 12           |           |           |           |
| 2 No load speed                         | rpm              | 23220        |           |           |           |
| 3 No load current                       | mA               | 210          |           |           |           |
| 4 Nominal speed                         | rpm              | 19138        |           |           |           |
| 5 Nominal torque                        | mNm              | 3,5          |           |           |           |
| 6 Nominal current                       | A                | 0,95         |           |           |           |
| 7 Stall torque                          | mNm              | 19,9         |           |           |           |
| 8 Stall current                         | A                | 4,44         |           |           |           |
| 9 Max. efficiency                       | %                | 61,3         |           |           |           |
| <b>Characteristics</b>                  |                  |              |           |           |           |
| 10 Terminal resistance*                 | $\Omega$         | 2,7          |           |           |           |
| 11 Terminal inductance*                 | mH               | 0,08         |           |           |           |
| 12 Torque constant                      | mNm/A            | 4,7          |           |           |           |
| 13 Speed constant                       | rpm/V            | 2031         |           |           |           |
| 14 Speed/torque gradient                | rpm/mNm          | 1166         |           |           |           |
| 15 Mechanical time constant             | ms               | 5,8          |           |           |           |
| 16 Rotor inertia                        | gcm <sup>2</sup> | 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°.



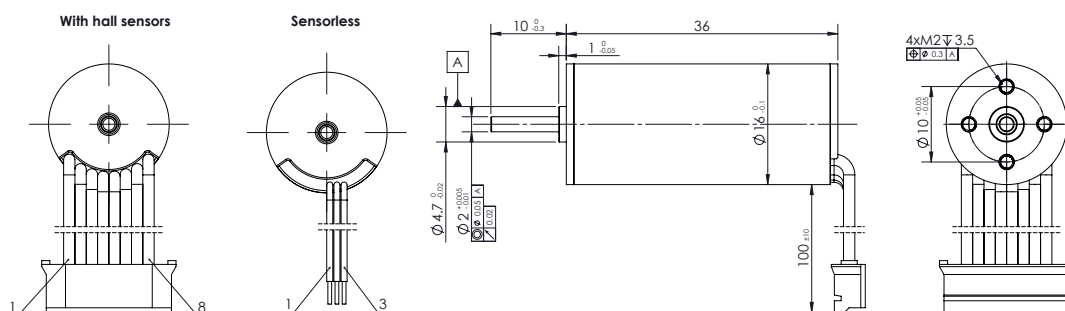
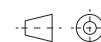
Continuous operating range  
Continuous operating range with Reduced Rth2 50%

## 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 16A                      | EN 16AL        |
| <b>Gearbox combinations</b> |                |
| SVTG A 16                   |                |



v3.1

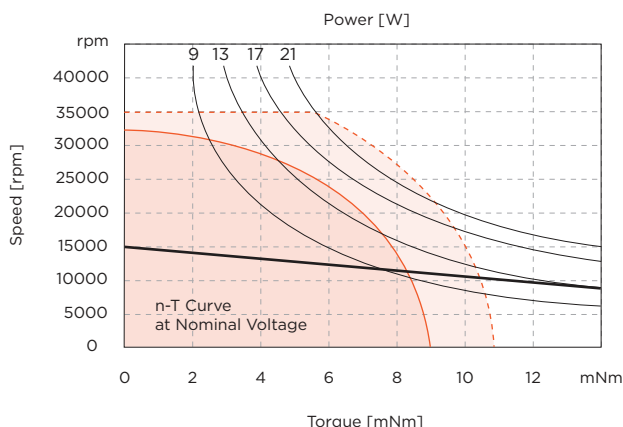
| Values                      | Unit                                 | SVTN A 01        | 1636-06.. | 1636-09.. | 1636-12.. | 1636-24.. |
|-----------------------------|--------------------------------------|------------------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>           |                                      |                  |           |           |           |           |
| 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 y-axis is Power (W) from 0 to 100. The x-axis is Temperature (°C) from 0 to 100. The curve shows a power limit that starts at approximately 100W at 0°C and decreases to about 25W at 100°C.</p> | <p>Graph showing continuous operating range. The y-axis is Power (W) from 0 to 100. The x-axis is Temperature (°C) from 0 to 100. The curve shows a power limit that starts at approximately 100W at 0°C and decreases to about 50W at 100°C.</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   |

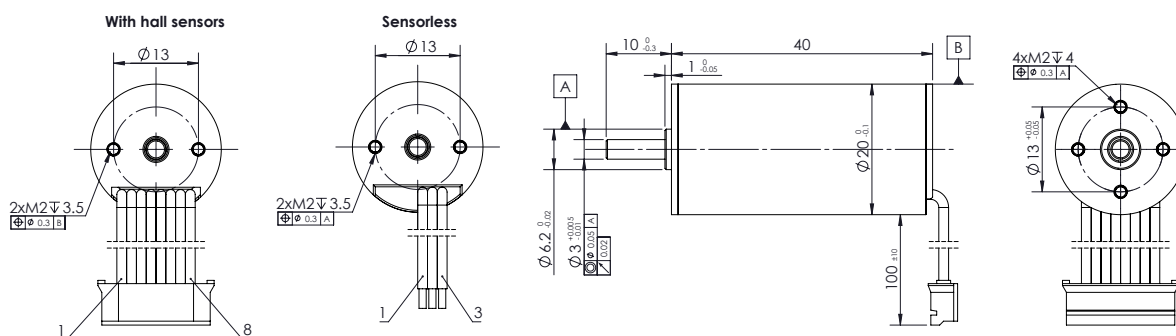
## Drive combinations

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



# ATOM EC Series SVTN A 01-2040

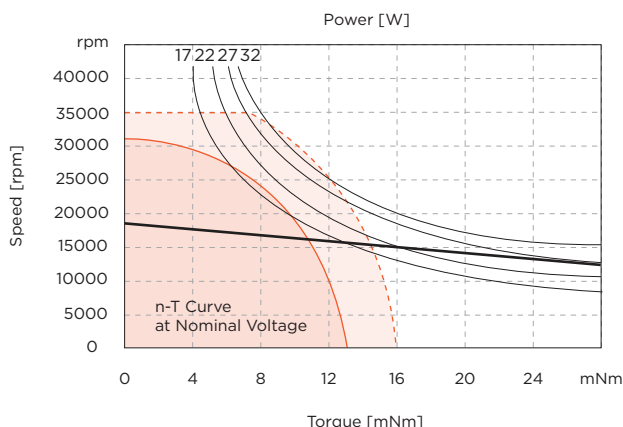
32 Watt



v3.1

| Values                                  | Unit             | SVTN A 01 | 2040-12.. | 2040-18.. | 2040-24.. | 2040-36.. |
|-----------------------------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Motor Data</b>                       |                  |           |           |           |           |           |
| 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      |           |
| <b>Characteristics</b>                  |                  |           |           |           |           |           |
| 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                        | gcm <sup>2</sup> | 2,3       | 2,3       | 2,3       | 2,3       |           |
| <b>Mechanical data</b>                  |                  |           |           |           |           |           |
| 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             |           |           |           |           |           |
| <b>Other specifications</b>             |                  |           |           |           |           |           |
| 28 Number of poles                      | 2                |           |           |           |           |           |
| 29 Number of phases                     | 3                |           |           |           |           |           |
| 30 Weight                               | 56 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 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                   |                |

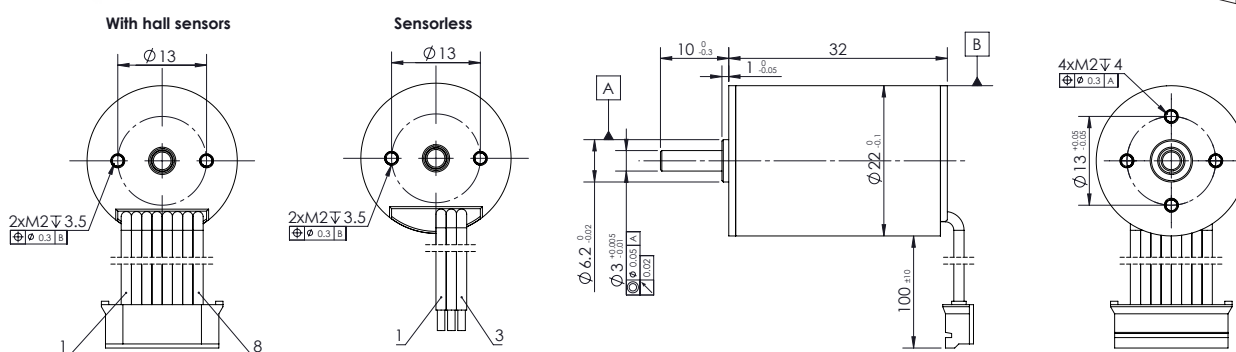


# ATOM EC Series SVTN A 01-2232

20 Watt



servotecnica  
CORELESS  
BRUSHLESS



v3.1

| 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°.

The graph plots Speed [rpm] on the y-axis (0 to 40,000) against Power [W] on the x-axis (0 to 20). Four curves are shown for nominal voltages of 8V, 12V, 16V, and 20V. The curves show that as voltage increases, the speed decreases and the power capability increases. A shaded region indicates the continuous operating range, and a dashed line indicates the maximum operating range.

Speed [rpm]

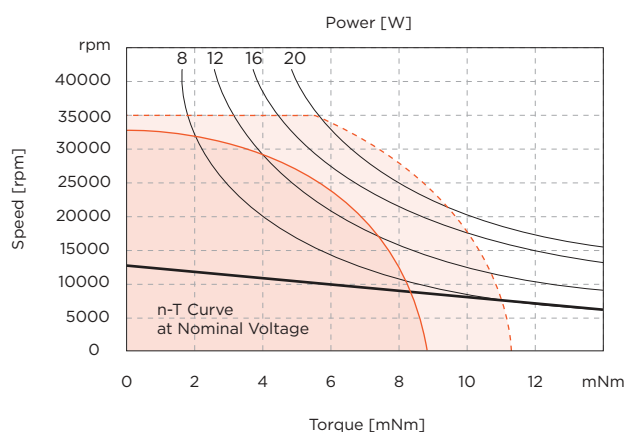
Power [W]

n-T Curve at Nominal Voltage

Continuous operating range

Maximum 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 |                  |       |        |
| 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

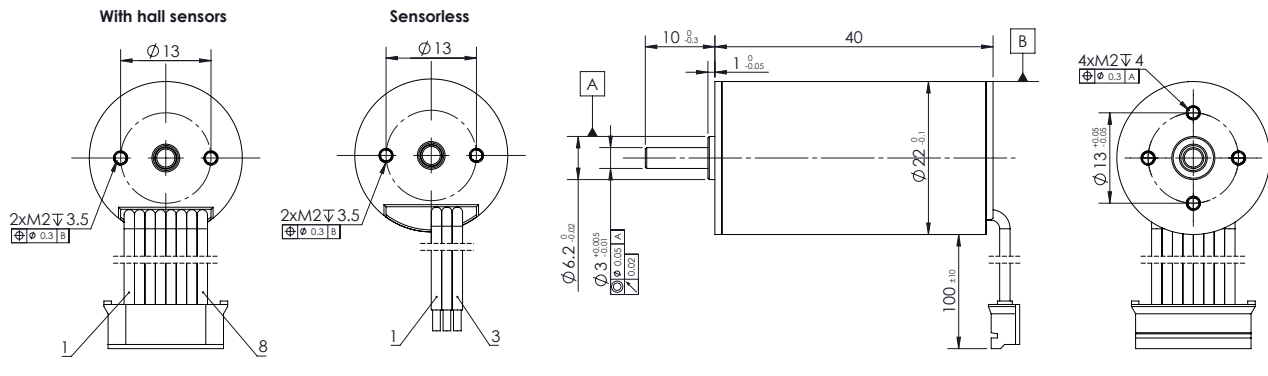
## Gearbox combinations

SVTG B 22  
SVTG B 24



# ATOM EC Series SVTN A 01-2240

39 Watt



v3.1

| Values               | Unit                                 | SVTN A 01<br>2240-12.. | 2240-24.. | 2240-30.. | 2240-36.. |       |
|----------------------|--------------------------------------|------------------------|-----------|-----------|-----------|-------|
| Motor Data           |                                      |                        |           |           |           |       |
| 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  |
| Characteristics      |                                      |                        |           |           |           |       |
| 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                        | gcm²                   | 2,3       | 2,3       | 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                               | 64 g                   |           |           |           |       |

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

Speed [rpm]

Power [W]

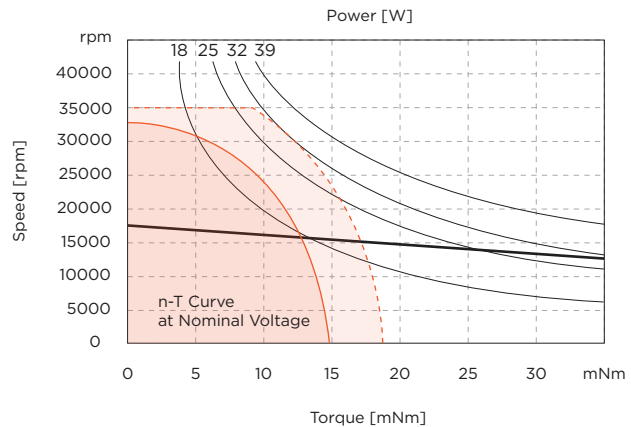
18 25 32 39

n-T Curve at Nominal Voltage

Continuous operating range

Maximum permissible speed (35000 rpm)

\*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

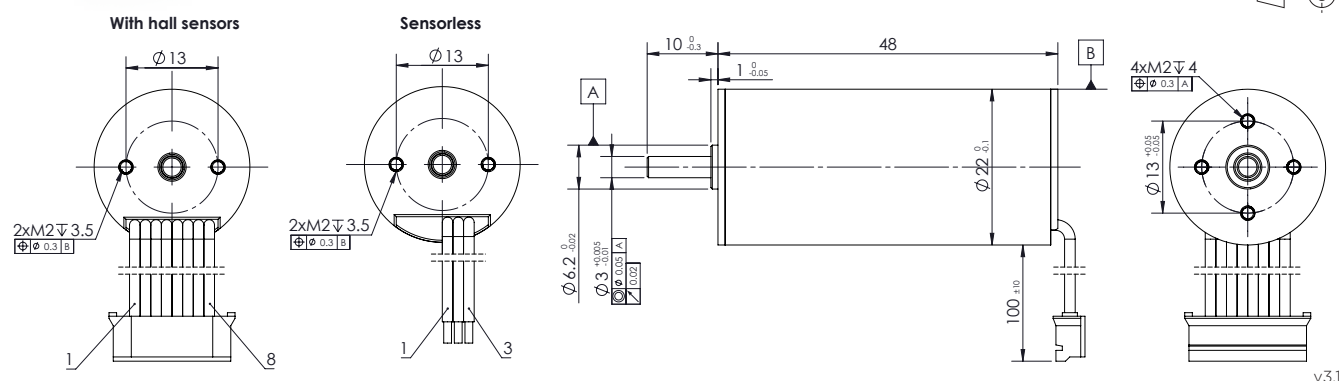
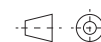
## Gearbox combinations

SVTG B 22  
SVTG B 24



# ATOM EC Series SVTN A 01-2248

43 Watt

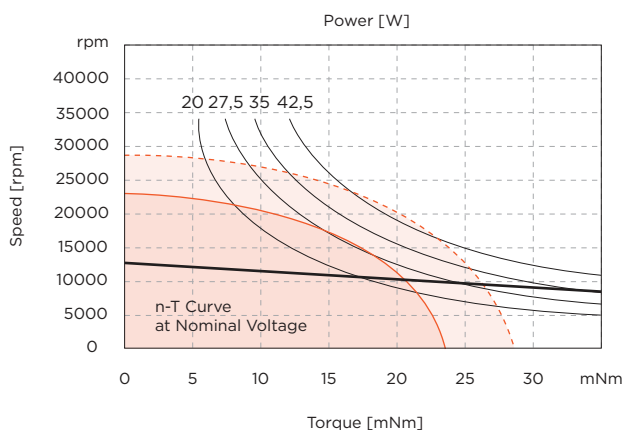


v3.1

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BRUSHLESS

| Values                                  | Unit             | SVTN A 01 | 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°.



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

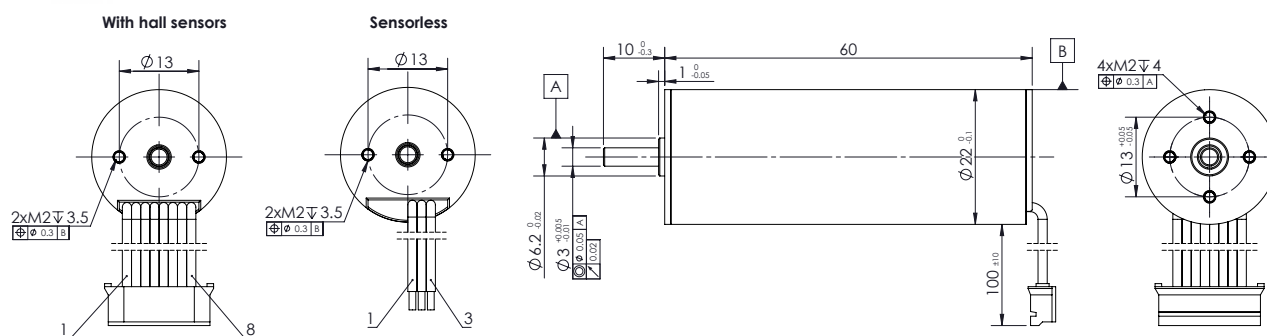
EN 22A  
EN 22AL

## Gearbox combinations

SVTG B 22  
SVTG B 24



70 Watt

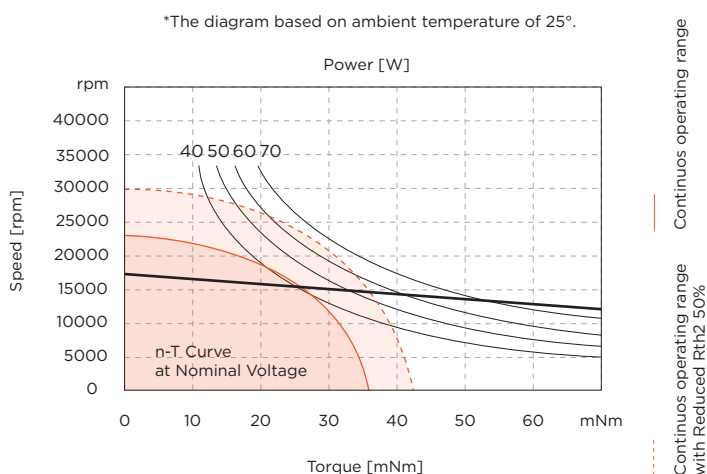


| Values                      | Unit                                 | SVTN A 01        | 2260-12..    | 2260-24.. | 2260-36.. | 2260-48.. |
|-----------------------------|--------------------------------------|------------------|--------------|-----------|-----------|-----------|
| <b>Motor Data</b>           |                                      |                  |              |           |           |           |
| 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*                 | Ω                | 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   |                  | 7.6 K/W      |           |           |           |
| 18                          | Thermal resistance winding-housing   |                  | 4.6 K/W      |           |           |           |
| 19                          | Thermal time constant winding        |                  | 29 s         |           |           |           |
| 20                          | Thermal time constant motor          |                  | 533 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                               |                  | 122 g        |           |           |           |

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

operating range

Continuos operating range



|              |                  |       |        |
|--------------|------------------|-------|--------|
| 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   |

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

EN 22A  
EN 22AL

SVTG B 22  
SVTG B 24



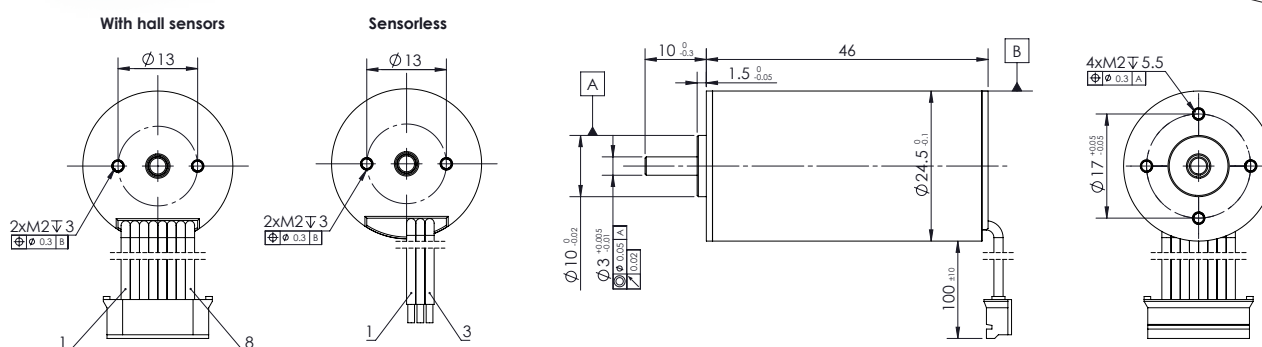
# ATOM EC Series SVTN A 01-2446

42 Watt



servotecnica

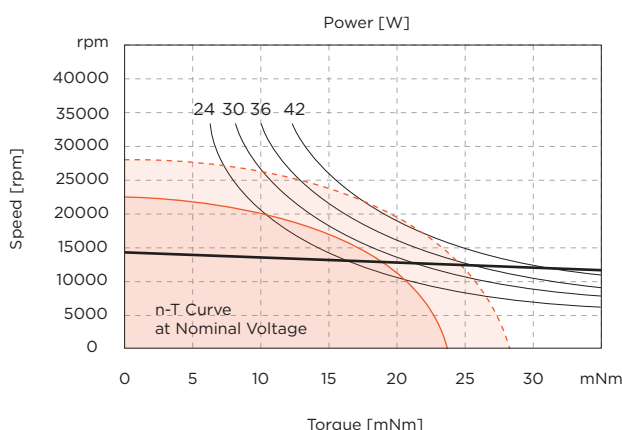
CORELESS  
BRUSHLESS



v3.1

| 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

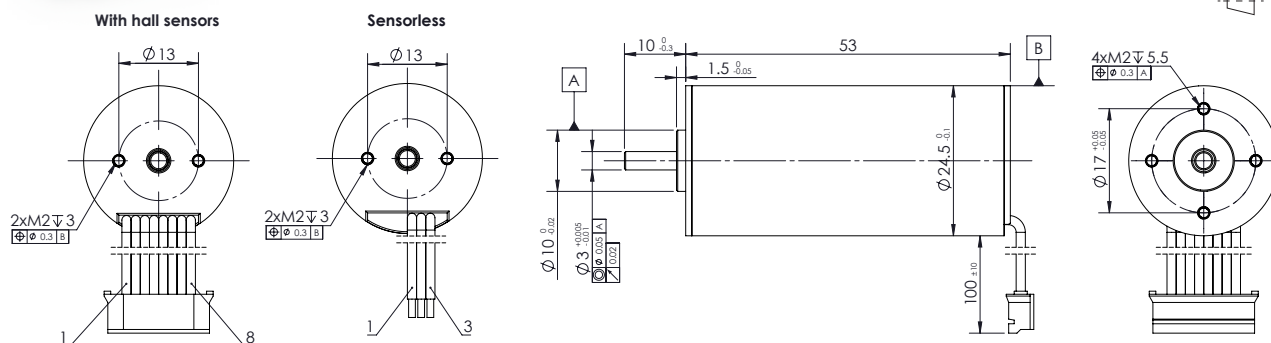
## Gearbox combinations

SVTG B 24  
SVTG B 28



# ATOM EC Series SVTN A 01-2453

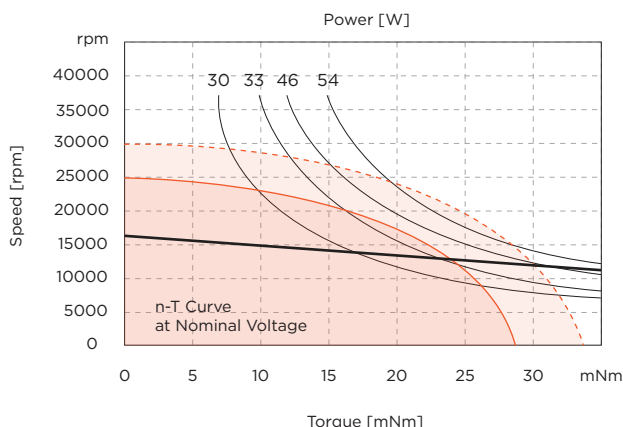
54 Watt



v3.1

| Values                                  | Unit             | SVTN A 01 | 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

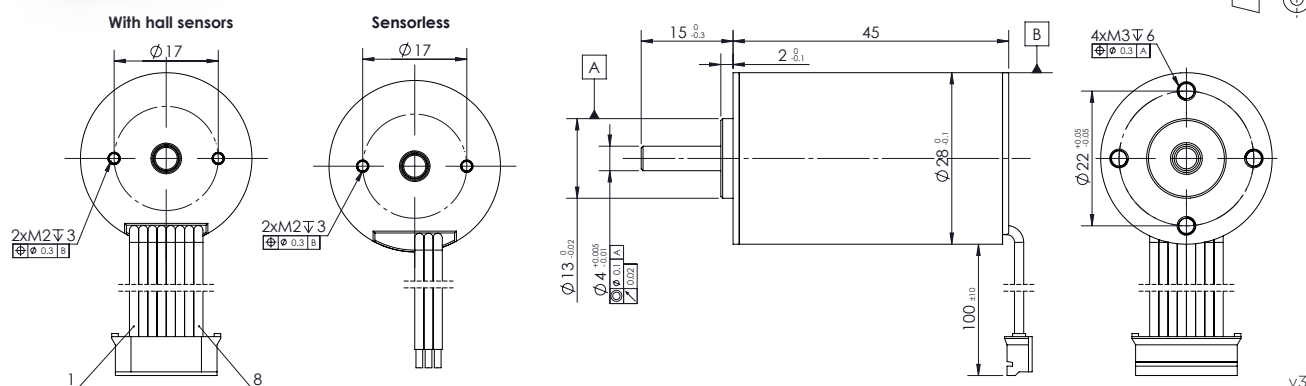
## Gearbox combinations

SVTG B 22  
SVTG B 24



# ATOM EC Series SVTN A 01-2845

35 Watt



v3.1

| Values               | Unit                                 | SVTN A 01    |           |           |           |       |
|----------------------|--------------------------------------|--------------|-----------|-----------|-----------|-------|
|                      |                                      | 2845-12..    | 2845-24.. | 2845-36.. | 2845-48.. |       |
| Motor Data           |                                      |              |           |           |           |       |
| 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  |
| Characteristics      |                                      |              |           |           |           |       |
| 10                   | Terminal resistance*                 | Ω            | 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                        | gcm²         | 5,2       | 5,2       | 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                               | 120 g        |           |           |           |       |

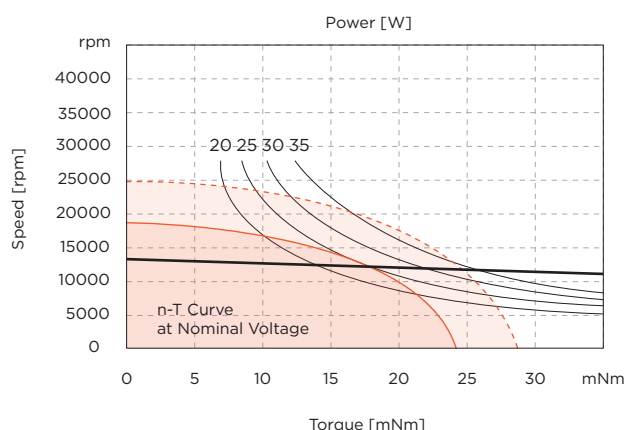
\*The diagram based on ambient temperature of 25°.

The graph plots Speed [rpm] on the y-axis (0 to 40000) against Power [W] on the x-axis (0 to 1000). It features four solid curves for temperatures 20, 25, 30, and 35, and two dashed curves. A shaded region represents the continuous operating range, and a label 'n-T Curve at Nominal Voltage' is present.

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

## Encoder combinations

EN 22B  
EN 22BL

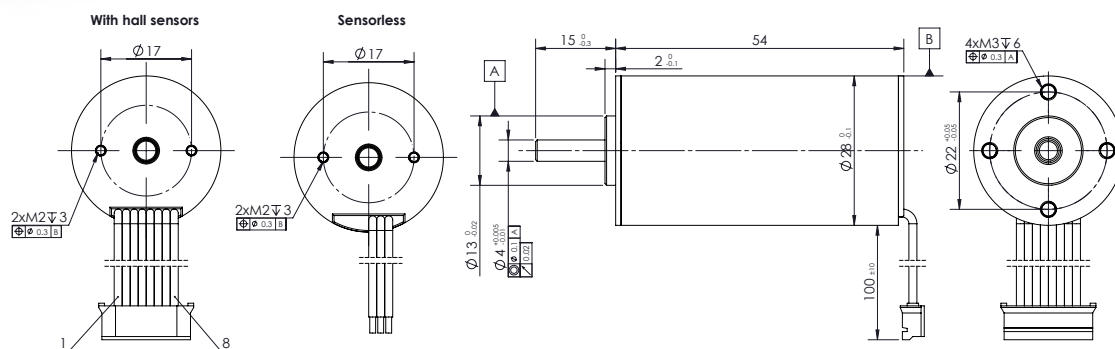
## Gearbox combinations

SVTG B 28



# ATOM EC Series SVTN A 01-2854

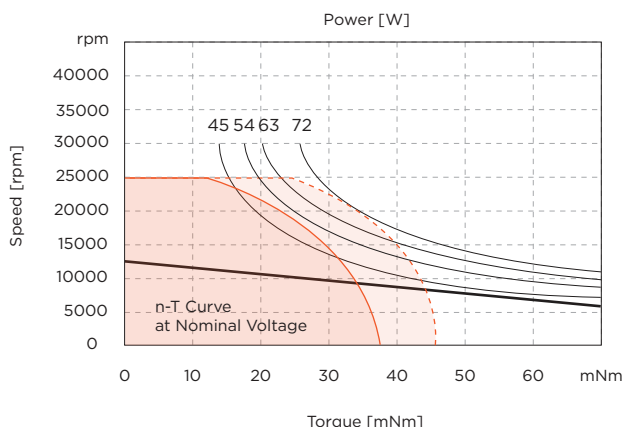
72 Watt



v3.1

| 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*                 | Ω                | 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

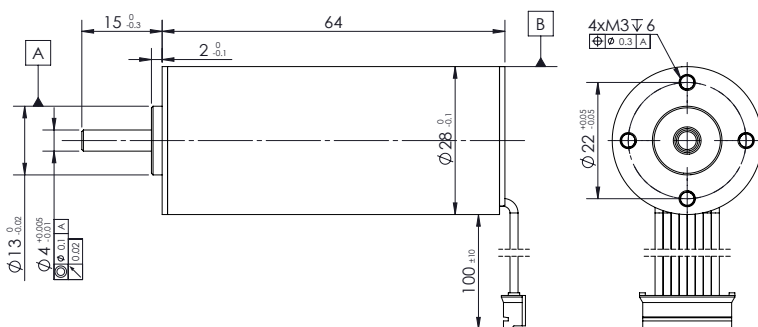
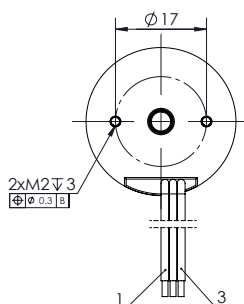
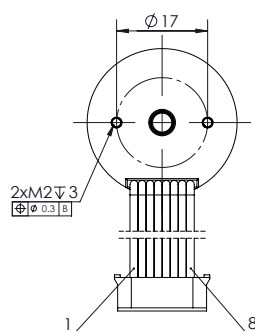
SVTG B 28



# ATOM EC Series SVTN A 01-2864

With hall sensors

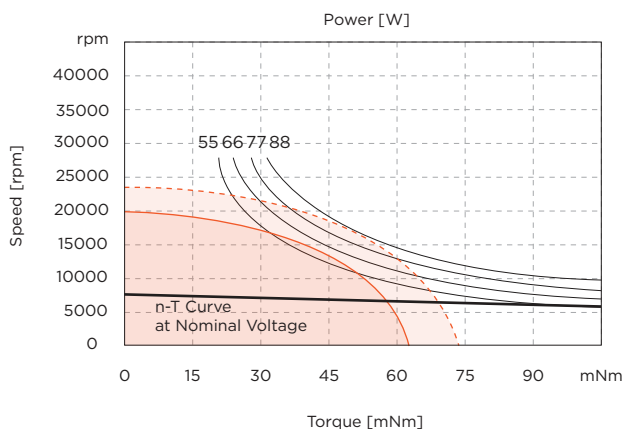
Sensorless



v3.1

| 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

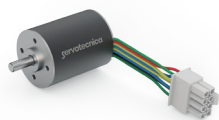
|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

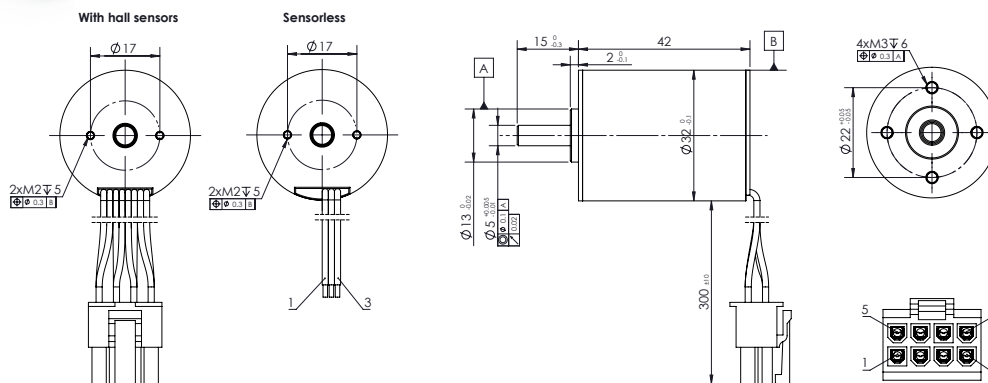
## Gearbox combinations

SVTG B 28



# ATOM EC Series SVTN A 01-3242

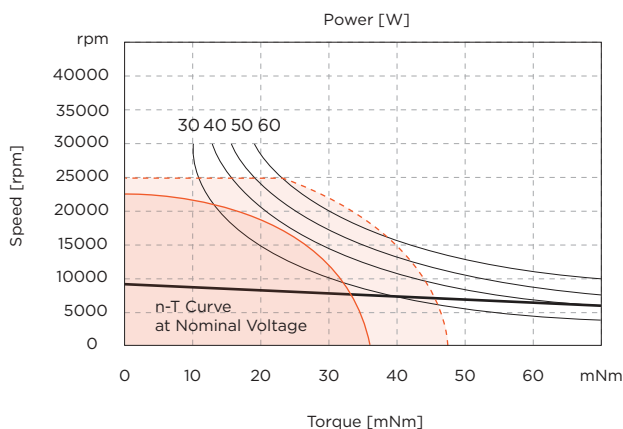
60 Watt



v3.1

| 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

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

## Encoder combinations

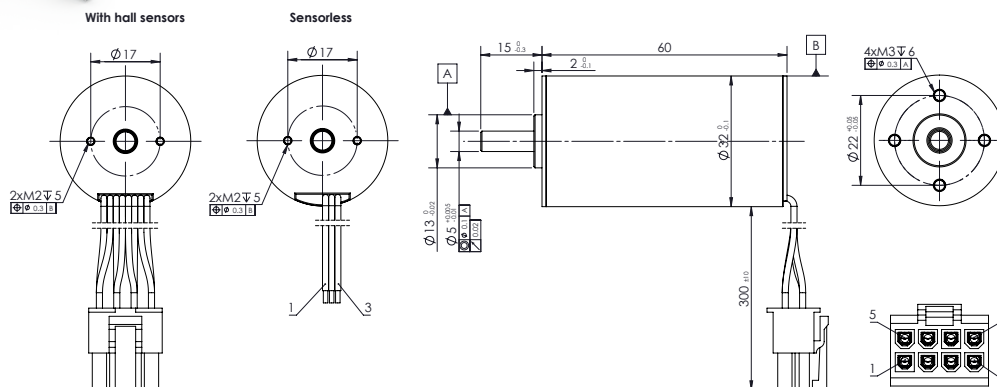
EN 22B  
EN 22BL

## Gearbox combinations

SVTG B 32  
SVTG B 36



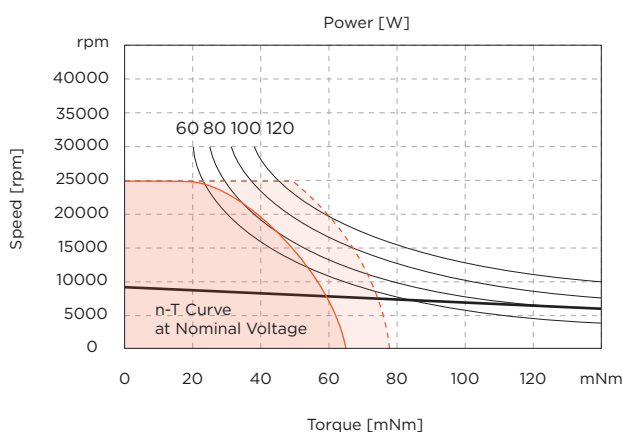
# ATOM EC Series SVTN A 01-3260



v3.1

| 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*                 | Ω                |           | 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

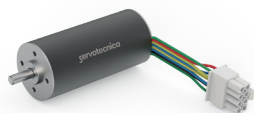
| Hall sensors | Encoder    |
|--------------|------------|
| SVTE-A-E40   | SVTE-A-E45 |
| SVTE-A-E50   | SVTE-A-E55 |

## Encoder combinations

EN 22B  
EN 22BL

## Gearbox combinations

SVTG B 32  
SVTG B 36



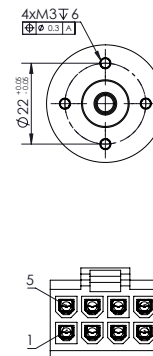
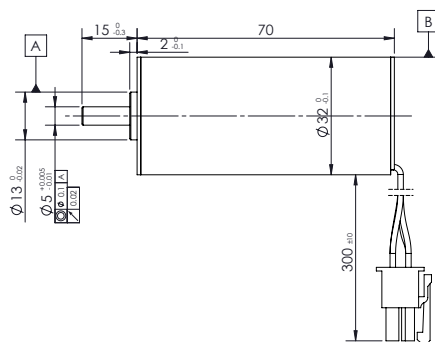
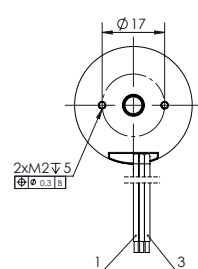
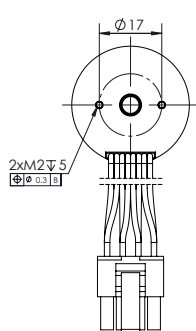
# ATOM EC Series SVTN A 01-3270

130 Watt



With hall sensors

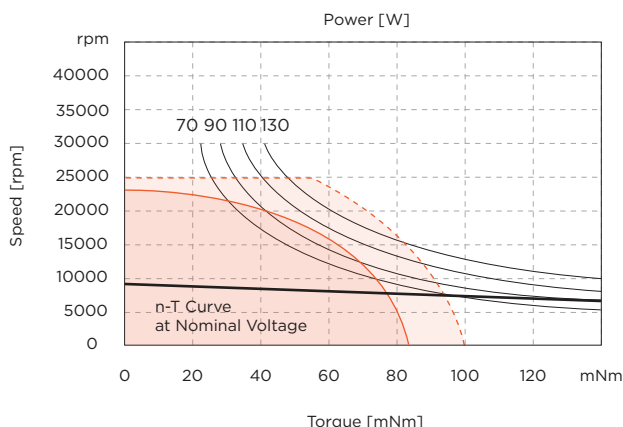
Sensorless



v3.1

| 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

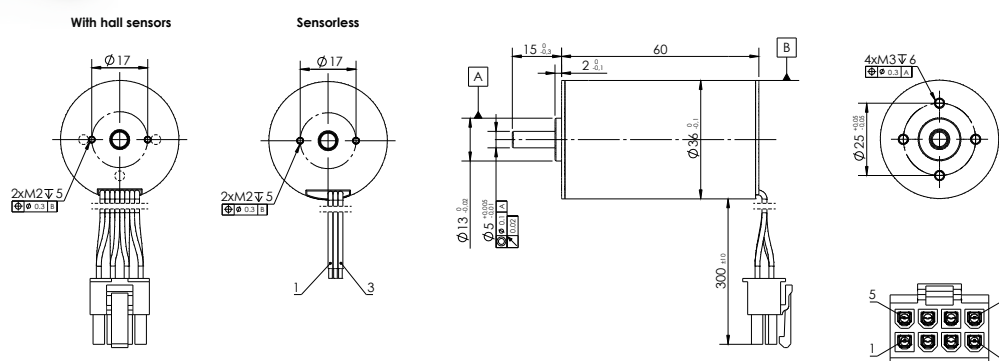
## Gearbox combinations

SVTG B 32  
SVTG B 36



# ATOM EC Series SVTN A 01-3660

140 Watt

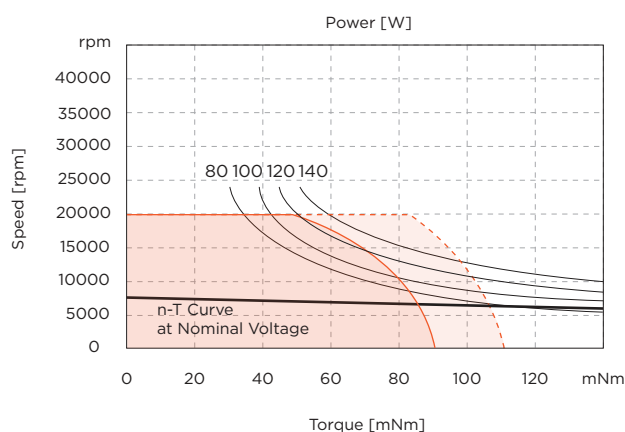


v3.1

**servotecnica**  
CORELESS  
BRUSHLESS

| Values                                  | Unit             | SVTN A 01 | 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

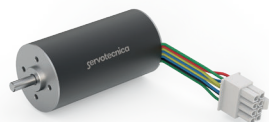
|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

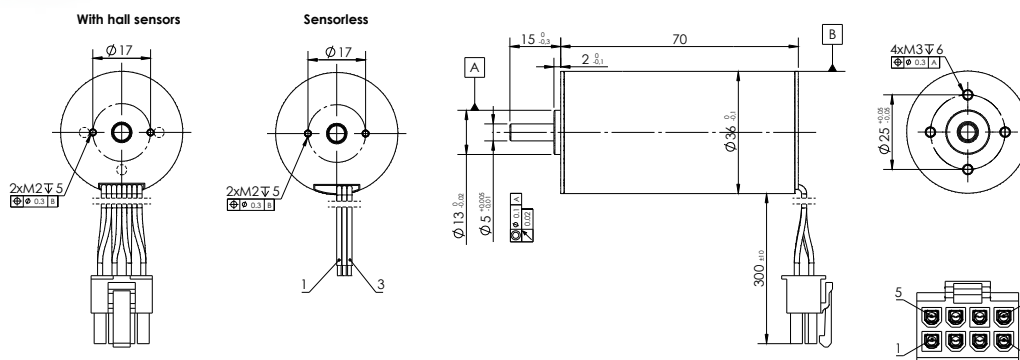
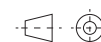
## Gearbox combinations

SVTG B 36  
SVTG B 42



# ATOM EC Series SVTN A 01-3670

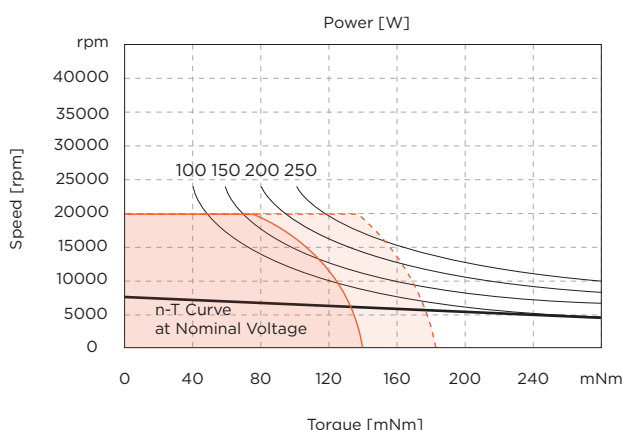
250 Watt



v3.1

| 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

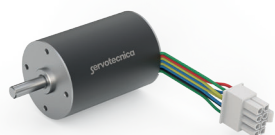
|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 22B  
EN 22BL

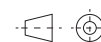
## Gearbox combinations

SVTG B 36  
SVTG B 42

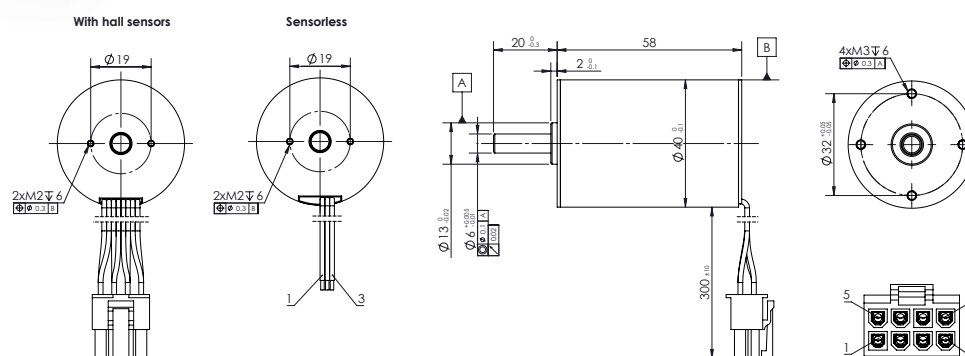


# ATOM EC Series SVTN A 01-4058

150 Watt



servotecnica  
CORELESS  
BRUSHLESS



v3.1

| Values               | Unit                                 | SVTN A 01<br>4058-12.. | 4058-24.. | 4058-36.. | 4058-48.. |      |
|----------------------|--------------------------------------|------------------------|-----------|-----------|-----------|------|
| Motor Data           |                                      |                        |           |           |           |      |
| 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 |
| Characteristics      |                                      |                        |           |           |           |      |
| 10                   | Terminal resistance*                 | Ω                      | 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                        | gcm²                   | 29,6      | 29,6      | 29,6      | 29,6 |
| Mechanical data      |                                      |                        |           |           |           |      |
| 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                   |           |           |           |      |
| Other specifications |                                      |                        |           |           |           |      |
| 28                   | Number of poles                      | 2                      |           |           |           |      |
| 29                   | Number of phases                     | 3                      |           |           |           |      |
| 30                   | Weight                               | 338 g                  |           |           |           |      |

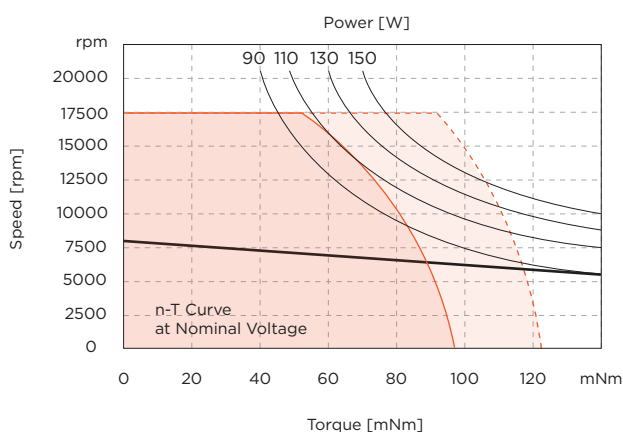
\*The diagram based on ambient temperature of 25°.

The graph plots Speed [rpm] on the y-axis (0 to 20000) against Power [W] on the x-axis (0 to 1500). Four curves are shown for pole counts 90, 110, 130, and 150. A solid black line represents the n-T Curve at Nominal Voltage. A shaded orange region indicates the continuous operating range, and a dashed red line indicates the operating range. The n-T Curve at Nominal Voltage is a solid black line that starts at approximately 7500 rpm at 0 W and decreases to about 5000 rpm at 1500 W.

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)         | 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

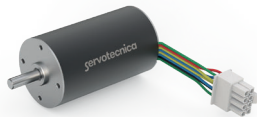
|                     |                |
|---------------------|----------------|
| <b>Hall sensors</b> | <b>Encoder</b> |
| SVTE-A-E40          | SVTE-A-E45     |
| SVTE-A-E50          | SVTE-A-E55     |

## Encoder combinations

EN 24  
EN 24L

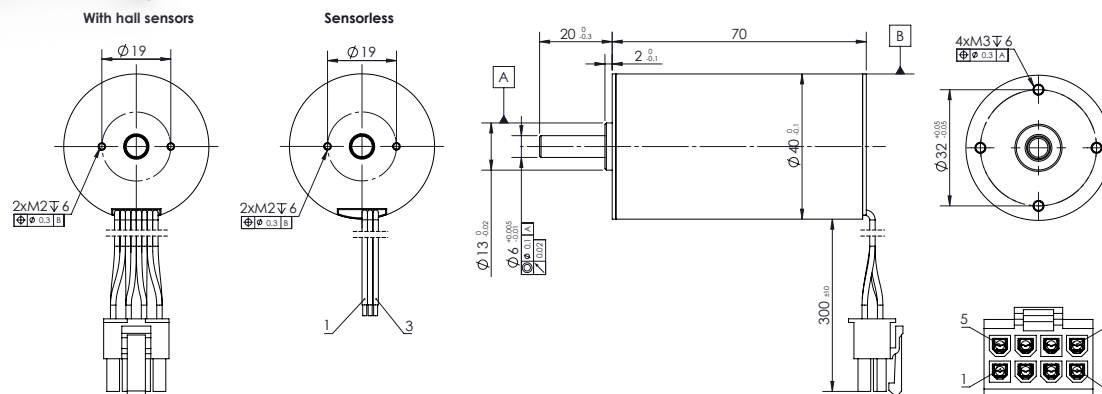
## Gearbox combinations

SVTG B 42



# ATOM EC Series SVTN A 01-4070

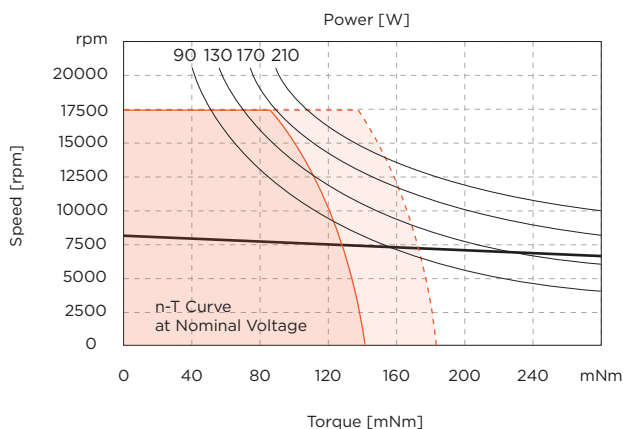
210 Watt



v3.1

| 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

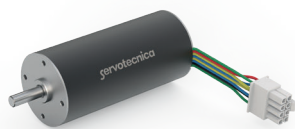
| Hall sensors | Encoder    |
|--------------|------------|
| SVTE-A-E40   | SVTE-A-E45 |
| SVTE-A-E50   | SVTE-A-E55 |

## Encoder combinations

EN 24  
EN 24L

## Gearbox combinations

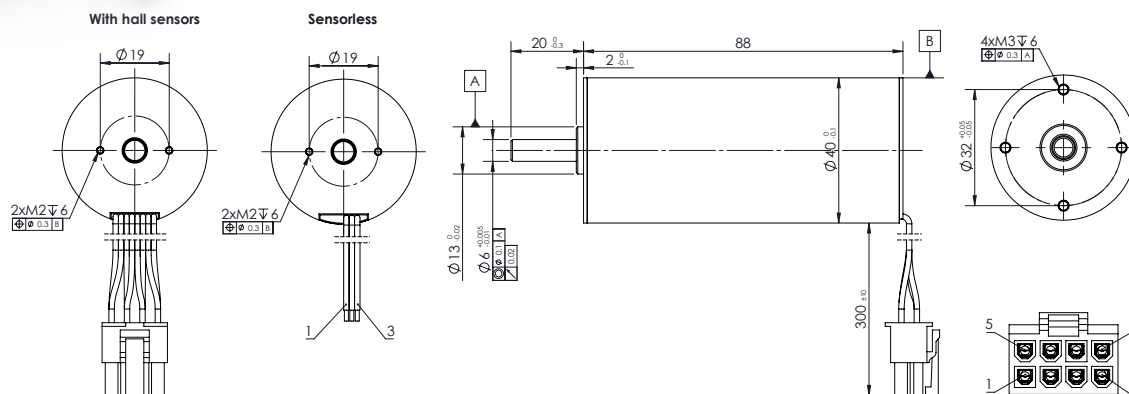
SVTG B 42



# ATOM EC Series SVTN A 01-4088

400 Watt

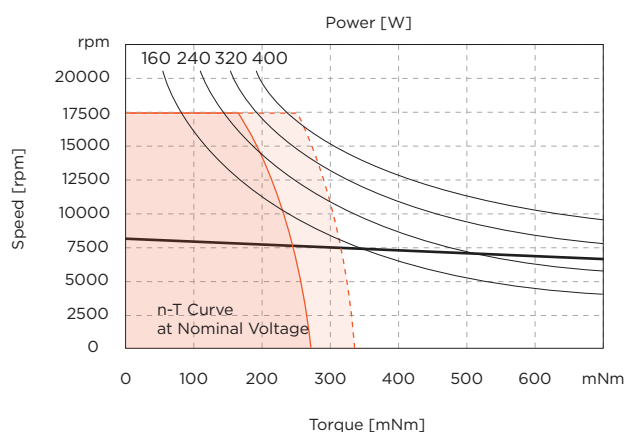
CORELESS  
BRUSHLESS



v3.1

| 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