

36 stepping motor – equipment

Stepping motor with integrated encoder

In non disturbed operation the stepping motor runs synchronously to the pulses coming from the control, that means the motor rotation (= rotation of the rotor) is synchronously to the pulse frequency (= rotating stator field in the motor).

In case of a load at the motor (e.g. via a static load at the motor shaft or because of accelerating the motor – dynamical load) the running of the motor will differ from the pulse frequency within a short time and within a certain max range. This results in changing the load angle (= difference between the real position of the rotor and its position command value).

Stepping motor with integrated encoder E50

The encoder series E50 monitors the motion of the motor. Together with a **STÖGRA**-drive series SE... E50 or SERS .. E50 the load angle of the stepping motor can be controlled. When exceeding the max. load angle allowed (e.g. in case of the motor running is interrupted because of a mechanical overload) the drive will create an error signal.



special characteristics

- simple and robust low cost version
- no changes of the motor dimensions in comparison to the standard version with cast connection box (except SM 56)
- the encoder is integrated in the motor housing. There is no additional measure necessary for protection – available until IP68
- all requirements for mechanical and climatical ambient conditions (vibration-, shock resistance, temperature and humidity) are fulfilled.
- evaluation of the encoder signals and realisation of a step angle control with generating an error signal can be done by using standard **STÖGRA**.

Specifications E50

electrical specifications

voltage supply: 5 to 24VDC

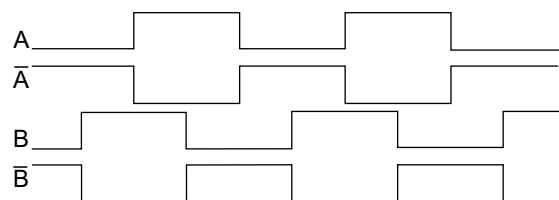
current consumption: typ. approx 35mA (no load at outputs) – max. load at outputs 100mA / output

operating temperature: max. 100°C

outputs

- 2 x 50 pulses per revolution – signals A and B with rectangular shape and inverted signals A and B
- duty cycle 1:1 ± max. 10% error
- Bipolar – switching to VCC and GND
- short circuit protected signals against GND
- pulse frequency min. 20 kHz

signal outputs



connections

connection via screw terminals for nominal cross section max. 1mm² (26 – 16AWG)

for series SM56 also available with D-Sub connector (see page 24 – figures below)

dimensions as standard motor types! (except series SM56 – see table page 39)

Stepping motor with integrated encoder H200 and H500**special characteristics**

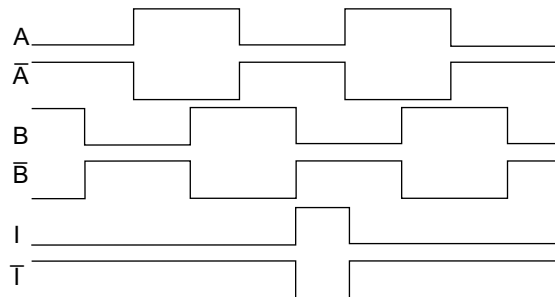
- the encoder is integrated in the motor housing. There is no additional measure necessary for protection
- available until protection class IP68
- all requirements for mechanical and climatical ambient conditions (vibration-, shock resistance, temperature and humidity) are fulfilled
- evaluation of the encoder signals and realisation of a step angle control with generation of an error signal can be done by using standard **STÖGRA** controls SERS...E50...

Technical specifications H200 and H500**general specifications H200 and H500**

- optical encoder
- voltage supply: 5 VDC
- operating temperature: max. 100°C

outputs

- 2 x 200 pulse per revolution for H200
2 x 500 pulse per revolution for H500
rectangular shape signals A und B,
with inverted signals A and B
- H200 and H500: zero pulse
and inverted zero pulse – 1 pulse per revolution
- duty cycle 1:1 ± max. 10% error
- RS422-line driver
- short circuit protected signals against GND
- pulse frequency min. 100 kHz

signal outputs**dimensions**

the modified dimensions – in comparison to the standard motors without encoder – can be found in the table at page 39

connections

connection via screw terminals for nominal cross section max. 1mm² (26 –16AWG)