STÖBER

This operating manual is intended as a supplement to the operating manual for STÖBER asynchronous motors. In the event of any unclear points, we recommend that you contact STÖBER with the model designation and serial number, or have the installation and maintenance work carried out by a STÖBER service partner.

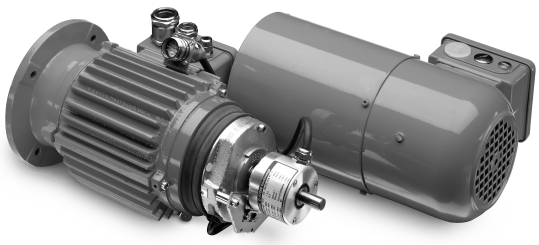
1 Operation in accordance with its intended use

The fulfillment of any warranty claims requires exact compliance with the information and instructions in this operating manual. Modifications to the encoders will void the warranty. On grounds of operational safety, the encoders may be used only for the purpose for which they were configured (see configuration aids in the STÖBER catalogs).
Refer to the operating manuals of the electronic devices connected to the encoder.

2 Technical data

The technical data for the encoder is specified on the respective rating plate. Further technical data and dimensional drawings can be found in the SMS catalog. Encoders are sensitive electronic precision instruments. The encoders conform to the EC directive 89/336/EEC (EMC directive). Never exceed the respective maximum operating voltages, not even temporarily. The maximum permissible humidity is 90% (condensation not permitted).
Observe the information in the technical documentation:

- power supply and the specified tolerance
- max. output load current
- amplitude and phase position of the output signals
- assignment of the plug contacts or wire colors
- limiting frequency of the encoder and the maximum permissible mechanical speed
- vibration stability and shock or impact load
- permissible shaft loads (axial and radial)
- protection type of the encoder
- operating temperature range



3 Safety information

In addition to the information in this operating manual, you must also comply with the applicable national, local and facility-specific regulations.

⚠ WARNING!

The operation of the encoders is associated with the following risks:

Electric shock due to contact with live bare parts

▶ All work on the encoder may be performed only in the deenergized state.

3.1 Personnel requirements

All work on the electrical equipment of the drive units must be performed by qualified electricians. Installation, maintenance and repairs of mechanical parts must be performed by fitters, industrial mechanics or persons with comparable qualifications.

3.2 Safety during installation and maintenance

Do not use a hammer on the encoder or housing; do not exert pressure on them and do not expose them to impacts or high acceleration. Avoid axial loads to the encoder shaft.

4 Electrical connection

4.1 Important information

- Do not touch the contacts of the encoder.
- Before installation, de-energize all relevant equipment. Make sure that the equipment cannot be supplied with electric current during the installation work.
- Use only wires recommended by STÖBER.
- Use only STÖBER plug connectors for connecting the signal wires.
- Many plug connectors can achieve the specified protection type only with the corresponding mating piece.
- Note the shielding of the plug and of the socket (on a pin and/or plug casing). The shielding must never be interrupted.
- When connecting the power supply for the encoder, provide for optimum voltage with no power surges. It is not permitted to supply inductive power consuming devices such as contactors, brake coils, regulating valves, throttles, etc. together with the encoder. In this case, a separate power supply for the encoder is absolutely necessary.
- If a drive controller is equipped with voltage adjuster, then the operating voltage can be adjusted via the sensor wire of the encoder. A voltage adjuster is possible for all models, but makes sense only in the TTL version.

4.2 Encoder connection

- Note the pin assignment (see motor connection diagram).
- Only use suitable STÖBER plug connectors.
- When using STÖBER SpeedTec cables, remove the O-ring from the back wall box.

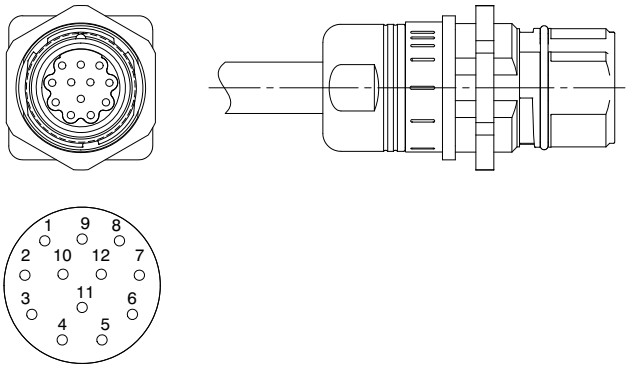


Fig. 4-1 Back wall box SpeedTec-Ready (Intercontec), pin contacts, 12-pin, size con.23

4.3 Plug connector (accessory)

- Suitable for back wall box of the encoder connection

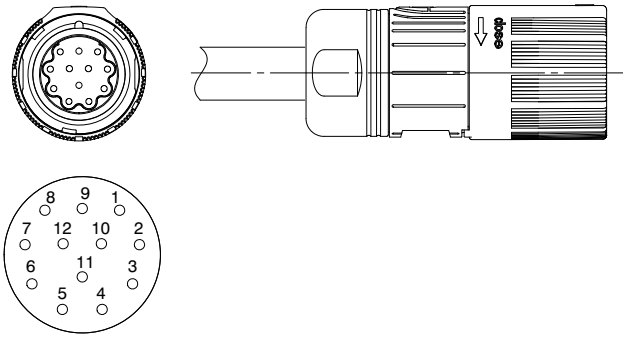


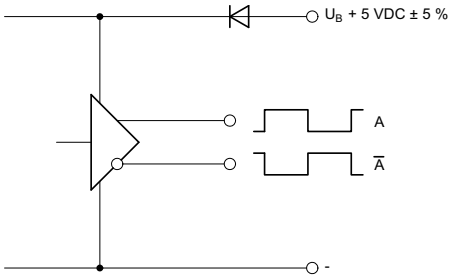
Fig. 4-2 Plug connector SpeedTec-Ready (Intercontec), socket contacts, 12-pin, size con.23

4.4 Protection from interference

- Provide for proper shielding of the encoder and of the wire/plug connections (according to DIN VDE 0160).
- Use only wires recommended by STÖBER.
- Avoid laying the signal wire in the direct vicinity (> 200 mm airgap distance) from sources of interference (magnetic fields of transformers, contactors, solenoid valves, relays, high-frequency devices ...! Also take into account the supply lines to these devices!).
- Lay the signal wires directly (shortest possible path, with no intermediate connections.
- Note that in addition to the wire shields, the encoder housing and the metal housing of the following electronic analysis components and measuring systems function as shielding.

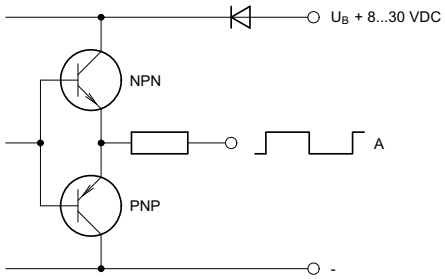
4.5 Basic circuit diagram of the output stages

TTL model, line driver end stage



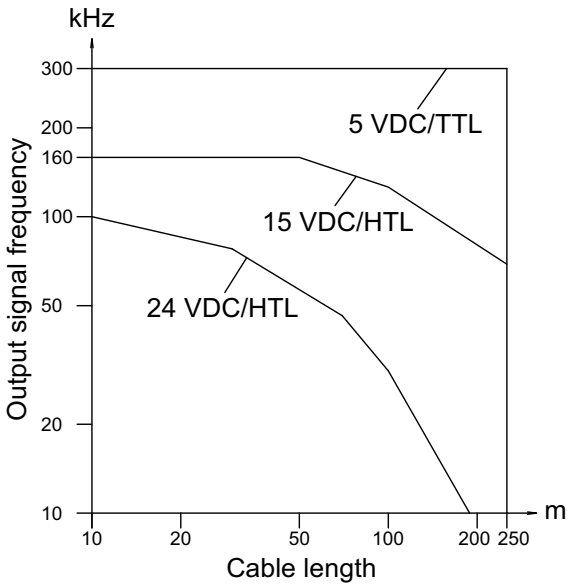
Operating voltage:
U_B = 5 V_{DC} ± 5 % (reverse polarity protected)
Output signal level:
U_{LOW} ≤ 0,5 V_{DC} / U_{HIGH} ≥ 2,5 V_{DC}
Output load current:
I_{LOW} ≤ 70 mA (short-circuit proof)

HTL model, push-pull end stage



Operating voltage:
U_B = 8 to 30 V_{DC} (reverse polarity protected)
Output signal level:
U_{LOW} ≤ 1,5 V_{DC} / U_{HIGH} ≤ U_B abz. 3 V_{DC}
Output load current:
I_{LOW} ≤ 70 mA (short-circuit proof)

4.6 Output signal frequency in relation to the wire length



4.7 Output signal diagram

BI model
2 pulse trains with one electric phase shift of 90° ± 10° and 2 inverted pulse trains
NI model
2 pulse trains with an electric phase shift of 90° ± 10° and 1 zero pulse with an electric length of 90° ± 10° and 3 inverted pulse trains

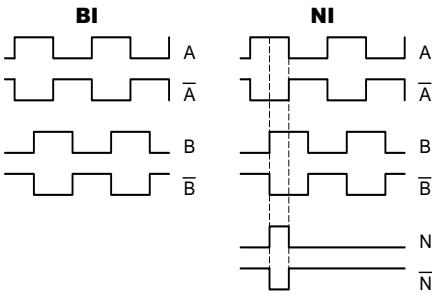


Fig. 4-3 Diagram, shown with clockwise rotation, with view of the encoder shaft (attachment side).

5 Mounting types

Hollow shaft encoders can be mounted as follows:
- by means of a flexible torque bracket
- shaft mounting by means of radial set screws or tension ring

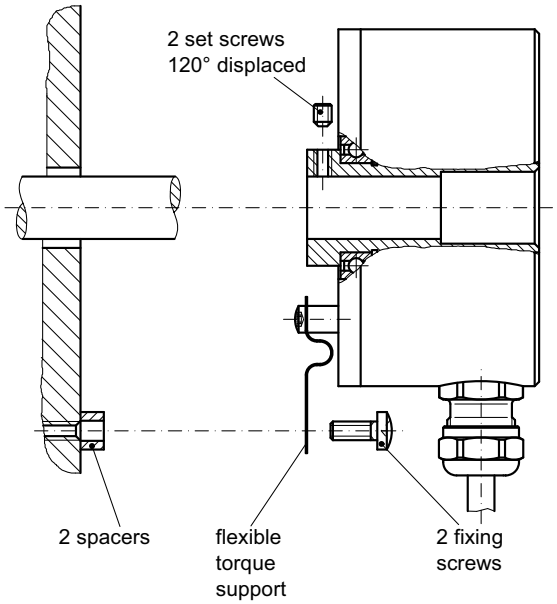


Fig. 5-1 Hollow shaft encoder mounting

6 Mechanical installation instructions

General installation information:
- Make sure that the drive unit cannot be started during installation of the encoder.
- The encoder must be mounted securely, vibration-free and centered on the drive shaft.

Hollow shaft encoder:
Use the STÖBER torque bracket for mounting the encoder.

Sequence:
- Observe all safety instructions.
- Inspect the mounting elements.
- Hollow shaft encoder:
  - The mounting shaft should be lightly greased and treated to prevent rust.
  - Reduce eccentricity of the mounting shaft to a minimum.
  - Mount the torque bracket(s) on the encoder and secure the bolts.
  - Push the hollow shaft encoder onto the mounting shaft with your hand and without applying excessive force. Check the dimensional accuracy of the shaft, if necessary.
  - Now mount the torque bracket(s) on the attachment side on the fixing plate by one or two bolts.
  - Establish a firm connection between the hollow shaft and the drive shaft by screwing in the radial set screws in the hollow shaft of the encoder or tightening the tension ring.
  - Make sure to secure all screws!

7 Maintenance

Check the bearings after. 20,000 to 100,000 hours of operation, depending on the operating speed and axial or radial shaft loads.
In the event of excessive play or noises during operation, send the encoder to STÖBER for maintenance.