

## Synchronous servo motor EZ to drive controller SD6A02 (EZ\_AL)

### 1 Safety notes

Serious risks to life and limb can occur when connecting and operating motors! Observe the following operating manuals, the operating manual of the motor as well as the applicable national, local and system-specific regulations.

#### **WARNING!**

#### **The motor is powered by high electrical voltage!**

Touching live parts is extremely dangerous and potentially fatal!

- The electrical connection of the motor may be carried out only by an electrician.
- Before performing the electrical connection, switch off the power supply of the machine with the main switch and secure it from being turned on again.
- Only connect the motor using power connection cables recommended by STÖBER
- Do not open the housing of the power plug connector.

**ATTENTION! This connection plan applies only to the motor type and drive controller type specified in the title!** Check whether this connection plan matches the information on the nameplate of the motor and drive controller and whether the connection cables correspond to this connection plan. In case of questions, contact STÖBER.

**ATTENTION! Directly connecting the motor to the power grid will cause damage to the motor!** Only connect the motor to the intended drive controller in accordance with this connection plan.

**ATTENTION! Connection cables not coordinated to the motor can cause damage to the motor or result in non-compliance with the legal requirements for EMC and thus the voiding of warranty claims!** Use connection cables coordinated to your motor from the STÖBER supply range or, when connecting to a drive controller from a third-party manufacturer, the corresponding original cables of that manufacturer.

**ATTENTION! Motor components such as encoders or temperature sensors can be damaged by electrostatic discharge!** Do not touch the contacts of the plug connectors with your fingers.

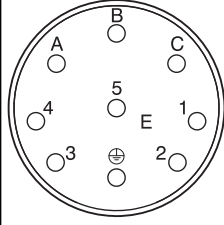
**ATTENTION! The plug connectors can be damaged by improper handling.** Note the following information:

- Tighten the cap nuts of screw connections by hand (not with a tool).
- Turn the plug connector of the motor using the connected mating connector of the connection cable (not with a tool).
- Turn the plug connector only within the permitted turning range.

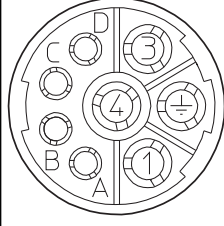
### 2 Terminal assignment of the power plug connector

The size and connection diagram of the power plug connector depend on the size of the motor.

#### Plug connector size con.15

| Connection diagram                                                                 | Pin                                                                                 | Connection                  |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------|
|  | A                                                                                   | 1U1 (U phase)               |
|                                                                                    | B                                                                                   | 1V1 (V phase)               |
|                                                                                    | C                                                                                   | 1W1 (W phase)               |
|                                                                                    | 1                                                                                   | 1TP1 (temperature sensor +) |
|                                                                                    | 2                                                                                   | 1TP2 (temperature sensor -) |
|                                                                                    | 3                                                                                   | 1BD1 (brake +)              |
|                                                                                    | 4                                                                                   | 1BD2 (brake -)              |
|                                                                                    | 5                                                                                   |                             |
|                                                                                    |  | PE (grounding conductor)    |

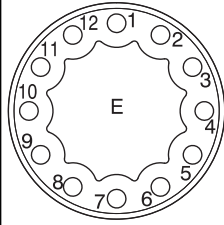
#### Plug connector size con.23

| Connection diagram                                                                  | Pin                                                                                   | Connection                  |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------|
|  | 1                                                                                     | 1U1 (U phase)               |
|                                                                                     | 3                                                                                     | 1V1 (V phase)               |
|                                                                                     | 4                                                                                     | 1W1 (W phase)               |
|                                                                                     | A                                                                                     | 1BD1 (brake +)              |
|                                                                                     | B                                                                                     | 1BD2 (brake -)              |
|                                                                                     | C                                                                                     | 1TP1 (temperature sensor +) |
|                                                                                     | D                                                                                     | 1TP2 (temperature sensor -) |
|                                                                                     |  | PE (grounding conductor)    |

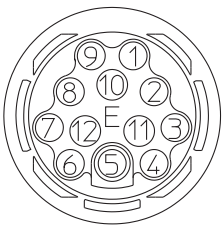
### 3 Terminal assignment of the encoder plug connector

The size and terminal assignment of the encoder plug connectors depend on the type of encoder installed and the size of the motor.

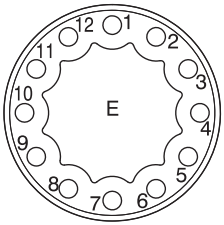
#### EnDat 2.1/2.2 digital encoders, plug connector size con.15

| Connection diagram                                                                   | Pin | Connection |
|--------------------------------------------------------------------------------------|-----|------------|
|  | 1   | Clock +    |
|                                                                                      | 2   | Up sense   |
|                                                                                      | 3   |            |
|                                                                                      | 4   |            |
|                                                                                      | 5   | Data -     |
|                                                                                      | 6   | Data +     |
|                                                                                      | 7   |            |
|                                                                                      | 8   | Clock -    |
|                                                                                      | 9   |            |
|                                                                                      | 10  | 0 V GND    |
|                                                                                      | 11  |            |
|                                                                                      | 12  | Up +       |

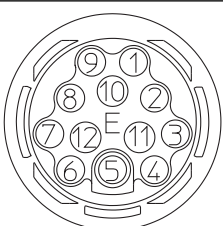
**EnDat 2.1/2.2 digital encoders, plug connector size con.17**

| Connection diagram                                                                | Pin | Connection |
|-----------------------------------------------------------------------------------|-----|------------|
|  | 1   | Clock +    |
|                                                                                   | 2   | Up sense   |
|                                                                                   | 3   |            |
|                                                                                   | 4   |            |
|                                                                                   | 5   | Data -     |
|                                                                                   | 6   | Data +     |
|                                                                                   | 7   |            |
|                                                                                   | 8   | Clock -    |
|                                                                                   | 9   |            |
|                                                                                   | 10  | 0 V GND    |
|                                                                                   | 11  |            |
|                                                                                   | 12  | Up +       |

**EnDat 2.2 digital encoder with battery buffering, plug connector size con.15**

| Connection diagram                                                                 | Pin | Connection                                                                                             |
|------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------|
|  | 1   | Clock +                                                                                                |
|                                                                                    | 2   | UBatt +                                                                                                |
|                                                                                    | 3   | UBatt -                                                                                                |
|                                                                                    | 4   |                                                                                                        |
|                                                                                    | 5   | Data -                                                                                                 |
|                                                                                    | 6   | Data +                                                                                                 |
|                                                                                    | 7   |                                                                                                        |
|                                                                                    | 8   | Clock -                                                                                                |
|                                                                                    | 9   |                                                                                                        |
|                                                                                    | 10  | 0 V GND                                                                                                |
|                                                                                    | 11  |                                                                                                        |
|                                                                                    | 12  | Up +                                                                                                   |
|                                                                                    |     | UBatt+ = DC 3.6 V for encoder model EBI in combination with the AES option of STOBER drive controllers |

**EnDat 2.2 digital encoder with battery buffering, plug connector size con.17**

| Connection diagram                                                                 | Pin | Connection                                                                                             |
|------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------|
|  | 1   | Clock +                                                                                                |
|                                                                                    | 2   | UBatt +                                                                                                |
|                                                                                    | 3   | UBatt -                                                                                                |
|                                                                                    | 4   |                                                                                                        |
|                                                                                    | 5   | Data -                                                                                                 |
|                                                                                    | 6   | Data +                                                                                                 |
|                                                                                    | 7   |                                                                                                        |
|                                                                                    | 8   | Clock -                                                                                                |
|                                                                                    | 9   |                                                                                                        |
|                                                                                    | 10  | 0 V GND                                                                                                |
|                                                                                    | 11  |                                                                                                        |
|                                                                                    | 12  | Up +                                                                                                   |
|                                                                                    |     | UBatt+ = DC 3.6 V for encoder model EBI in combination with the AES option of STOBER drive controllers |

**4 Temperature sensor connection**

The type of the temperature sensor is specified on the nameplate of the motor.

- PTC thermistor 145 °C
- Pt1000 temperature sensor
- KTY 84-130 temperature sensor

**ATTENTION! Incorrect or a lack of monitoring of the temperature sensor can cause damage to the motor!** Always monitor the temperature sensor using devices that will switch the motor off if the maximum permitted winding temperature is exceeded.

**5 Holding brake connection**

The (optional) motor holding brake is connected via the power plug connector.

**ATTENTION! Connection errors can cause damage to the holding brake!** Observe the polarity of the connections and the nominal voltage of the holding brake.

Nominal voltage of permanent magnet holding brake: DC 24 V  $\pm$  5%, smoothed.

Note that there must be the specified nominal voltage of the holding brake at the plug connector of the motor. Adjust the voltage if necessary to compensate for voltage drops in the connection cables.

**6 Forced ventilation unit connection**

The nominal voltage of the (optional) forced ventilation unit is AC 230 V  $\pm$  5%, 50/60 Hz.

For the connection of the forced ventilation unit, you need a connection cable with flexible cores and end sleeves.

Connect the connection cable to the screw terminals of the supplied mating connector in accordance with the following table.

| Connection diagram                                                                   | Pin                                                                                   | Connection               |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------|
|  | 1                                                                                     | L1 (phase)               |
|                                                                                      | 2                                                                                     | N (neutral conductor)    |
|                                                                                      | 3                                                                                     |                          |
|                                                                                      |  | PE (grounding conductor) |