

Electrical motor connection

synchronous servo motors EZ on MDS 5000



1 Safety information

1.1 General safety instructions



WARNING!

Connecting and operating electric motors is associated with the following hazards:

- Electrical shock by touching live unpainted parts
- Injuries from moving and rotating parts
- Burns from touching hot surfaces
- ▶ The motor may only be connected if the following safety instructions are observed as well as the operating instructions for the relevant type of synchronous servo motor and applicable national, local and system-specific regulations.

1.2 Safety when making the electrical connection



WARNING!

Connection and operation of a synchronous servo motor is associated with the hazard of electrical shock from touching live unpainted parts.

- ▶ Only allow the electrical connection of the motor to be made by electrical specialists.
- ▶ Before connecting the motor, switch the relevant system or machine to zero potential with the main switch and protect the main switch against being turned on again!
- ▶ Close the entire connector housing before turning on the motor.
- ▶ Do not touch any live unpainted parts while the fan is running because a voltage is applied to the motor connections in this case due to the permanent magnets installed in the motor.

1.3 Avoid connection errors

NOTICE

Electrical connection errors can cause damage to the motor and its components.

- ▶ Therefore you should carefully note the information on the motor name plate and the connection diagrams below. If you have any questions, please consult with the STÖBER Service department.

1.4 Safe function and EMC of the drive system

NOTICE

If connection cables or a drive controller that are not designed for the motor are used to make the electrical connection for the motor, this may result in damage to the motor such that compliance with the legal requirements for EMC is no longer provided and claims under the warranty will be null and void.

- ▶ You should therefore use connection cables and a drive controller specifically designed for your motor from the STÖBER product range.

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2 Motor connection

Color coding as per IEC 60757 (ID 442341).

2.1 Power connection plug (standard)

NOTICE

The motor can be damaged by electrical connection errors!

- You should therefore check before making the connection to be sure that the motor plug and drive controller match this motor connection diagram.

<p>size con.15 (for EZ3 only)</p>	A = 1U1	1 = 1TP1 / 1K1*
	B = 1V1	2 = 1TP2 / 1K2*
	C = 1W1	3 = 1BD1**
		4 = 1BD2**
		PE protective ground

<p>size con.23 (1)</p>	1 = 1U1	A = 1BD1**
	3 = 1V1	B = 1BD2**
	4 = 1W1	C = 1TP1 / 1K1*
		D = 1TP2 / 1K2*
		PE protective ground

<p>size con.40 (1.5) size con.58 (3)</p>	U = 1U1	+ = 1BD1 **
	V = 1V1	- = 1BD2 **
	W = 1W1	1 = 1TP1 / 1K1*
		2 = 1 TP2 / 1K2*
		PE protective ground

Conductor insulation color of the power connections

Abbreviation	Designation	Color
1U1	Phase U	BK
1V1	Phase V	BU
1W1	Phase W	RD
	PE protective ground	GYNE

2.1.1 *Thermal winding protection

NOTICE

The thermal winding protection can be damaged by electrical connection errors!

- Therefore carefully note the type of the thermal winding protection indicated on the motor name plate.

PTC thermistor 145° C (standard)

Abbreviation	Color
1TP1	BK
1TP2	WH

KTY 84-130 sensor (optional)

Abbreviation	Designation	Color
1K1	+	BN
1K2	-	WH

2.1.2 **Motor holding brake (optional)

NOTICE

The brake can be damaged by electrical connection errors!

- Therefore when connecting the brake, carefully note the polarity of the connections and the supply voltage of the brake.

Brake with permanent magnet excitation (P)

Abbreviation	Designation	Color
1BD1	24 V _{DC} ± 5% (smoothed)	RD
1BD2	0 V (GND)	BK

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2.2 Encoder connection plug


NOTICE

The encoder can be damaged by electrical connection errors!


- Therefore check before making the connection whether the type of the encoder (see motor name plate) is correctly set in the drive controller.

Encoder EnDat® 2.1/2.2 digital (EC/ECN/EQI/EQN)	Pin	Signal	Color
 <p>size con.15 (for EZ3 only)</p> <p>size con.17</p>	1	Clock +	VT
	2*	Up sense	BNGN
	3		
	4		
	5	Data –	PK
	6	Data +	GY
	7		
	8	Clock –	YE
	9		
	10	0 V	WHGN
	11		
	12	Up +	BNGN

Pin 2 is connected with pin 12 in the built-in socket

Encoder EnDat® 2.2 digital with battery buffering (EBI)	Pin	Signal	Color
 <p>size con.15 (for EZ3 only)</p> <p>size con.17</p>	1	Clock +	VT
	2	UBatt +	BU
	3	UBatt –	WH
	4		
	5	Data –	PK
	6	Data +	GY
	7		
	8	Clock –	YE
	9		
	10	0 V	WHGN
	11		
	12	Up +	BNGN

UBatt + = 3.6 V_{DC} only for EBI in conjunction with AES


Resolver	Pin	Signal	Color
 <p>size con.15 (for EZ3 only)</p> <p>size con.17</p>	1	S3 Cos +	BK
	2	S1 Cos –	RD
	3	S4 Sin +	BU
	4	S2 Sin –	YE
	5		
	6		
	7	R2 Ref +	YEW
	8	R1 Ref –	RDW
	9		
	10		
	11		
	12		

2.3 Connection plug for external fan (optional)

NOTICE

The external fan motor can be damaged by electrical connection errors!

- Therefore check before making the connection whether the connection values and terminal assignment of the external fan motor match those shown below.

Connection diagram	Pin	Designation
	1	L1 (220 - 230 V, 50 Hz)
	2	N
	3	
	4	PE protective ground