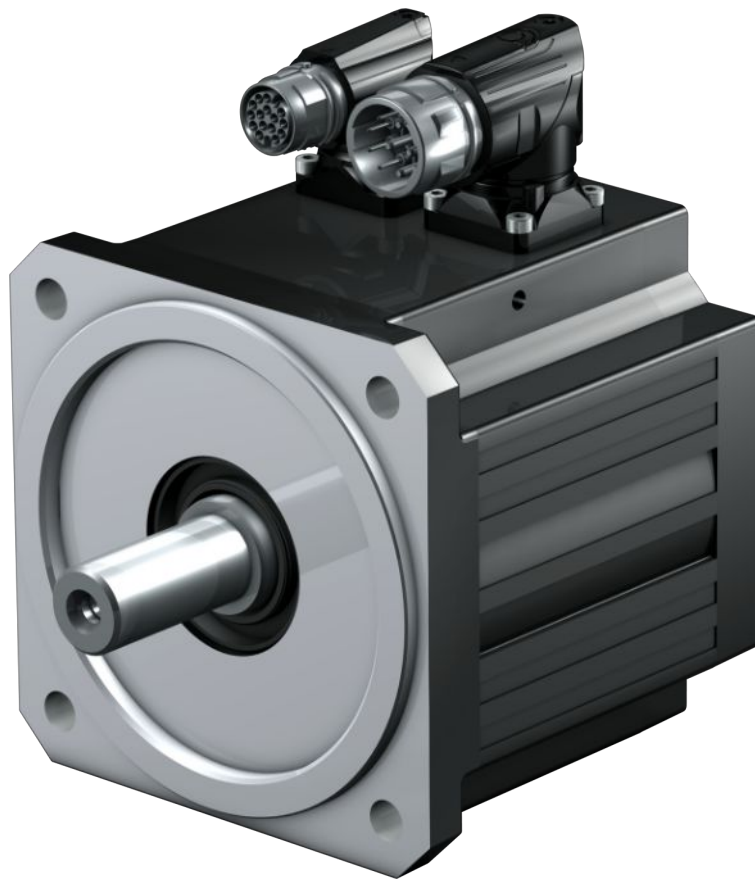




EZ motors in combination with Bosch IndraDrive C/Cs Information on compatibility

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STÖBER

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1 Foreword

The STÖBER synchronous servo motors of the EZ series can be operated with drive controllers from a wide range of manufacturers – for example, with IndraDrive C/Cs frequency inverters from Bosch (referred to below as drive controllers).

The encoders and their electronic nameplates, as well as the temperature sensors on STÖBER motors, are compatible with the specified drive controllers. The original cables from Bosch cannot be used with the plug connectors of STÖBER motors. STÖBER therefore offers compatible connection cables.

2 Information on this documentation

This documentation contains information on the compatibility of STÖBER synchronous servo motors of the EZ series with the IndraDrive C/Cs drive controllers from Bosch. The relevant operating manual applies to installation, connection and commissioning.

2.1 Timeliness

Check whether you have the latest version of this documentation. The latest document versions for our products are available for download on our website:

<http://www.stoeber.de/en/downloads/>.

2.2 Original language

The original language of this documentation is German; all other language versions are derived from the original language.

2.3 Limitation of liability

This documentation was created taking into account the applicable standards and regulations as well as the current state of technology.

No warranty or liability claims for damage shall result from failure to comply with the documentation or from use that deviates from the intended use of the product. This is especially true for damage caused by individual technical modifications to the product or the project configuration and operation of the product by unqualified personnel.

2.4 Formatting conventions

Orientation guides in the form of signal words, symbols and special text markups are used to emphasize specific information so that you are able identify it in this documentation quickly.

2.4.1 Distinction of text elements

Certain elements of the continuous text are distinguished as follows.

Important information	Words or expressions with a special meaning
Interpolated position mode	Optional: File or product name or other name
<u>Detailed information</u>	Internal cross-reference
http://www.samplelink.com	External cross-reference

2.5 Trademarks

The following names used in connection with the device, its optional equipment and its accessories are trademarks or registered trademarks of other companies:

EnDat®	EnDat® and the EnDat® logo are registered trademarks of Dr. Johannes Heidenhain GmbH, Germany.
HIPERFACE®	HIPERFACE® and the HIPERFACE DSL® logo are registered trademarks of SICK AG, Germany.
IndraDrive®	IndraDrive® is a registered trademark of Bosch Rexroth AG, Germany.
IndraWorks®	IndraWorks® is a registered trademark of Bosch Rexroth AG, Germany.
INTERCONTEC®	INTERCONTEC® is a registered trademark of TE Connectivity Industrial GmbH, Germany.

All other trademarks not listed here are the property of their respective owners.

Products that are registered as trademarks are not specially indicated in this documentation. Existing property rights (patents, trademarks, protection of utility models) are to be observed.

3 Connection

The terminal assignment of the plug connectors of STÖBER synchronous servo motors of the EZ series – in the version for Bosch drive controllers – is not compatible with that of the Bosch original cables. STÖBER therefore offers its own connection cables specifically designed for Bosch drive controllers. Detailed information is available from your STÖBER customer consultant.

3.1 Possible combinations with drive controllers

The following table shows the possible combinations of STÖBER synchronous servo motors with drive controllers from Bosch Rexroth depending on the encoder model.

Drive controller		IndraDrive C/Cs (EnDat 2.1; HIPERFACE)
Drive controller code		FW
DC link voltage U_{ZK}		540 V
Connection plan ID		442445
Encoder	Encoder code	
EnDat 2.1 EQN 1125	Q4	EZ
EnDat 2.1 ECI 1118-G3	C2	EZ
EnDat 2.1 EQI 1130-G3	Q2	EZ
SKM36	H1	EZ

The encoder and drive controller codes are a part of the type designation of the motor.

3.2 Encoders

Encoders with EnDat 2.1 interface

Encoder model	Code	Measuring method	Recordable revolutions	Resolution	Position values per revolution	Periods per revolution	MTTF [years]	PFH [h]
EnDat 2.1 EQN 1125	Q4	Optical	4096	13 bit	8192	Sin/cos 512	> 57	$\leq 2 \times 10^{-6}$
EnDat 2.1 ECI 1118-G3	C2	Inductive	–	18 bit	262144	Sin/cos 16	> 100	$\leq 6 \times 10^{-7}$
EnDat 2.1 EQI 1130-G3	Q2	Inductive	4096	18 bit	262144	Sin/cos 16	> 100	$\leq 6 \times 10^{-7}$

Encoders with HIPERFACE interface

Encoder model	Code	Measuring method	Recordable revolutions	Resolution	Position values per revolution	Periods per revolution	MTTF [years]	PFH [h]
SKM36	H1	Optical	4096	12 bit	4096	Sin/cos 128	> 100	$\leq 5.4 \times 10^{-7}$

Notes

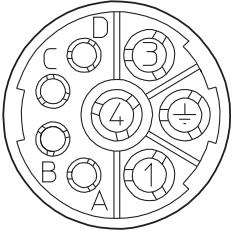
- The encoder code is a part of the type designation of the motor.
- Multiple revolutions of the motor shaft can be recorded only using multi-turn encoders.

3.3 Two-cable solution

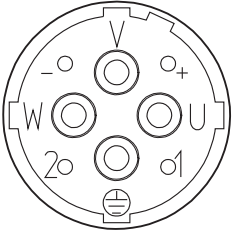
3.3.1 Connection assignment of the power plug connector

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

Plug connector size con.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)

Plug connector size con.40

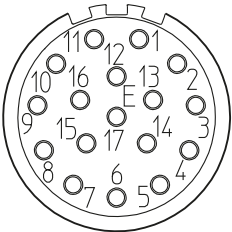
Connection diagram	Pin	Connection
	U	1U1 (U phase)
	V	1V1 (V phase)
	W	1W1 (W phase)
	+	1BD1 (brake +)
	-	1BD2 (brake -)
	1	1TP1 (temperature sensor +)
	2	1TP2 (temperature sensor -)
		PE (grounding conductor)

3.3.2 Connection assignment of the encoder plug connector

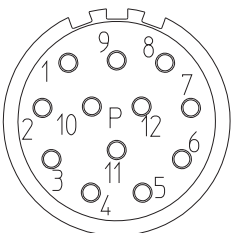
The size and terminal assignment of the encoder plug connectors depend on the model of encoder installed and the size of the motor.

EnDat 2.1 encoder with sin/cos incremental signals, plug connector size con.23

This terminal assignment only applies to the IndraDrive C/Cs drive controller.

Connection diagram	Pin	Connection
	1	Up sense
	2	
	3	
	4	0 V sense
	5	
	6	
	7	Up +
	8	Clock +
	9	Clock –
	10	0 V GND
	11	
	12	B + (Sin +)
	13	B – (Sin –)
	14	Data +
	15	A + (Cos +)
	16	A – (Cos –)
	17	Data –

HIPERFACE encoder, plug connector size con.23

Connection diagram	Pin	Connection
	1	Us
	2	0 V GND
	3	REFSIN
	4	REFCOS
	5	Data +
	6	Data –
	7	+ SIN
	8	+ COS
	9	
	10	
	11	
	12	

3.3.3 Plug connectors

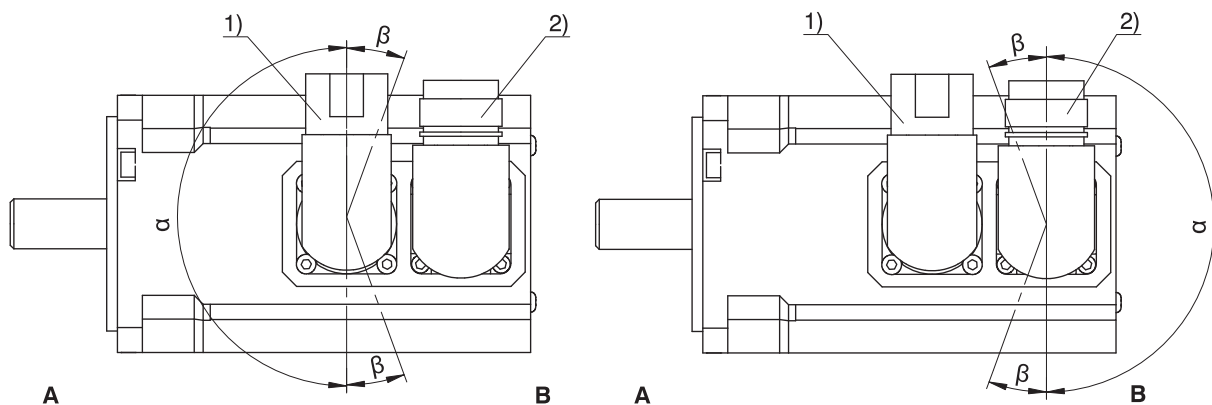
In the standard version, STÖBER synchronous servo motors are equipped with rotatable plug connectors¹ for power and encoder connections. You can find detailed technical information about the plug connectors at <http://www.intercontec.biz>.

For motors with forced ventilation, avoid collisions between the motor connection cables and the plug connector of the forced ventilation unit. In the event of a collision, rotate the plug connectors of the motor by the required angle.

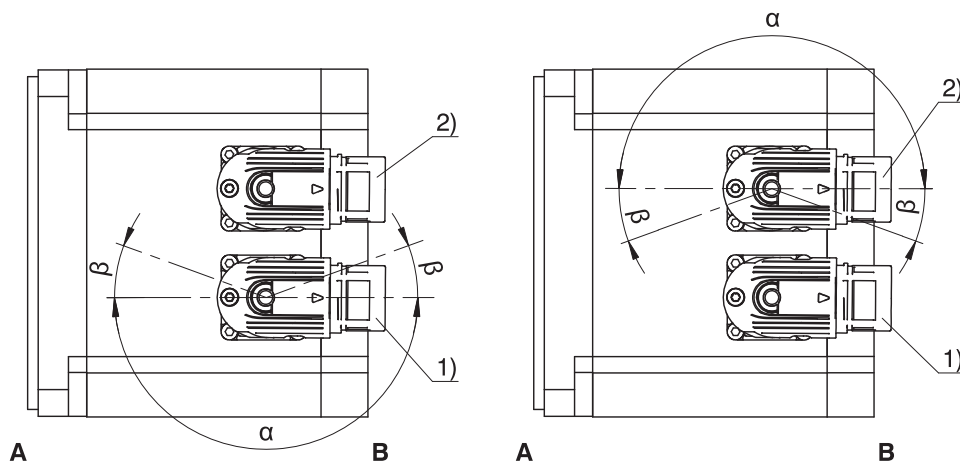
For winding protection, STÖBER uses PTC or Pt1000 temperature sensors, which are selected to match the drive. In a two-cable solution, the temperature sensor connections are routed via the power plug connector.

The figures represent the position of the plug connectors upon delivery.

Turning ranges of plug connectors (EZ2 – EZ3 motors)



Turning ranges of plug connectors (EZ4 – EZ8 motors)



1 Power plug connector

2 Encoder plug connector

A Attachment or output side of the motor

B Not output side

¹The connectors can be pivoted up to 10 times at a specific angle. They cannot be rotated repeatedly.

Power plug connector features

Motor type	Size	Connection	Turning range	
			α	β
EZ2, EZ3	con.23	Quick-lock	180°	120°
EZ4, EZ5, EZ701, EZ702, EZ703	con.23	Quick-lock	180°	40°
EZ705, EZ8	con.40	Quick-lock	180°	40°

Encoder plug connector features

Motor type	Size	Connection	Turning range	
			α	β
EZ2, EZ3	con.23	Quick-lock	180°	120°
EZ4, EZ5, EZ7, EZ8	con.23	Quick-lock	190°	35°

Notes

- The number after "con." indicates the approximate external thread diameter of the plug connector in mm (for example, con.23 designates a plug connector with an external thread diameter of about 23 mm).
- In turning range β , the power or encoder plug connectors can be turned only if doing so does not cause them to collide.

4 Commissioning

Only put the motor into operation if you have reviewed its installation and connection in accordance with the associated operating manual, as well as all other necessary requirements specific to your system. In addition, follow the instructions for commissioning your drive controller in the third-party manufacturer's documentation.

4.1 Parameterizing the motor

After the motor has been installed and connected to the corresponding drive controller, parameterization takes place in the IndraWorks commissioning software from Bosch.

As a specific parameterization list is required for this, please contact STÖBER System Support at systemsupport@stoerber.de and send either your order number or the series, size and type designation of the motor as well as the type of drive controller used. You will receive the requested list immediately by e-mail.

The electronic nameplate of STÖBER motors is not read by Bosch drive controllers. Only the commutation offset is stored in the encoder memory and can be read out by the drive controller.

Information

The commutation offset of the motor comes from the factor set in such a way that calibration by the customer is not necessary.

5 Appendix

5.1 Further information

The documentation listed below provides you with further relevant information on the motors. The current status of the documentation can be found in our download center at:

<http://www.stoeber.de/en/downloads/>.

Enter the ID of the documentation in the search.

Title	Documentation	Contents	ID
Synchronous Servo Motors EZ	Operating manual	Technical data, transport and storage, installation, connection, commissioning, service	443032_en
Drives and automation	Catalog	Detailed information on drive controllers and the design of connection cables	442711_en

The documentation for the drive controller and a current version of the **IndraWorks** commissioning software are available in the download area of Bosch at:

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5.2 Abbreviations

Abbreviation	Meaning
GND	Ground
PE	Protective Earth (grounding conductor)
PTC	Positive Temperature Coefficient

6 Contact

6.1 Consultation, service and address

We would be happy to help you!

We offer a wealth of information and services to go with our products on our website:

<http://www.stoeber.de/en/service>

For additional or personalized information, contact our consultation and support service:

<http://www.stoeber.de/en/support>

If you need our system support:

Phone: +49 7231 582-3060

systemsupport@stoeber.de

If you need a replacement device:

Phone: +49 7231 582-1128

replace@stoeber.de

Call our 24-hour service hotline:

Phone: +49 7231 582-3000

Our address is:

STÖBER Antriebstechnik GmbH + Co. KG

Kieselbronner Strasse 12

75177 Pforzheim, Germany

6.2 Your opinion is important to us

We created this documentation to the best of our knowledge with the goal of helping you build and expand your expertise productively and efficiently with our products.

Your suggestions, opinions, wishes and constructive criticism help us to ensure and further develop the quality of our documentation.

If you want to contact us for a specific reason, we would be happy to receive an e-mail from you at:

documentation@stoeber.de

Thank you for your interest.

Your STÖBER editorial team

6.3 Close to customers around the world

We offer you committed, expert advice and support in over 40 countries worldwide:

STOBER AUSTRIA

www.stoeber.at
+43 7613 7600-0
sales@stoeber.at

STOBER FRANCE

www.stober.fr
+33 478 98 91 80
sales@stober.fr

STOBER ITALY

www.stober.it
+39 02 93909570
sales@stober.it

STOBER KOREA

www.stober.kr
+82 10 5681 6298
sales@stober.kr

STOBER SWITZERLAND

www.stoeber.ch
+41 56 496 96 50
sales@stoeber.ch

STOBER TURKEY

www.stober.com
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sales-turkey@stober.com

STOBER USA

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STOBER CHINA

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sales@stoeber.de

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STOBER SWEDEN

www.stober.com
+46 702 394 675
neil.arstad@stoeber.de

STOBER TAIWAN

www.stober.tw
+886 4 2358 6089
sales@stober.tw

STOBER UK

www.stober.co.uk
+44 1543 458 858
sales@stober.co.uk



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STÖBER Antriebstechnik GmbH + Co. KG
Kieselbronner Str. 12
75177 Pforzheim
Germany
Tel. +49 7231 582-0
mail@stoeber.de
www.stober.com

24 h Service Hotline
+49 7231 582-3000

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