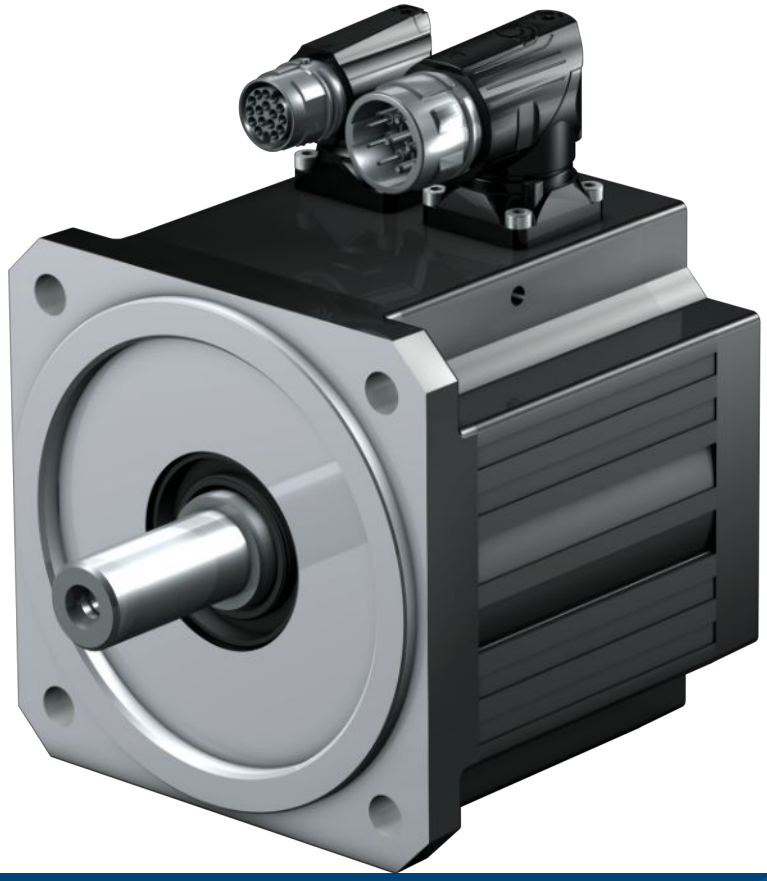

Commissioning of EZ motors on S120 drive controllers

Information

en-US
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STÖBER

1 Overview

This document contains information about the **Siemens SINAMICS S120** feature that is offered in the configuration of STOBER motors when selecting the drive controller type. This feature affects the connection and parameterization of STOBER synchronous servo motors to drive controllers of the Siemens SINAMICS S120 series.

STOBER motor designs with the previously named features are available and can be delivered.

STOBER has taken the following measures to minimize the effort of commissioning STOBER motors connected to SINAMICS S120 drive controllers and avoid errors during parameterization:

- The commutation offset of the motor was set so that calibration by the customer is not necessary.
- Parameter lists are provided on request.

Brand names

SINAMICS®	SINAMICS® is a registered trademark of Siemens AG, Munich, Germany.

04/2023 | ID 443232_en.01

2 Siemens drive controllers

Supported series

This document refers to Siemens drive controllers of the SINAMICS S120 series.

Parameterization

Automatic parameterization of STOBER motors to S120 drive controllers is not possible. STOBER provides parameter lists in PDF format on request, however. More information can be found in the chapter Parameterizing the motor [▶ 7].

Connection cables

The plug connectors and terminal assignment of STOBER motors are designed so that the customer can obtain and connect the corresponding original cables from Siemens. STOBER does not offer any connection cables for Siemens drive controllers.

04/2023 | ID 443232_en.01

3 STOBER motors

Supported motor series

The STOBER EZ motor series can be parameterized to SINAMICS S120 drive controllers. Other STOBER motor series on request.

Electronic nameplate

When connecting STOBER motors to SINAMICS S120, the electronic nameplate is not used. Only the commutation offset is stored in the encoder memory so that it can be read out by the drive controller.

Temperature sensor

As standard, PTC or PT1000 temperature sensors are installed in Siemens motors, depending on the series. STOBER offers the same temperature sensors. The temperature sensor connections are routed via the encoder plug connector.

The terminal assignment for plug connectors of STOBER motors in the designs listed above is identical to Siemens motors.

3.1 Encoders

Encoders with EnDat 2.1 interface

Encoder model	Code	Measuring method	Recordable revolutions	Resolution	Position values per revolution	Periods per revolution	MTTF [years]	PHF [h]
EnDat 2.1 ECI 119	C4	Inductive	–	19 bit	524288	Sin/cos 32	> 57	$\leq 2 \times 10^{-6}$
EnDat 2.1 EQN 1125 FMA	M2	Optical	4096	13 bit	8192	Sin/cos 512	> 57	$\leq 2 \times 10^{-6}$
EnDat 2.1 EQN 1125	Q4	Optical	4096	13 bit	8192	Sin/cos 512	> 57	$\leq 2 \times 10^{-6}$
EnDat 2.1 ECN 1113 FMA	M0	Optical	–	13 bit	8192	Sin/cos 512	> 57	$\leq 2 \times 10^{-6}$
EnDat 2.1 ECN 1113	C6	Optical	–	13 bit	8192	Sin/cos 512	> 57	$\leq 2 \times 10^{-6}$

Notes

- The encoder code is a part of the type designation of the motor.
- FMA = Version with fault exclusion for mechanical coupling.
- Multiple revolutions of the motor shaft can be recorded only using multi-turn encoders.

04/2023 | ID 443232_en.01

3.2 Possible combinations with drive controllers

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

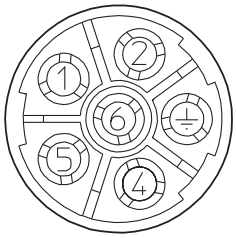
Drive controller		**SINAMICS S120** (with EnDat 2.1 and resolver interface)
Drive controller code		FJ
Connection plan ID		442315
Encoder	**Encoder code**	
EnDat 2.1 EQN 1125 FMA	M2	EZ
EnDat 2.1 EQN 1125	Q4	EZ
EnDat 2.1 ECN 1113 FMA	M0	EZ
EnDat 2.1 ECN 1113	C6	EZ
Resolver	R0	EZ

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

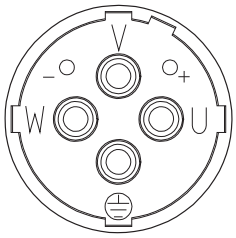
3.3 Connection assignment of the power plug connector

The size and connection plan of the power plug connector depend on the size of the motor. The colors of the connecting wires inside the motor are specified in accordance with IEC 60757.

Plug connector size con.23

Connection diagram	Pin	Connection	Color
	1	U phase	BK
	2	V phase	BU
	4	Brake +	RD
	5	Brake –	BK
	6	W phase	RD
	⏚	Grounding conductor	GNYE

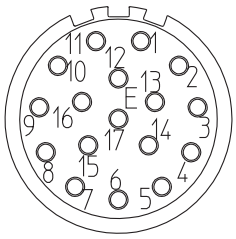
Plug connector size con.40 (1.5)

Connection diagram	Pin	Connection	Color
	U	U phase	BK
	V	V phase	BU
	W	W phase	RD
	+	Brake +	RD
	–	Brake –	BK
	⏚	Grounding conductor	GNYE

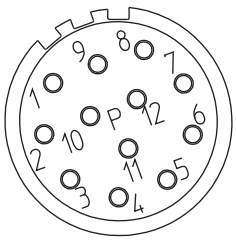
3.4 Connection assignment of the encoder plug connector

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

Connection diagram	Pin	Connection	Color
	1	A + (Cos +)	GNBK
	2	A – (Cos –)	YEBK
	3	Data +	GY
	4		
	5	Clock +	VT
	6		
	7	0 V GND	WHGN
	8	Temperature sensor +	BK/BN
	9	Temperature sensor –	WH/WH
	10	Up +	BNGN
	11	B + (Sin +)	BUBK
	12	B – (Sin –)	RDBK
	13	Data –	PK
	14	Clock –	YE
	15	0 V sense	WH
	16	Up sense	BU
	17		

Resolver, plug connector size con.23

Connection diagram	Pin	Connection	Color
	1	S4 Sin +	BU
	2	S2 Sin –	YE
	3		
	4		
	5		
	6		
	7	R1 Ref –	RDWH
	8	Temperature sensor +	BK/BN
	9	Temperature sensor –	WH/WH
	10	R2 Ref +	YEWH
	11	S3 Cos +	BK
	12	S1 Cos –	RD

04/2023 | ID 443232_en.01

4 Parameterizing the motor

Prerequisites

Before parameterizing the motor, make sure that the following prerequisites are present or have been met:

- PC with Siemens Starter software
- Mechanical installation of the EZ motor in the machine is completed
- Electrical connection of the EZ motor to the S120 drive controller is complete

Parameterize the STOBER motor using Siemens Starter, inputting the parameters with the help of the software wizard or in expert mode. The necessary parameter values can be obtained from STOBER in list form.

The correct commutation offset is already stored in the motor encoder.

Further information on commissioning can be found in the technical documentation of Siemens Starter, the drive controller and motor.

The technical documentation of a STOBER motor can be found by entering the motor's serial number under https://id.stober.com or scanning the QR code on the motor's nameplate.

443232_en.01

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