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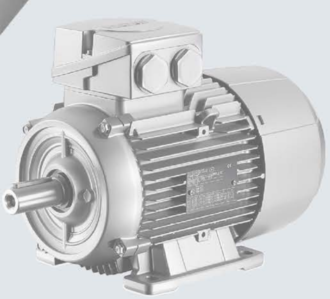

Compact Operating Instructions

SINAMICS

SINAMICS G120C

Low-voltage inverters
Built-in devices, frame sizes D ... F

Edition 11/2016

www.siemens.com/drives

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SINAMICS

SINAMICS G120C
SINAMICS G120C, FSD ... FSF inverters

Compact Operating Instructions

Edition 11/2016, firmware 4.7 SP6

11/2016, FW V4.7 SP6

A5E39339884B AA

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠DANGER
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠WARNING
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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A5E39339884B AA
℗ 11/2016 Subject to change

Table of contents

The Compact Operating Instructions describe how you install and commission the SINAMICS G120C converter.

What is the meaning of the symbols in the manual?

Reference to further information in the manual

1.
2.
An operating instruction starts here.

This concludes the operating instruction.

Download from the Internet

DVD that can be ordered

1 Fundamental safety instructions

1.1 General safety instructions

⚠ WARNING

Danger to life if the safety instructions and residual risks are not observed

If the safety instructions and residual risks in the associated hardware documentation are not observed, accidents involving severe injuries or death can occur.

- Observe the safety instructions given in the hardware documentation.
- Consider the residual risks for the risk evaluation.

⚠ WARNING

Danger to life or malfunctions of the machine as a result of incorrect or changed parameterization

As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.

- Protect the parameterization (parameter assignments) against unauthorized access.
- Respond to possible malfunctions by applying suitable measures (e.g. EMERGENCY STOP or EMERGENCY OFF).

1.2 Industrial security

Note

Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions only represent one component of such a concept.

The customer is responsible for preventing unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit:

Industrial security (http://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed at:

Industrial security (http://www.siemens.com/industrialsecurity).

⚠ WARNING

Danger to life as a result of unsafe operating states resulting from software manipulation

Software manipulations (e.g. viruses, trojans, malware or worms) can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.
- Make sure that you include all installed products into the holistic industrial security concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.

Scope of delivery and options 2

2.1 Inverters, frame sizes FSD … FSF

The delivery comprises at least the following components:

- A ready to run inverter with loaded firmware.

  Options for upgrading and downgrading the firmware can be found on the Internet:
  Firmware (http://support.automation.siemens.com/WW/news/en/67364620)

  You can find the article number 6SL3210-1KE…, the hardware version (e.g. C02) and the firmware (e.g. V4.7) on the inverter rating plate.
- 1 set of shield plates, including mounting materials
- Compact Operating Instructions in German and English
- The inverter contains open-source software (OSS). The OSS license terms are saved in the inverter.
- 1 set of covers for the motor, line and braking resistor terminals.

Transferring OSS license terms to a PC

Procedure

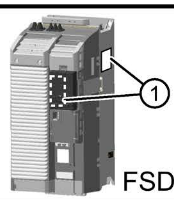
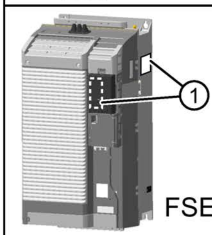
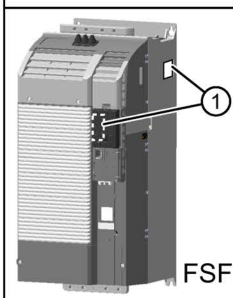
To transfer OSS license terms to a PC, proceed as follows:

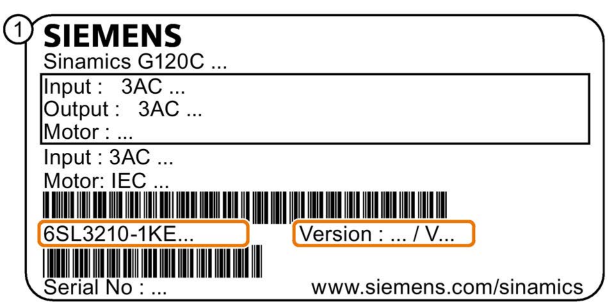
1. Switch off the inverter power supply.
2. Insert an empty memory card into the card slot of the inverter.

   Overview of the interfaces (Page 28)
3. Switch on the inverter power supply.
4. The inverter writes file "Read_OSS.ZIP" to the memory card within approximately 30 seconds.
5. Switch off the inverter power supply.
6. Withdraw the memory card from the inverter.
7. Insert the memory card into the card reader of a PC.
8. Please read the license terms.

You have transferred the OSS license terms to a PC.

Type plate and technical data

Frame size	Rated output power	Rated output current	Article No. SINAMICS G120C PN (PROFINET, EtherNet/IP)	
	Based on a low overload		Without filter	With filter
 FSD	22 kW	43 A	6SL3210-1KE24-4UF1	6SL3210-1KE24-4AF1
	30 kW	58 A	6SL3210-1KE26-0UF1	6SL3210-1KE26-0AF1
	37 kW	68 A	6SL3210-1KE27-0UF1	6SL3210-1KE27-0AF1
	45 kW	82.5	6SL3210-1KE28-4UF1	6SL3210-1KE28-4AF1
 FSE	55 kW	103 A	6SL3210-1KE31-1UF1	6SL3210-1KE31-1AF1
 FSF	75 kW	136 A	6SL3210-1KE31-4UF1	6SL3210-1KE31-4AF1
	90 kW	164 A	6SL3210-1KE31-7UF1	6SL3210-1KE31-7AF1
	110 kW	201 A	6SL3210-1KE32-1UF1	6SL3210-1KE32-1AF1
	132 kW	237 A	6SL3210-1KE32-4UF1	6SL3210-1KE32-4AF1



The rating plate contains the Article No. and the hardware and firmware version of the inverter. You will find a rating plate at the following locations on the inverter:

- At the front, after removing the blanking cover for the operator panel.
- At the side on the heat sink

2.2 Optional components

Line reactor

A line reactor is not required.

Output reactor

The output reactor increases the maximum permissible length of the motor cables.

Inverter			Output reactor
Frame size D	22 kW … 37 kW	6SL3210-1KE24-4 . . 1 6SL3210-1KE26-0 . . 1 6SL3210-1KE27-0 . . 1	6SE6400-3TC07-5ED0
	45 kW	6SL3210-1KE28-4 . . 1	6SE6400-3TC14-5FD0
Frame size E	55 kW	6SL3210-1KE31-1 . . 1	
Frame size F	75 kW … 90 kW	6SL3210-1KE31-4 . . 1 6SL3210-1KE31-7 . . 1	
	110 kW	6SL3210-1KE32-1 . . 1	6SL3000-2BE32-1AA0
	132 kW	6SL3210-1KE32-4 . . 1	6SL3000-2BE32-6AA0

Braking resistor

The braking resistor allows the inverter to actively brake loads with high moments of inertia.

Inverter			Braking resistor
Frame size D	22 kW	6SL3210-1KE24-4 . . 1	JJY:023422620001
	30 kW … 37 kW	6SL3210-1KE26-0 . . 1 6SL3210-1KE27-0 . . 1	JJY:023424020001
	45 kW	6SL3210-1KE28-4 . . 1	JJY:023434020001
Frame size E	55 kW	6SL3210-1KE31-1 . . 1	
Frame size F	75 kW … 90 kW	6SL3210-1KE31-4 . . 1 6SL3210-1KE31-7 . . 1	JJY:023454020001
	110 kW … 132 kW	6SL3210-1KE32-1 . . 1 6SL3210-1KE32-4 . . 1	JJY:023464020001

Installing 3

3.1 Mounting

Dimensions

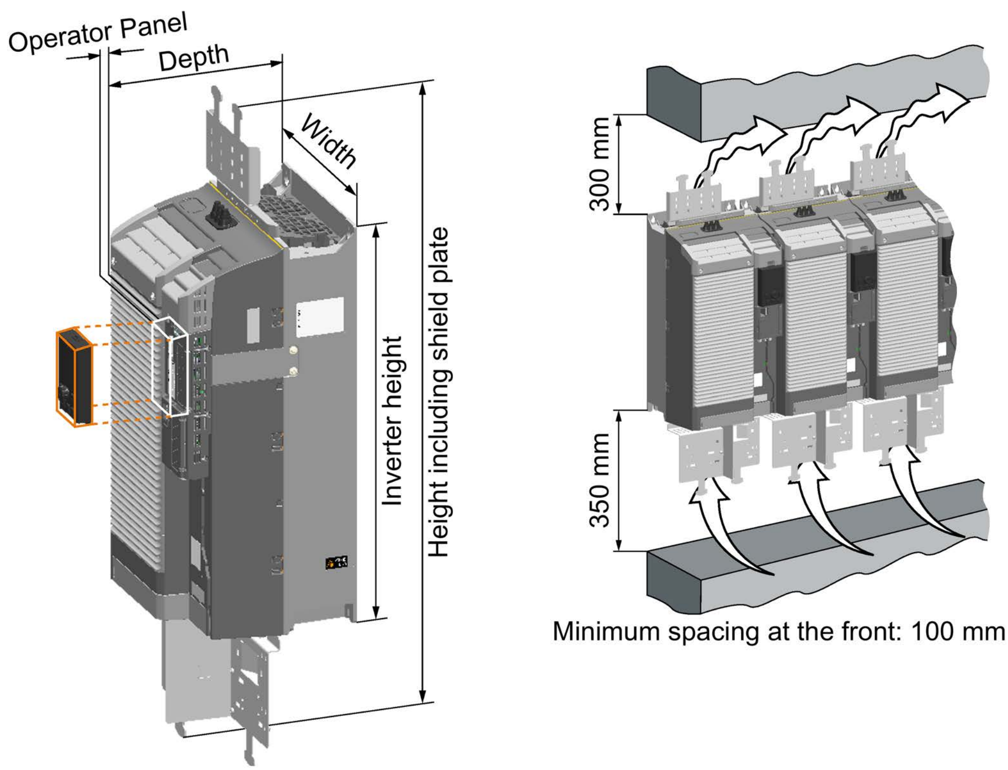


Figure 3-1 Dimensions and minimum spacing to other devices, FSD … FSF

Table 3- 1 Dimensions, FSD … FSF

	Frame size D **22 kW … 45 kW**	**Frame size E** **55 kW**	**Frame size F** **75 kW … 132 kW**
Inverter height	472 mm	551 mm	708 mm
Height including shield plate	708 mm	850 mm	1107 mm
Height of the lower shield plate	152 mm	177 mm	257 mm
Height of the upper shield plate	84 mm	123 mm	142 mm
Width	200 mm	275 mm	305 mm
Depth	237 mm	237 mm	357 mm
Additional depth with operator panel	+ 22 mm with IOP (Intelligent Operator Panel)		
	+ 11 mm with BOP-2 (Basic Operator Panel) attached		

Mounting the shield plates

We recommend that you mount the shield plates provided. The shield plates make it simpler to install the inverter in compliance with EMC regulations and to provide strength relief for the connected cables.

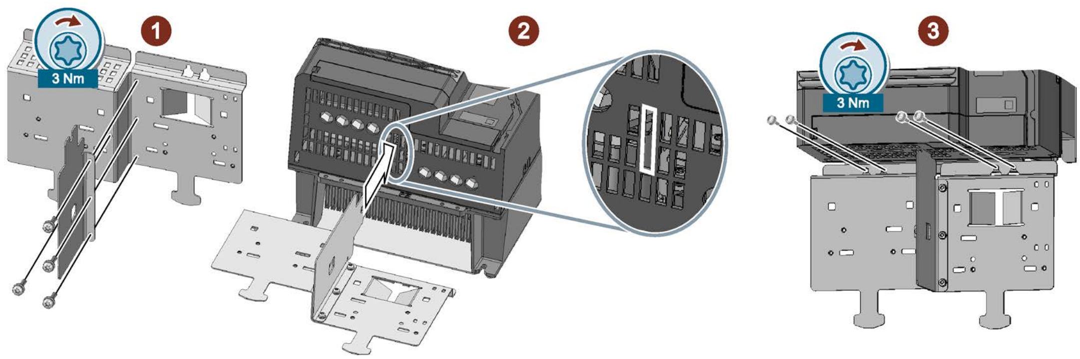


Figure 3-2 Mounting the lower shield plate, FSD and FSE

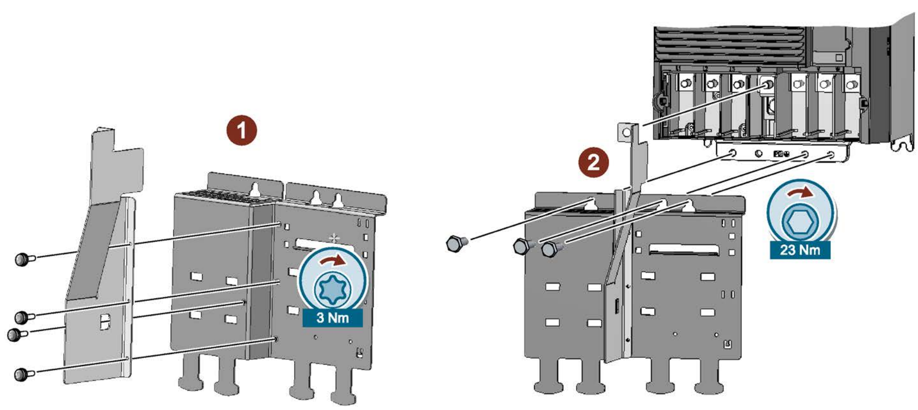
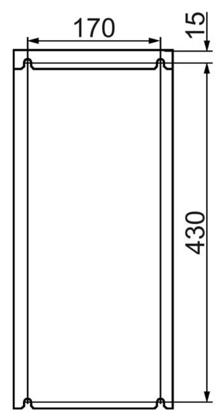
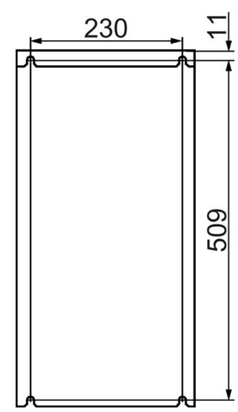
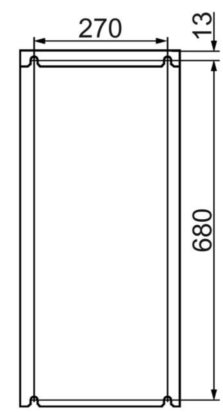


Figure 3-3 Mounting the lower shield plate, FSF

Mounting on a control cabinet panel

Table 3- 2 Drilling templates and mounting equipment, FSD … FSF

	Frame size D **22 kW … 45 kW**	**Frame size E** **55 kW**	**Frame size F** **75 kW … 132 kW**
Drilling pattern			
Mounting parts	4 x M5 bolts 4 x M5 nuts 4 x M5 washers	4 x M6 bolts 4 x M6 nuts 4 x M6 washers	4 x M8 bolts 4 x M8 nuts 4 x M8 washers
Locked-rotor (starting) torque	6 Nm	10 Nm	25 Nm

Protection against the spread of fire

The device may be operated only in closed housings or in control cabinets with protective covers that are closed, and when all of the protective devices are used. The installation of the device in a metal control cabinet or the protection with another equivalent measure must prevent the spread of fire and emissions outside the control cabinet.

Protection against condensation or electrically conductive contamination

Protect the device, e.g. by installing it in a control cabinet with degree of protection IP54 according to IEC 60529 or NEMA 12. Further measures may be necessary for particularly critical operating conditions.

If condensation or conductive pollution can be excluded at the installation site, a lower degree of control cabinet protection may be permitted.

3.2 Connecting

3.2.1 Connecting the inverter and inverter components to the line supply

WARNING

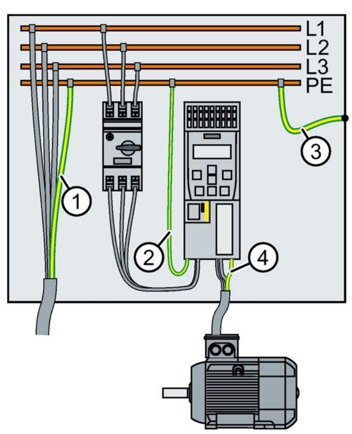
Danger to life caused by high leakage currents for an interrupted protective conductor

The drive components conduct a high leakage current via the protective conductor. Touching conductive parts when the protective conductor is interrupted can result in death or serious injury.

- Dimension the protective conductor as stipulated in the appropriate regulations.

Dimensioning the protective conductor

Observe the local regulations for protective conductors subject to an increased leakage current at the site of operation.



① Protective conductor for line feeder cables
② Protective conductor for inverter line feeder cables
③ Protective conductor between PE and the electrical cabinet
④ Protective conductor for motor feeder cables

The minimum cross-section of the protective conductor ① … ④ depends on the cross-section of the line or motor feeder cable:

- Line or motor feeder cable ≤ 16 mm²

  ⇒ Minimum cross-section of the protective conductor = cross-section of the line or motor feeder cable

- 16 mm² < line or motor feeder cable ≤ 35 mm²

  ⇒ Minimum cross-section of the protective conductor = 16 mm²

- Line or motor feeder cable > 35 mm²

  ⇒ Minimum cross-section of the protective conductor = ½ cross-section of the line or motor feeder cable

Additional requirements placed on the protective conductor ①:

- For permanent connection, the protective conductor must fulfill at least one of the following conditions:
  - The protective conductor is routed so that it is protected against damage along its complete length.
    Cables routed inside electrical cabinets or enclosed machine housings are considered to be adequately protected against mechanical damage.
  - As a conductor of a multi-conductor cable, the protective conductor has a cross-section ≥ 2.5 mm² Cu.
  - For an individual conductor, the protective conductor has a cross-section ≥ 10 mm² Cu.
  - The protective conductor consists of two conductors with the same cross-section.
- When connecting a multi-core cable using an industrial plug connector according to EN 60309, the protective conductor must have a cross-section of ≥ 2.5 mm² Cu.

Overview of the connections

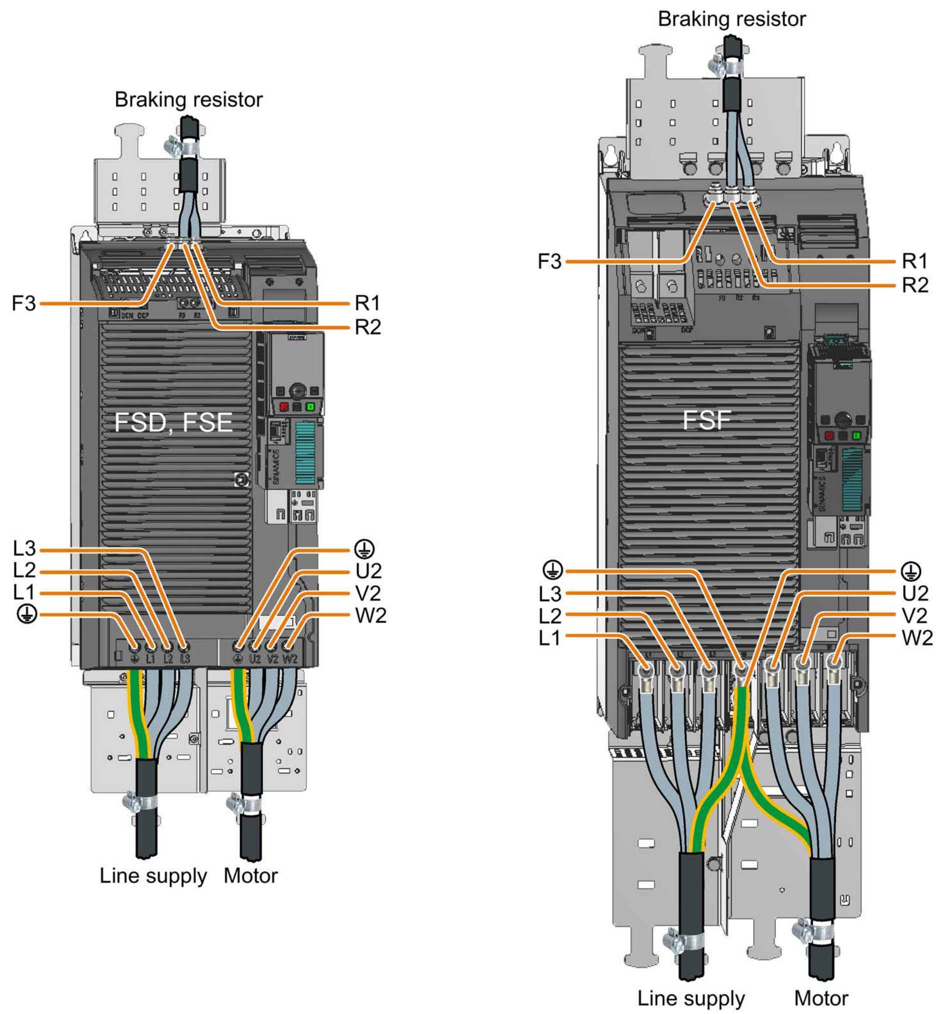
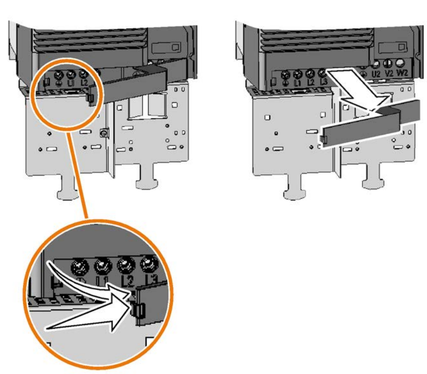


Figure 3-4 Connections for the line supply, motor and braking resistor

Connecting the line supply and motor, frame sizes FSD … FSE



Remove the lower connection covers.

You must re-attach the covers in order to re-establish the touch protection of the inverter after the cables have been connected.

Connecting the line supply and motor, frame size FSF

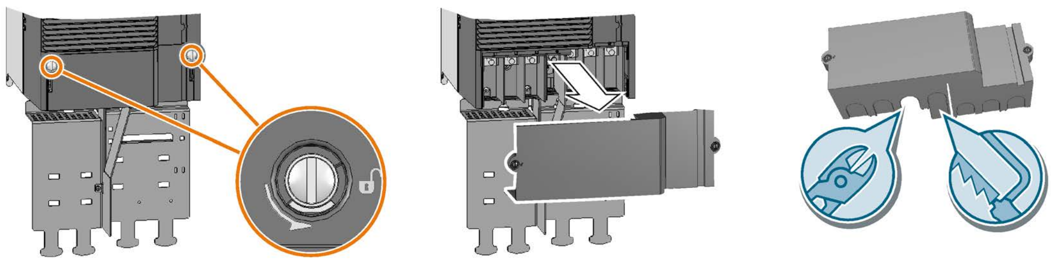


Figure 3-5 Connecting the line supply and motor, FSF

Remove the lower connection covers.

Use side cutters or a fine saw blade to make openings in the cover for the cables.

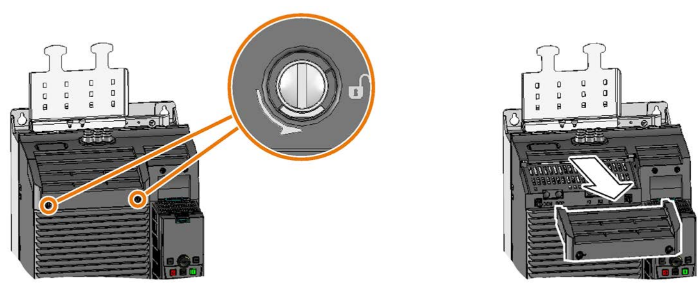
You must re-attach the covers in order to re-establish the touch protection of the inverter after the cables have been connected.

Connecting the braking resistor, frame sizes FSD … FSF

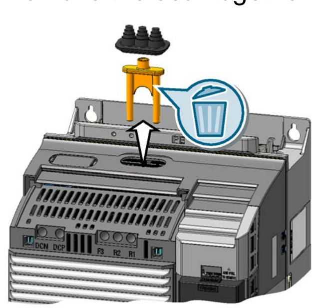
Procedure

To connect a braking resistor, proceed as follows:

1. Remove the upper inverter cover.

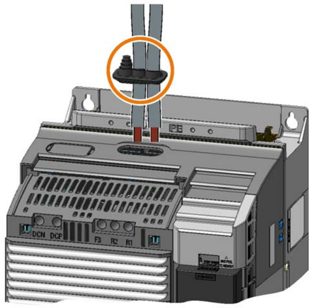


2. Release the two braking resistor terminals.
3. Remove the seal together with the connection cover upwards away from the inverter.

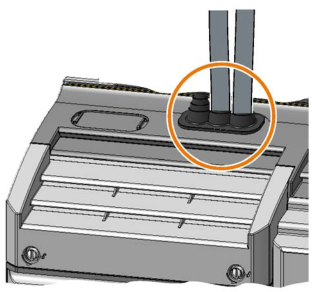


4. Adapt the seal to the cable cross-section.

5. Place the seal on the cables to be connected.

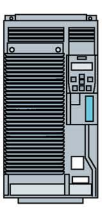


6. Connect the cables in the inverter.
7. Push the seal into the inverter housing.
8. Mount the upper inverter cover.

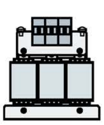


You have connected the braking resistor.

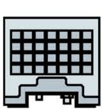
Connection cross-sections and tightening torque



Frame size, rated power		Inverter Connection cross-section (tightening torque)	
FSD	22 kW … 45 kW	10 ... 35 mm² (2.5 ... 4.5 Nm)	20 ... 10 AWG (22 lbf in)
FSE	55 kW	25 ... 70 mm² (8 ... 10 Nm)	6 ... 3/0 AWG (88.5 lbf in)
FSF	75 kW … 132 kW	35 ... 2 * 120 mm² (22 ... 25 Nm)	1 ... 2 * 4/0 AWG (210 lbf in)



Output reactor Connection cross-section (tightening torque)		Rated power of the inverter
M6	PE M6	22 kW … 37 kW
M8	PE M8	45 kW … 90 kW
M10	PE M8	110 kW … 132 kW



Braking resistor Connection cross-section (tightening torque)				Rated power of the inverter
R1, R2, PE		Temperature contact		
10 mm² (0.8 Nm)	8 AWG (7.1 lbf in)	2.5 mm² (0.5 Nm)	14 AWG (4.5 lbf in)	22 kW … 37 kW
16 mm² (1.2 Nm)	6 AWG (10.6 lbf in)			45 kW … 55 kW
10/16 mm² (0.8/1.2 Nm)	8/6 AWG (7.1/10.6 lbf in)			75 kW … 90 kW
16 mm² (1.2 Nm)	6 AWG (10.6 lbf in)			110 kW … 132 kW

3.2.2 Branch circuit protection

> ⚠ **WARNING**
>
> **Danger to life due to electric shock and fire hazard caused by protective equipment tripping too late**
>
> Overcurrent protective equipment that trips too late or not all can cause electric shock or fire.
>
> - In the case of a conductor-conductor or conductor-ground short-circuit, ensure that the short-circuit current at the point where the inverter is connected to the line supply corresponds as a minimum to the requirements of the protective equipment used.
> - You must additionally use a residual-current protective device (RCD) if, for a conductor-ground short circuit, the required short-circuit current is not reached. Especially for TT line systems, the required short-circuit can be too low.
> - It is not permissible that the short-circuit current exceeds the short-circuit current rating (SCCR) of the inverter and the disconnecting capacity of the protective equipment.

Branch circuit protection according to the IEC standard

Table 3- 3 Permissible protective equipment according to the IEC standard

Frame size	Rated power	Inverter article number	Article number, fuse		I_{max} 1)	Control cabinet 2)
FSD	22 kW	6SL3210-1KE24-4…	3NA3824	3NE1820-0	80	≥ 0.6 m³
	30 kW	6SL3210-1KE26-0…	3NA3830	3NE1021-0	100	
	37 kW	6SL3210-1KE27-0…	3NA3830	3NE1021-0	100	
	45 kW	6SL3210-1KE28-4…	3NA3832	3NE1022-0	125	
FSE	55 kW	6SL3210-1KE31-1…	3NA3836	3NE1224-0	160	
FSF	75 kW	6SL3210-1KE31-4…	3NA3140	3NE1225-0	200	
	90 kW	6SL3210-1KE31-7…	3NA3142	3NE1277-0	250	
	110 kW	6SL3210-1KE32-1…	3NA3250	3NE1230-0	315	
	132 kW	6SL3210-1KE32-4…	3NA3252	3NE1331-0	350	

1) Maximum rated current of the protection device.

2) Minimum volume of the control cabinet in which the inverter is installed. The restriction applies only for a protection with a circuit-breaker.

Branch circuit protection according to the UL standard

Use in North America requires protection devices that meet UL standards as detailed in the following tables.

Table 3- 4 Permissible safety devices according to the UL standard

Protection device	UL category
Fuses of any manufacturer with faster tripping characteristic than class RK5, e.g. class J, T, CC, G, or CF	JDDZ
SIEMENS circuit breaker	DIVQ
Type E combination motor controller (designation according to the UL standard), is available as SIEMENS circuit breaker	NKJH

In accordance with the following tables, you may operate the inverter on a branch circuit with the specified short-circuit current rating provided the specified branch-circuit protection is installed.

Table 3- 5 Permissible circuit protection with non-semiconductor fuses of Classes J, T, CC, G or CF (JDDZ)

Frame size	Rated power	Inverter article number	I_{max} 1)	SCCR 2)	Control cabinet 3)
FSD	22 kW	6SL3210-1KE24-4…	70 A	65 kA, 3 AC 480 V	≥ 36000 in³
	30 kW	6SL3210-1KE26-0…	90 A	65 kA, 3 AC 480 V	≥ 36000 in³
	37 kW	6SL3210-1KE27-0…	100 A	65 kA, 3 AC 480 V	≥ 36000 in³
	45 kW	6SL3210-1KE28-4…	125 A	65 kA, 3 AC 480 V	≥ 36000 in³
FSE	55 kW	6SL3210-1KE31-1…	150 A	65 kA, 3 AC 480 V	≥ 36000 in³
FSF	75 kW	6SL3210-1KE31-4…	200 A	65 kA, 3 AC 480 V	≥ 36000 in³
	90 kW	6SL3210-1KE31-7…	250 A	65 kA, 3 AC 480 V	≥ 36000 in³
	110 kW	6SL3210-1KE32-1…	300 A	65 kA, 3 AC 480 V	≥ 36000 in³
	132 kW	6SL3210-1KE32-4…	350 A	65 kA, 3 AC 480 V	≥ 36000 in³

1) Maximum rated current of the fuse

2) Short circuit current rating of the inverter

3) Minimum envelope dimensions of a control cabinet approved according to UL in which the inverter is installed.

Table 3- 6 Permissible circuit-breakers (DIVQ)

Frame size	Rated power	Inverter article number	Circuit breaker		SCCR 2)	Control cabinet 3)
			Article number	I_{max} 1)		
FSD	22 kW	6SL3210-1KE24-4…	NCGA, NDGB, FXD6-A, FD6-A	70 A	35 kA, 480 V AC	≥ 36600 in³
			LGGA, HCGA, HDGB, LDGB, HFD6, HFXD6	70 A	65 kA, 480 VAC	≥ 36600 in³
			CED6, HHFD6, HHFXD6, CFD6	70 A	100 kA, 480 V AC	≥ 36600 in³
			3RV1742	70 A	65 kA, 480Y / 277 V AC 4)	≥ 36600 in³
	30 kW	6SL3210-1KE26-0…	NCGA, NDGB, FXD6-A, FD6-A	90 A	35 kA, 480 VAC	≥ 36600 in³
			LGGA, HCGA, HDGB, LDGB, HFD6, HFXD6	90 A	65 kA, 480 VAC	≥ 36600 in³
			CED6, HHFD6, HHFXD6, CFD6	90 A	100 kA, 480 V AC	≥ 36600 in³
	37 kW	6SL3210-1KE27-0…	NCGA, NDGB, NFGB, FXD6-A, FD6-A	100 A	35 kA, 480 VAC	≥ 36600 in³
			LGGA, HCGA, HDGB, LDGB, HFGB, LFGB, HFD6, HFXD6	100 A	65 kA, 480 VAC	≥ 36600 in³
			CED6, HHFD6, HHFXD6, CFD6	100 A	100 kA, 480 V AC	≥ 36600 in³
	45 kW	6SL3210-1KE28-4…	NCGA, NDGB, NFGB, FXD6-A, FD6-A	125 A	35 kA, 480 V AC	≥ 36600 in³
			LGGA, HCGA, HDGB, LDGB, HFGB, LFGB, HFD6, HFXD6	125 A	65 kA, 480 VAC	≥ 36600 in³
			CED6, HHFD6, HHFXD6, CFD6	125 A	100 kA, 480 V AC	≥ 36600 in³
FSE	55 kW	6SL3210-1KE31-1…	NCGA, NDGB, NFGB, FXD6-A, FD6-A	150 A	35 kA, 480 VAC	≥ 36600 in³
			HCGA, HDGB, LDGB, HFGB, HFD6, HFXD6	150 A	65 kA, 480 VAC	≥ 36600 in³
			HHFD6, HHFXD6, CFD6	150 A	100 kA, 480 V AC	≥ 36600 in³

Frame size	Rated power	Inverter article number	Circuit breaker		SCCR [2]	Control cabinet [3]
			Article number	I_{max} [1]		
FSF	75 kW	6SL3210-1KE31-4…	NFGB, FXD6-A, FD6-A, JD6-A, JXD6-A	200 A	35 kA, 480 VAC	≥ 36600 in³
			HFGB, LFGB, HFD6, HFXD6, HJD6-A, HJXD6-A	200 A	65 kA, 480 VAC	≥ 36600 in³
			HHFD6, HHFXD6, CFD6, HHJD6, HHJXD6, CJD6-A	200 A	100 kA, 480 V AC	≥ 36600 in³
	90 kW	6SL3210-1KE31-7…	NFGB, FXD6-A, FD6-A, JD6-A, JXD6-A	250 A	35 kA, 480 V AC	≥ 36600 in³
			HFGB, LFGB, HFD6, HFXD6, HJD6-A, HJXD6-A	250 A	65 kA, 480 VAC	≥ 36600 in³
			HHFD6, HHFXD6, CFD6, HHJD6, HHJXD6, CJD6-A	250 A	100 kA, 480 V AC	≥ 36600 in³
	110 kW	6SL3210-1KE32-1…	NJGA, JD6-A, JXD6-A, LD6-A, LXD6-A	300 A	35 kA, 480 VAC	≥ 36600 in³
			HJGA, LJGA, HJD6-A, HJXD6-A, HLD6-A, HLXD6-A, HHLD6, HHLXD6	300 A	65 kA, 480 VAC	≥ 36600 in³
			HHJD6, HHJXD6, CJD6-A, CLD6-A	300 A	100 kA, 480 V AC	≥ 36600 in³
	132 kW	6SL3210-1KE32-4…	NJGA, JD6-A, JXD6-A, LD6-A, LXD6-A	350 A	35 kA, 480 VAC	≥ 36600 in³
			HJGA, LJGA, HJD6-A, HJXD6-A, HLD6-A, HLXD6-A, HHLD6, HHLXD6	350 A	65 kA, 480 VAC	≥ 36600 in³
			HHJD6, HHJXD6, CJD6-A, CLD6-A	350 A	100 kA, 480 V AC	≥ 36600 in³

1) Maximum rated current of the circuit-breaker

2) Short circuit current rating of the inverter

3) Minimum envelope dimensions of a control cabinet approved according to UL in which the inverter is installed.

4) 65 kA, 480 VAC with rated current < 35 A

Table 3- 7 Permissible Type E combination motor controller (NKJH)

Frame size	Rated power	Inverter article number	Type E combination motor controller			SCCR [3]	Control cabinet [4]
			Article number	I_{max}[1]	P_N[2]		
FSD	22 kW	6SL3210-1KE24-4…	3RV2031-4WA1.. or 3RV2032-4WA1.. [5]	52 A	40 HP	65 kA, 480Y / 277 VAC	≥ 36600 in³
			3RV1031-4HA1..	50 A	40 HP	65 kA, 480Y / 277 VAC	≥ 36600 in³
			3RV1041-4KA1.. or 3RV1042-4KA1.. [6]	75 A	60 HP	65 kA, 480Y / 277 V AC	≥ 36600 in³
			3RV2031-4JA1.. [5]	65 A	50 HP	20 kA, 480Y / 277 V AC	≥ 36600 in³
			3RV2032-4JA1.. [5]	65 A	50 HP	30 kA, 480Y / 277 V AC	≥ 36600 in³
			3RV2031-4KA1.. [5]	73 A	60 HP	20 kA, 480Y / 277 V AC	≥ 36600 in³
			3RV2032-4KA1.. [5]	73 A	60 HP	30 kA, 480Y / 277 V AC	≥ 36600 in³
	30 kW	6SL3210-1KE26-0…	3RV1041-4LA1.. or 3RV1042-4LA1.. [6]	90 A	75 HP	65 kA, 480Y / 277 VAC	≥ 36600 in³
	37 kW	6SL3210-1KE27-0…	3RV1041-4MA1.. or 3RV1042-4MA1.. [6]	100 A	75 HP	65 kA, 480Y / 277 V AC	≥ 36600 in³
	45 kW	6SL3210-1KE28-4…	---	---	---	---	---
FSE	55 kW	6SL3210-1KE31-1…	---	---	---	---	---
FSF	75 kW	6SL3210-1KE31-4…	---	---	---	---	---
	90 kW	6SL3210-1KE31-7…	---	---	---	---	---
	110 kW	6SL3210-1KE32-1…	---	---	---	---	---
	132 kW	6SL3210-1KE32-4…	---	---	---	---	---

1) Maximum rated current of the Type E combination motor controller. You may use NKJH-listed Type E combination motor controller of the same type - with a rated voltage ≥ 480 V AC and with a lower rated current - which match the inverter.

2) Rated power of the Type E combination motor controller at 460 V AC

3) Short circuit current rating of the inverter

4) Minimum envelope dimensions of a control cabinet approved according to UL in which the inverter is installed.

5) UL approval only with phase barrier 3RV2938-1K

6) UL approval only with phase barrier 3RT1946-4GA07

Installation in the United States and Canada (UL or CSA)

To install the inverter in compliance with UL/cUL, perform the following steps:

- Use the specified protection devices.
- A multi-motor drive is not permissible, i.e. simultaneously operating several motors connected to one inverter.
- The integrated semiconductor short-circuit protection in the inverter does not provide branch protection. Install branch protection in compliance with the National Electric Code and possibly relevant local regulations.
- Use copper cables, Class 1, 60 °C or 75 °C to connect line supply and motor.
- For frame size FSE, use copper cables, Class 1, 75 °C to connect a braking resistor.
- For frame size FSF, to connect the line supply and motor, only use UL approved ring-type cable lugs (ZMVV), which are certified for the particular voltage. Permissible current of the ring-type cable lugs ≥ 125 % of the input or output current.
- Leave parameter p0610 in its factory setting.

  The factory setting p0610 = 12 means: The inverter responds to motor overtemperature immediately with an alarm and after a certain time with a fault.

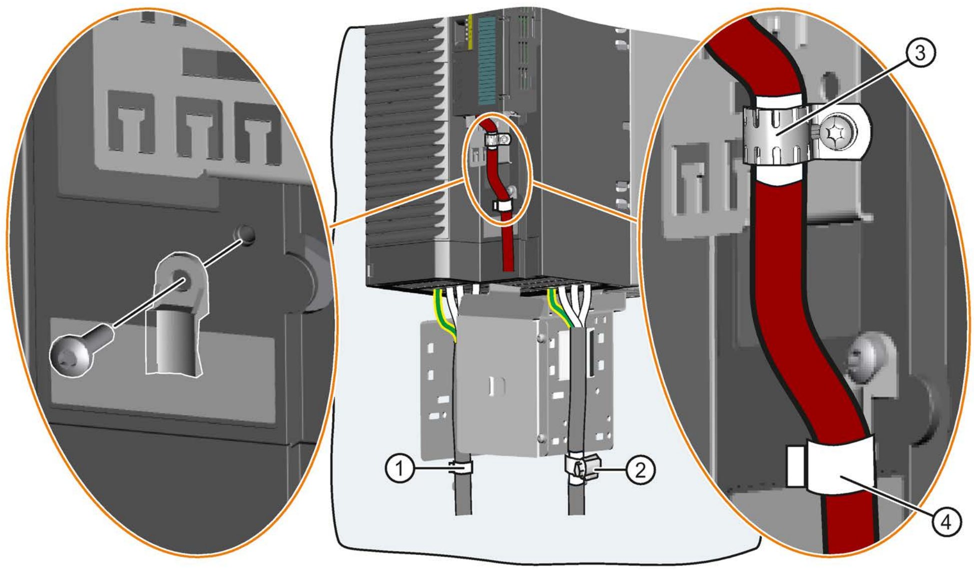
Additional requirements for CSA compliance:

- Use the specified protection devices.
- Use a surge protection device with article no. 5SD7424-1.
- Alternative: Install the inverter with an external surge protection device with the following attributes:
  - Surge protection device with ‘listed’ test symbol: category checking numbers VZCA and VZCA7
  - Rated voltage 3-phase 480/277 VAC, 50/60 Hz
  - Terminal voltage V_{PR} = 2000 V, I_N = 3 kA min, MCOV = 508 VAC, SCCR = 40 kA
  - Suitable for SPD applications, type 1 or type 2
- When commissioning the drive system, set the motor overload protection to 115%, 230% or 400% of the rated motor current using parameter p0640. This means that motor overload protection according to CSA C22.2 No. 274 is complied with.

3.2.3 Connecting inverters in compliance with EMC regulations

Connect cables at the inverter so that they are EMC compliant

Attach the cable tie holders to the Power Module as shown to the left in the diagram before you establish the connections.

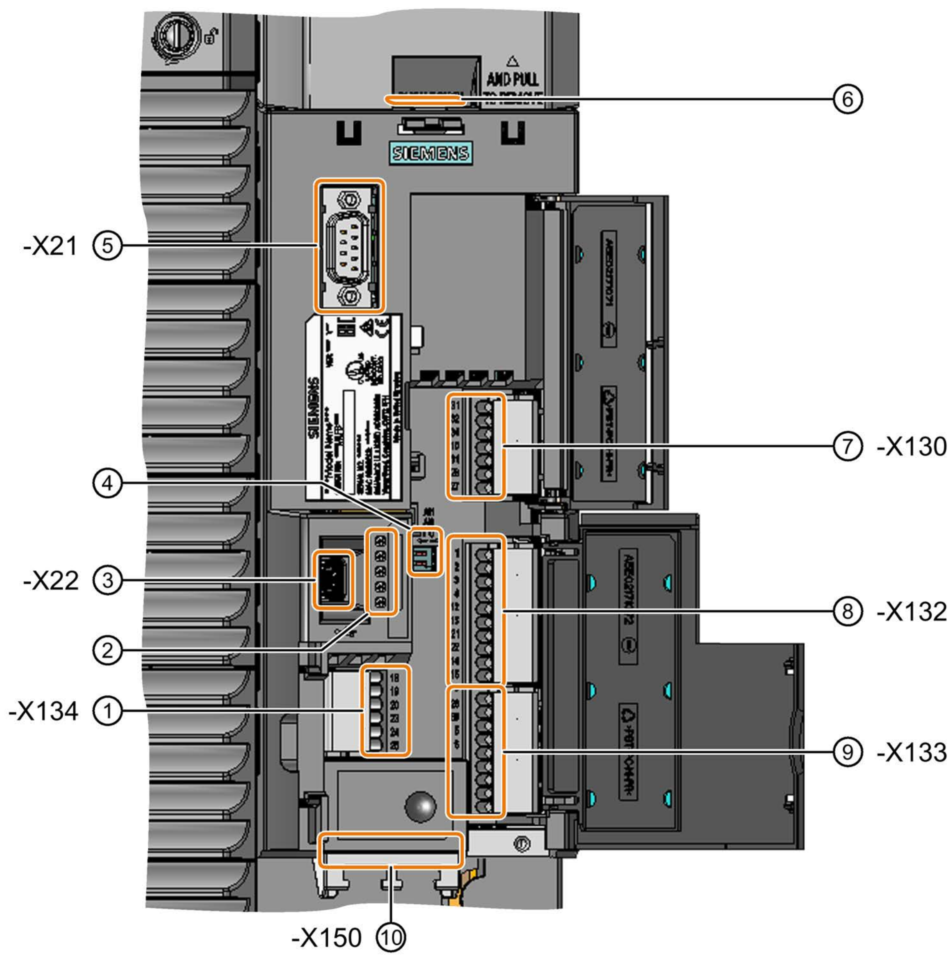


Fix the line connecting cable using a cable tie as shown in ①.

Fix the shield of the motor connecting cable using a hose clamp (②).

Connect the shield of the control cable with the shield plate of the Control Unit (③) using a steel band. Also attach the control cable to the Power Module using a cable tie (④).

3.2.4 Overview of the interfaces



① Terminal strip -X134

② RDY, BF, SAFE, LNK1, LNK2 Status LED

③ USB interface for connection to a PC

④ AI1, AI0 (I U) Switch for analog inputs (AI 0 and AI 1)
- I 0/4 mA … 20 mA
- U -10/0 V … 10 V

⑤ Interface -X21 to the Operator Panel

⑥ Memory card slot

The memory card slot is located under a cover. You must temporarily remove the cover to insert or withdraw the memory card.

⑦ Terminal strip -X130

⑧ Terminal strip -X132

⑨ Terminal strip -X133

⑩ Fieldbus interface -X150 at the lower side

3.2.5 Terminal strips

Terminal strips with wiring example

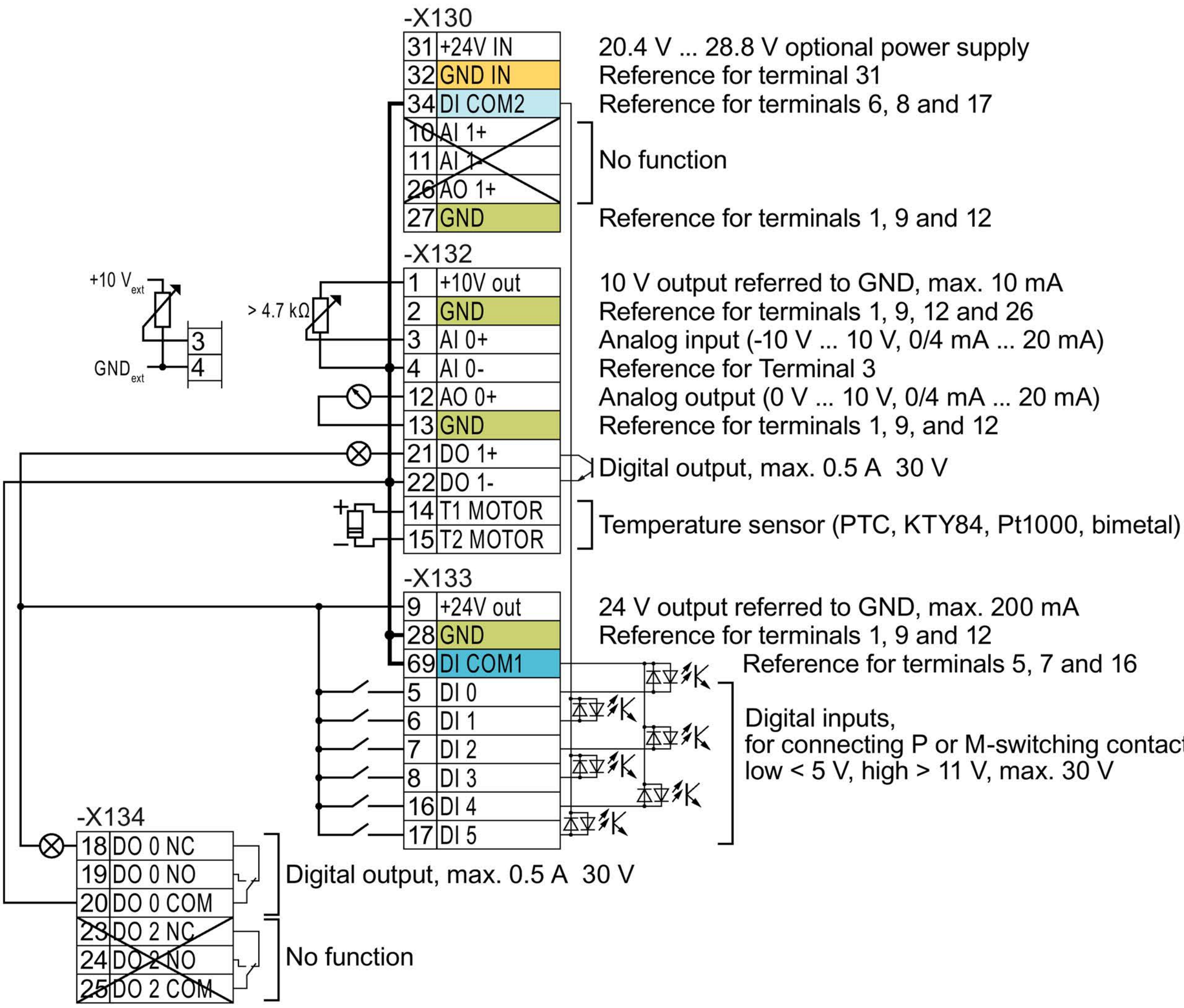


Figure 3-6 Wiring example of the digital inputs with the internal inverter 24 V power supply

GND	All terminals with the reference potential "GND" are connected to each other inside the inverter.
DI COM2	Reference potentials "DI COM1" and "DI COM2" are electrically isolated from "GND". → If you use the 24-V power supply at terminal 9 to power the digital inputs, you must interconnect "GND," "DI COM1," and "DI COM2."
31 +24 V IN 32 GND IN	When an optional 24-V power supply is connected to terminals 31, 32, the Control Unit remains in operation even after the Power Module has been disconnected from the line supply. The Control Unit thus maintains fieldbus communication, for example. → Connect only power supplies that are SELV (Safety Extra Low Voltage) or PELV (Protective Extra Low Voltage) to terminals 31, 32 .

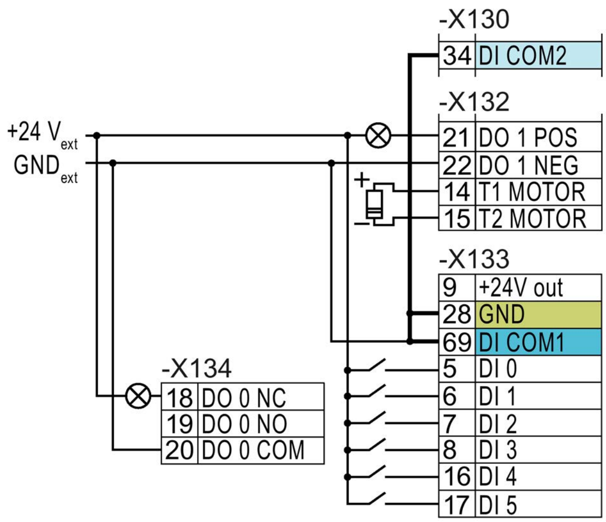
→ If you also wish to use the power supply at terminals 31, 32 for the digital inputs, then you must connect "DI COM1/2" and "GND IN" with one another.

3	AI 0+
4	AI 0-

For the analog input, you can use the internal 10 V supply or an external voltage source.

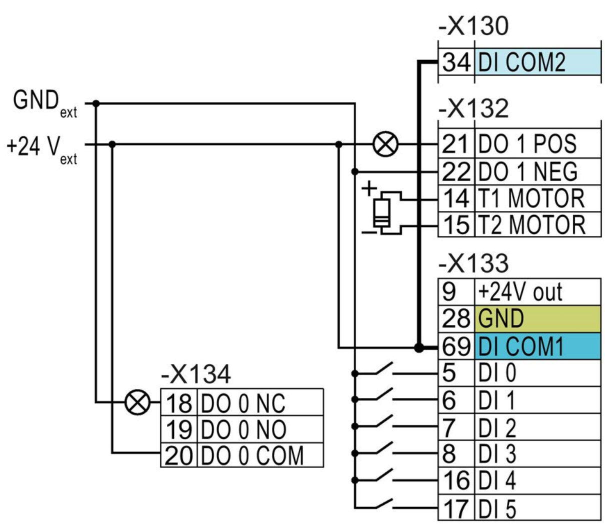
→ if you use the internal 10 V power supply, you must connect AI 0- or AI 1- to GND.

Further wiring options for digital inputs



Connection of contacts switching to P potential with an external power source

If you want to connect the potential of the external power source to the potential of the inverter's internal power supply, you must connect "GND" to terminals 34 and 69.



Connection of contacts switching to N potential with an external power source

Connect terminals 69 and 34 to each other.

3.2.6 Factory setting of the interfaces

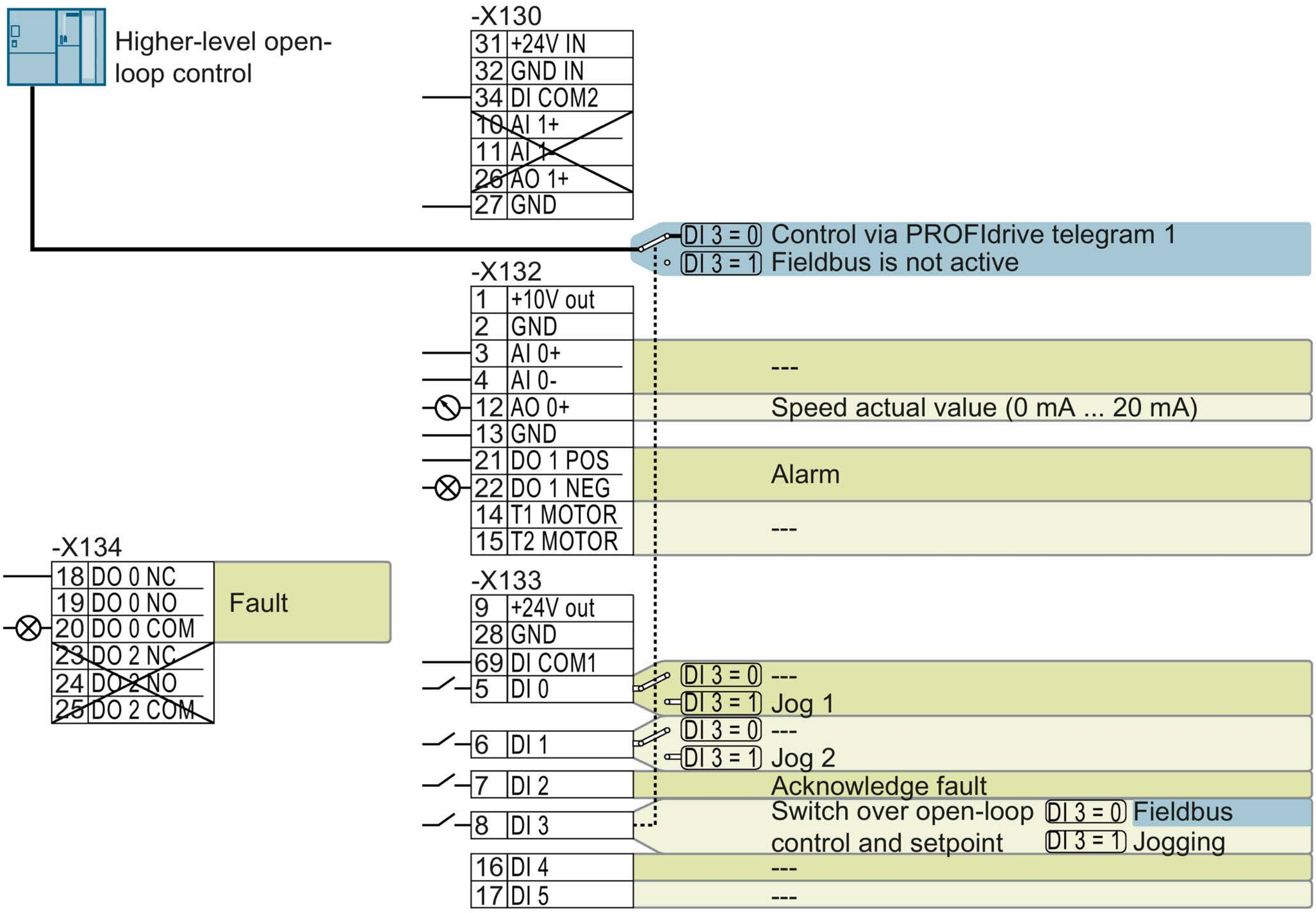


Figure 3-7 Factory setting for G120C PN, FSD … FSF

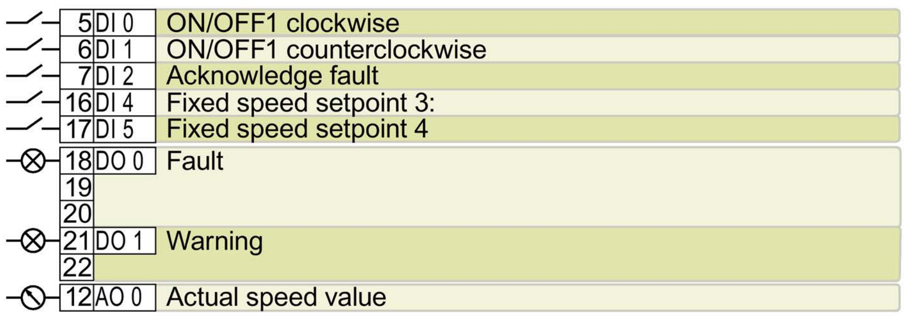
3.2.7 Default setting of the interfaces

The function of the terminals and fieldbus interface can be set.

In order that you do not have to successively change terminal for terminal, several terminals can be jointly set using default settings ("p0015 Macro drive unit").

The factory setting of the terminals described above corresponds to the default setting 7 (p0015 = 7): "Fieldbus with data set switchover".

Default setting 1: "Conveyor technology with 2 fixed frequencies"



DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5

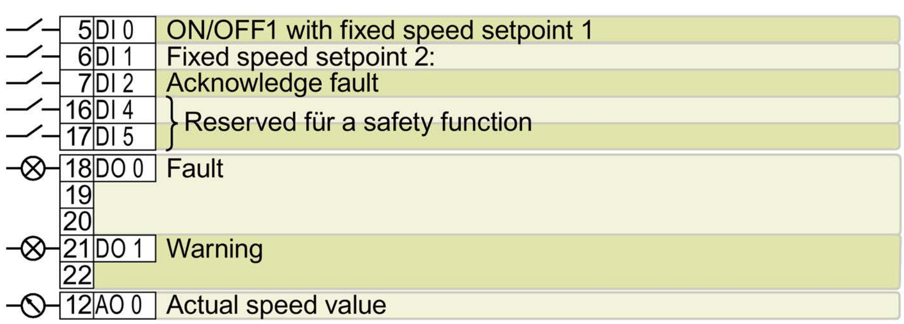
Fixed speed setpoint 3: p1003, fixed speed setpoint 4: p1004, fixed speed setpoint active: r1024

Speed setpoint (main setpoint): p1070[0] = 1024

DI 4 and DI 5 = high: the inverter adds the two fixed speed setpoints

Designation in the BOP-2: coN 2 SP

Default setting 2: "Conveyor system with Basic Safety"



DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5

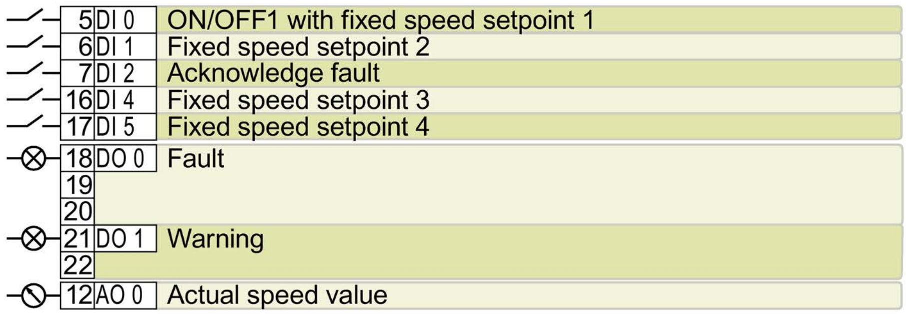
Fixed speed setpoint 1: p1001, fixed speed setpoint 2: p1002, fixed speed setpoint active: r1024

Speed setpoint (main setpoint): p1070[0] = 1024

DI 0 and DI 1 = high: the inverter adds the two fixed speed setpoints.

Designation in the BOP-2: coN SAFE

Default setting 3: "Conveyor system with 4 fixed frequencies"



DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5

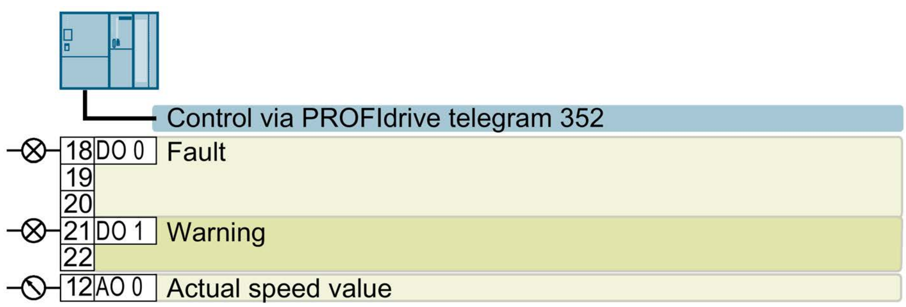
Fixed speed setpoint 1: p1001, … fixed speed setpoint 4: p1004, fixed speed setpoint active: r1024

Speed setpoint (main setpoint): p1070[0] = 1024

Several of the DI 0, DI 1, DI 4, and DI 5 = high: the inverter adds the corresponding fixed speed setpoints.

Designation in the BOP-2: coN 4 SP

Default setting 4: "Conveyor system with fieldbus"

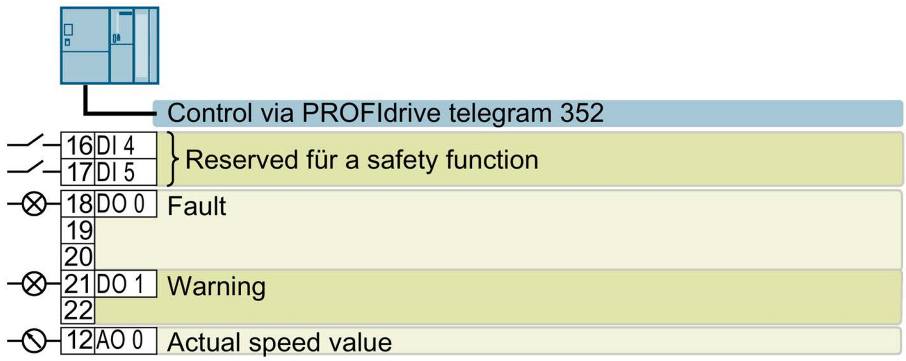


DO 0: p0730, DO 1: p0731 AO 0: p0771[0]

Speed setpoint (main setpoint): p1070[0] = 2050[1]

Designation in the BOP-2: coN Fb

Default setting 5: "Conveyor system with fieldbus and Basic Safety"



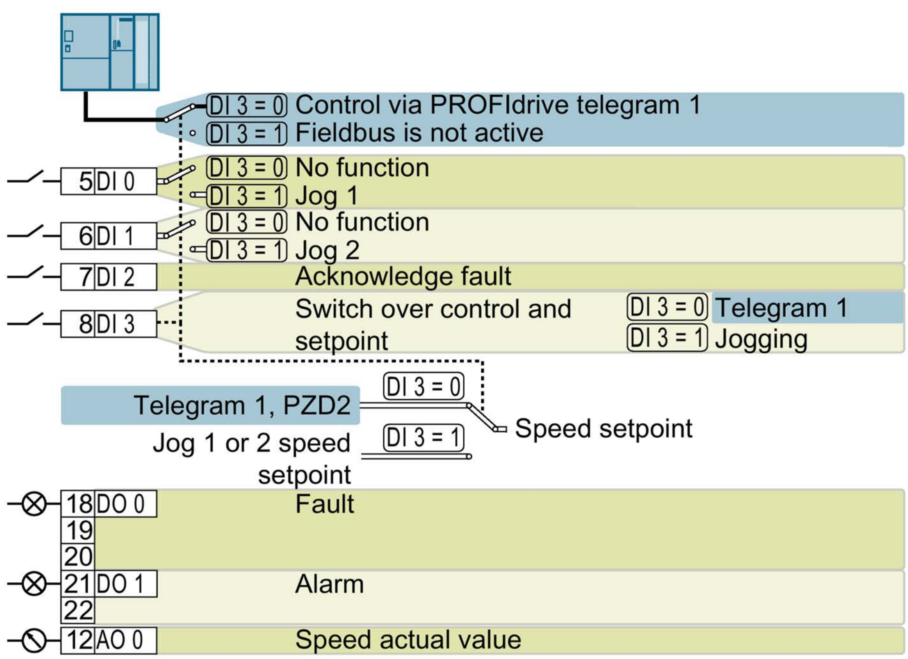
DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 4: r0722.4, DI 5: r0722.5

Speed setpoint (main setpoint): p1070[0] = 2050[1]

Designation in the BOP-2: coN Fb S

Default setting 7: "Fieldbus with data set switchover"

Factory setting



DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 3: r0722.3

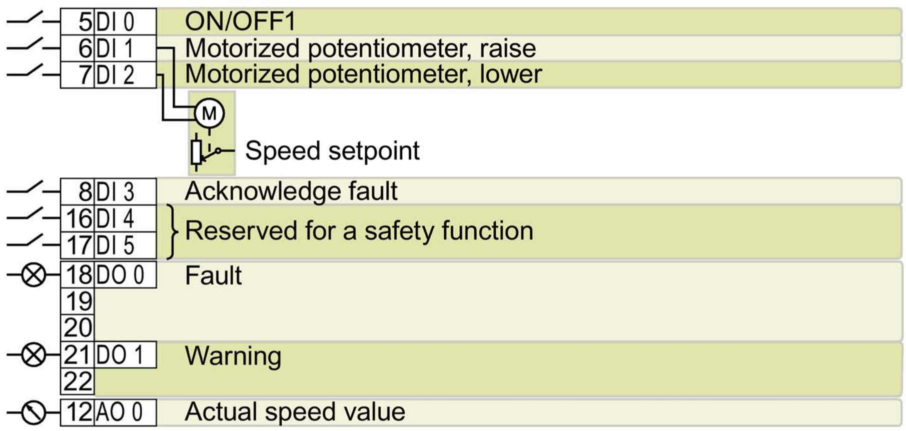
Speed setpoint (main setpoint): p1070[0] = 2050[1]

Jog 1 speed setpoint: p1058, factory setting: 150 rpm

Jog 2 speed setpoint: p1059, factory setting: -150 rpm

Designation in the BOP-2: FB cdS

Default setting 8: "MOP with Basic Safety"



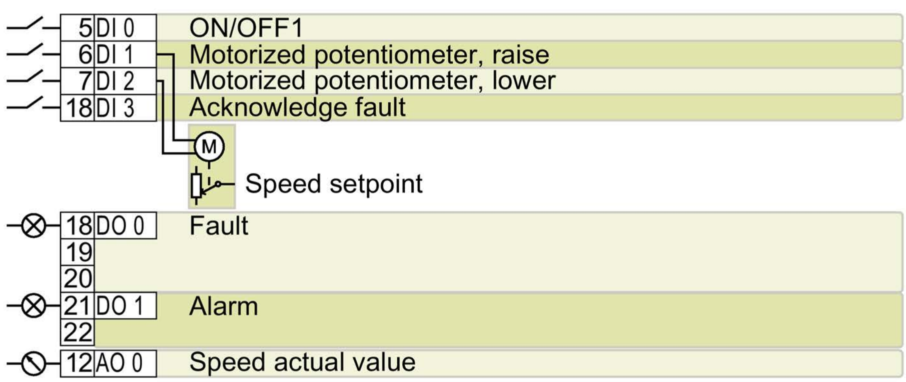
DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5

Motorized potentiometer, setpoint after the ramp-function generator: r1050

Speed setpoint (main setpoint): p1070[0] = 1050

Designation in the BOP-2: MoP SAFE

Default setting 9: "Standard I/O with MOP"



DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 3: r0722.3

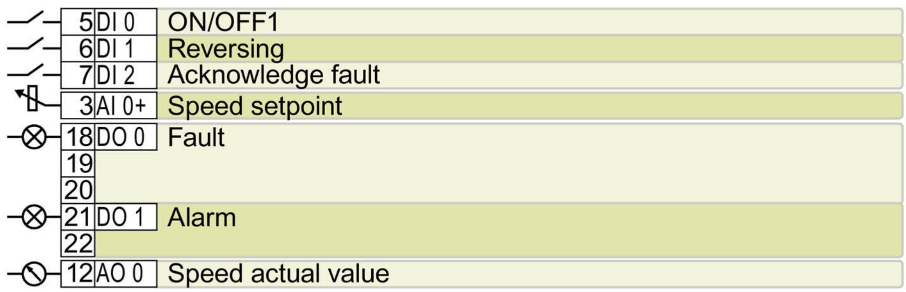
Motorized potentiometer, setpoint after the ramp-function generator: r1050

Speed setpoint (main setpoint): p1070[0] = 1050

Designation in the BOP-2: Std MoP

Default setting 12: "Standard I/O with analog setpoint"

Factory setting for inverters with USS interface

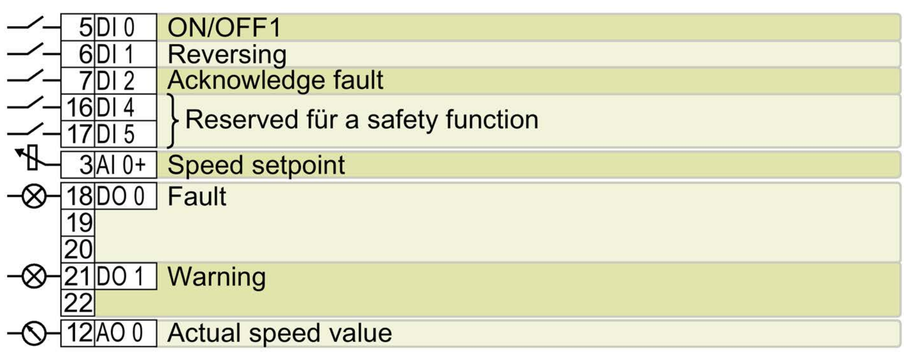


DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 2: r0722.2 AI 0: r0755[0]

Speed setpoint (main setpoint): p1070[0] = 755[0]

Designation in the BOP-2: Std ASP

Default setting 13: "Standard I/O with analog setpoint and safety"

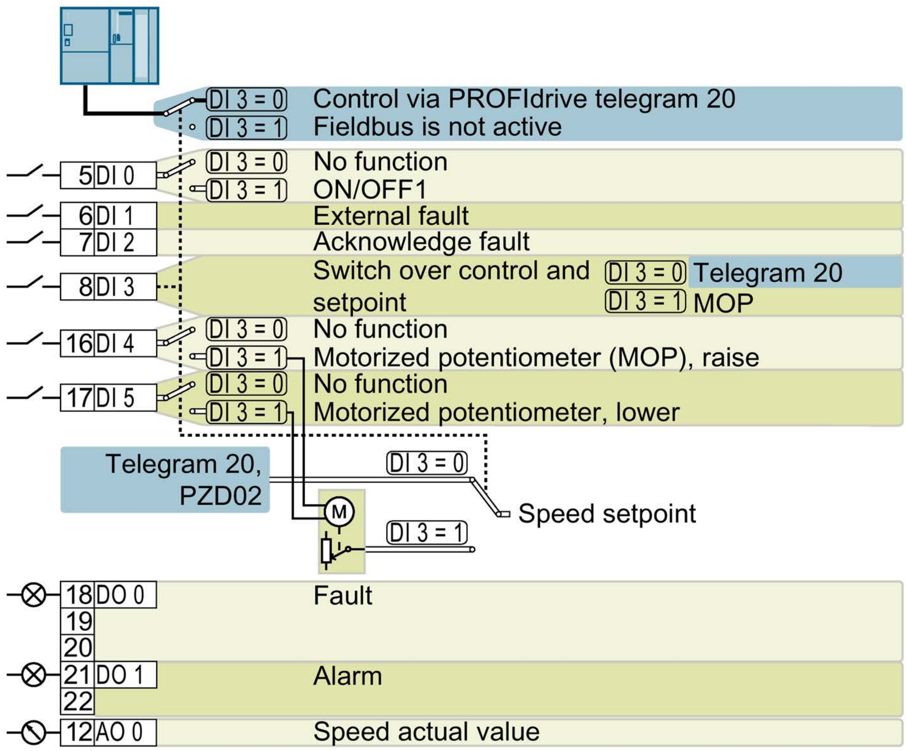


DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5 AI 0: r0755[0]

Speed setpoint (main setpoint): p1070[0] = 755[0]

Designation in the BOP-2: ASPS

Default setting 14: "Process industry with fieldbus"



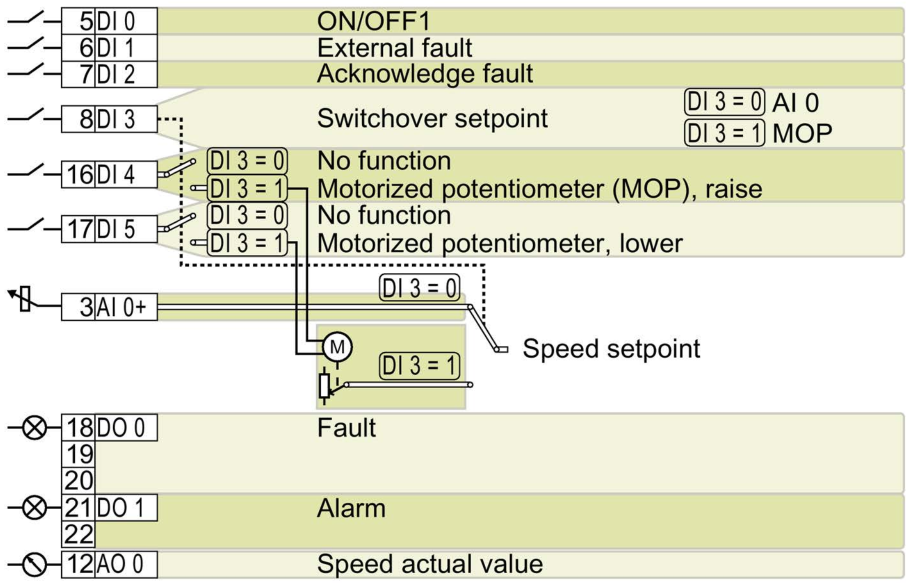
DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5

Motorized potentiometer, setpoint after the ramp-function generator: r1050

Speed setpoint (main setpoint): p1070[0] = 2050[1], p1070[1] = 1050

Designation in the BOP-2: Proc Fb

Default setting 15: "Process industry"



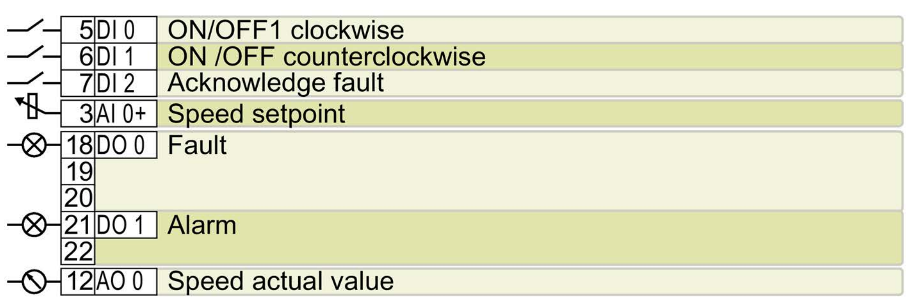
DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 5: r0722.5 AI 0: r0755[0]

Motorized potentiometer, setpoint after the ramp-function generator: r1050

Speed setpoint (main setpoint): p1070[0] = 755[0], p1070[1] = 1050

Designation in the BOP-2: Proc

Default setting 17: "2-wire (forw/backw1)"

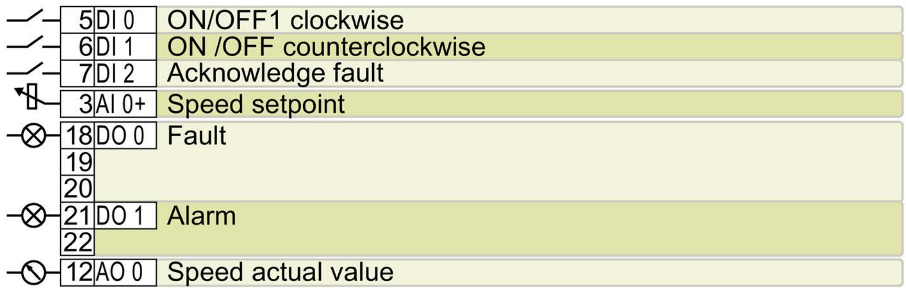


DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 2: r0722.2 AI 0: r0755[0]

Speed setpoint (main setpoint): p1070[0] = 755[0]

Designation in the BOP-2: 2-wIrE 1

Default setting 18: "2-wire (forw/backw2)"

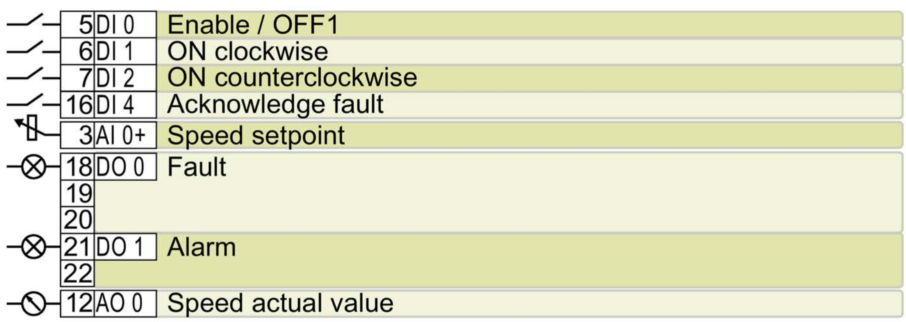


DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 2: r0722.2 AI 0: r0755[0]

Speed setpoint (main setpoint): p1070[0] = 755[0]

Designation in the BOP-2: 2-wIrE 2

Default setting 19: "3-wire (enable/forw/backw)"

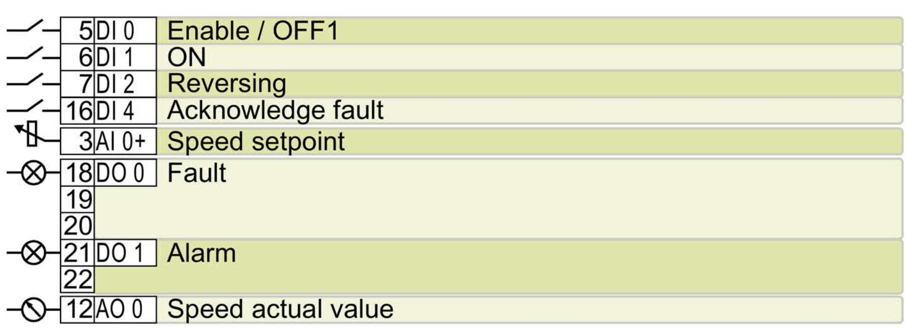


DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 4: r0722.4 AI 0: r0755[0]

Speed setpoint (main setpoint): p1070[0] = 755[0]

Designation in the BOP-2: 3-wIrE 1

Default setting 20: "3-wire (enable/on/reverse)"



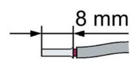
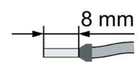
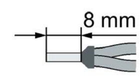
DO 0: p0730, DO 1: p0731 AO 0: p0771[0] DI 0: r0722.0, …, DI 4: r0722.4 AI 0: r0755[0]

Speed setpoint (main setpoint): p1070[0] = 755[0]

Designation in the BOP-2: 3-wIrE 2

3.2.8 Wiring the terminal strip

Table 3- 8 Permissible cables and wiring options

Solid or finely stranded cable	Flexible conductor with non-insulated end sleeve	Flexible conductor with non-insulated end sleeve	Two finely stranded cables with the same cross-section with partially insulated twin end sleeves
 0.5 ... 1.5 mm²	 0.5 ... 1.0 mm²	 0.5 mm²	 2 * 0.5 mm²

Wiring the terminal strip to ensure EMC

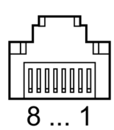
- If you use shielded cables, then you must connect the shield to the mounting plate of the control cabinet or with the shield support of the inverter through a good electrical connection and a large surface area.
- Use the shield connection plate of the inverter as strain relief.

Further information about EMC-compliant wiring is available in the Internet:EMC installation guideline (http://support.automation.siemens.com/WW/view/en/60612658)

3.2.9 Fieldbus interface allocation

The fieldbus interface is on the underside of the inverter.

X150 P1
X150 P2
PROFINET
EtherNet/IP



1 RX+ Receive data +
2 RX- Receive data -
3 TX+ Transmit data +
4 ---
5 ---
6 TX- Transmit data -
7 ---
8 ---

GSDML general station description file for PROFINET

The general station description file (GSDML) is an electronic data sheet, which contains all of the information required for a higher-level control. Using a GSDML, you can configure and operate a inverter on PROFINET.

GSD Markup Language (GSDML) for PROFINET

Internet: (http://support.automation.siemens.com/WW/view/en/26641490)

Alternative to a download:

The GSDML is saved in the inverter. The inverter writes its GSDML to the inserted memory card when you set p0804 = 12. For instance, you can transfer the file to a PC from the memory card.

Commissioning 4

4.1 Overview of the commissioning tools

Operator panel

An operator panel is used to commission, troubleshoot and control the inverter, as well as to back up and transfer the inverter settings.

The **Intelligent Operator Panel (IOP)** is available for snapping onto the inverter, or as handheld with a connecting cable to the inverter. The graphics-capable plain text display of the IOP enables intuitive operation and diagnostics of the inverter.

The IOP is available in two versions:

- With European languages
- With Chinese, English and German

Additional information about the compatibility of the IOP and inverters is available in the Internet:

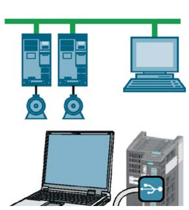
Compatibility of the IOP and Control Units (http://support.automation.siemens.com/WW/view/en/67273266)

The **Operator Panel BOP-2** for snapping onto the inverter has a two-line display for diagnostics and operating the inverter.

Operating Instructions of the BOP-2 and IOP operator panels:

Operator Panels (http://support.automation.siemens.com/WW/view/en/30563514/133300)

PC tools



STARTER and **Startdrive** are PC tools that are used to commission, troubleshoot and control the inverter, as well as to back up and transfer the inverter settings. You can connect the PC with the inverter via USB or via the PROFIBUS / PROFINET fieldbus.

Connecting cable (3 m) between PC and inverter: Article number 6SL3255-0AA00-2CA0

STARTER DVD: Article number 6SL3072-0AA00-0AG0

Startdrive DVD: Article number 6SL3072-4CA02-1XG0

Startdrive, system requirements and download (http://support.automation.siemens.com/WW/view/en/68034568)

STARTER, system requirements and download (http://support.automation.siemens.com/WW/view/en/26233208)

Startdrive tutorial (http://support.automation.siemens.com/WW/view/en/73598459)

STARTER videos (http://www.automation.siemens.com/mcms/mc-drives/en/low-voltage-inverter/sinamics-g120/videos/Pages/videos.aspx)

If you intend to commission the converter with IOP operator panel

The IOP offers commissioning wizards and help texts for an intuitive commissioning. For further information refer to the IOP operating instructions.

If you intend to commission the converter with PC tools STARTER and Startdrive

Overviev of the most important steps with STARTER:

1. Connect the PC to the converter via USB and start the PC tool.
2. Choose the project wizard (menu "Project / New with assistent").
   - In the project wizard choose "Find drive units online".
   - Select USB as interface (Access point of the application: "DEVICE …", interface parameter assignment used: "S7USB").
   - Finish the project wizard.
3. STARTER has now created your project and inserted a new drive.
   - Select the drive in your project and go online.
   - In your drive open the "Configuration" mask (double click).
   - Start commissioning with the "Assistent" button.

For further information refer to converter operating instructions.

Overview of the manuals (Page 86)

4.2 Commissioning with BOP-2 operator panel

Plug Basic Operator Panel BOP-2 into the inverter

Procedure

To plug Basic Operator Panel BOP-2 onto the inverter, proceed as follows:

1. Remove the blanking cover of the inverter.
2. Locate the lower edge of the BOP-2 housing in the matching recess of the inverter housing.
3. Press the BOP-2 onto the inverter until you hear the latching mechanism on the inverter housing engage.

You have plugged the BOP-2 onto the inverter

When you power up the inverter, the BOP-2 will be ready for operation.

4.2.1 Quick commissioning with the BOP-2

Starting quick commissioning

Preconditions

SP 0000 1/min
0.0 1/min

- The power supply is switched on.
- The operator panel displays setpoints and actual values.

Procedure

1.
2.

Proceed as follows to carry out quick commissioning:

ESC

Press the ESC key.

Press one of the arrow keys until the BOP-2 displays the "SETUP" menu.

SETUP

To start quick commissioning, in the "SETUP" menu, press the OK key.

RESET

If you wish to restore all of the parameters to the factory setting before the quick commissioning, proceed as follows:

1. Press the OK key.
2. Switchover the display using an arrow key: nO → YES
3. Press the OK key.

DRV APPL
P96

When you select an application class, the inverter assigns suitable default settings to the motor control:

- STANDARD

  Standard Drive Control (Page 45)

- DYNAMIC

  Dynamic Drive Control (Page 47)

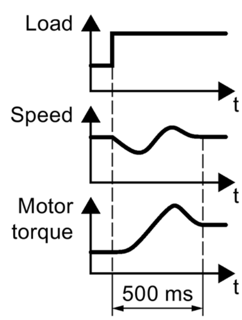
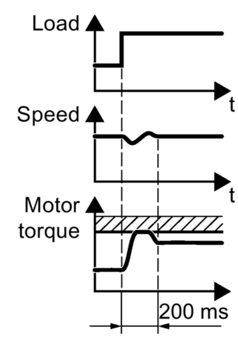
- EXPERT

  This procedure is described in the operating instructions

  Overview of the manuals (Page 86)

Select the suitable application class

When you select an application class, the inverter assigns suitable settings to the motor control:

Application class	Standard Drive Control	Dynamic Drive Control
Motors that can be operated	Induction motors	Induction and synchronous motors
Application examples	• Pumps, fans, and compressors with flow characteristic • Wet or dry blasting technology • Mills, mixers, kneaders, crushers, agitators • Horizontal conveyor technology (conveyor belts, roller conveyors, chain conveyors) • Basic spindles	• Pumps and compressors with displacement machines • Rotary furnaces • Extruder • Centrifuge
Characteristics	• Typical settling time after a speed change: 100 ms … 200 ms • Typical settling time after after a sudden load change: 500 ms  • Standard Drive Control is suitable for the following requirements: – All motor power ratings – Ramp-up time 0 → rated speed (depending on the motor power rating): 1 s (0.1 kW) … 10 s (18.5 kW) – Applications with continuous load torque without sudden load changes • Standard Drive Control is insensitive to inaccurate motor data settings	• Typical settling time after a speed change: < 100 ms • Typical settling time after after a sudden load change: 200ms  • Dynamic Drive Control controls and limits the motor torque • Typically achieves a torque accuracy: ± 5 % for 15 % … 100 % of the rated speed • We recommend Dynamic Drive Control for the following applications: – Motor power ratings > 11 kW – On sudden load changes 10% ... >100% of the motor rated torque • Dynamic Drive Control is necessary for a ramp-up time 0 → rated speed (depending on the motor power rating): < 1 s (0.1 kW) … < 10 s (18.5 kW).
Max. output frequency	550 Hz	240 Hz
Commissioning	• Unlike "Dynamic Drive Control," no speed controller needs to be set • In comparison to setting "EXPERT": – Simplified commissioning using predefined motor data – Reduced number of parameters	• Fewer number of parameters when compared to setting "EXPERT"

4.2.2 Standard Drive Control

EUR/USA P100

Select the motor standard.

- KW 50HZ: IEC
- HP 60HZ: NEMA
- KW 60HZ: IEC 60 Hz

INV VOLT P210

Set the inverter supply voltage.

MOT TYPE P300

Select the motor type. Depending on the particular inverter, it is possible that the BOP-2 does not list all of the following motor types.

- INDUCT: Third-party induction motor
- SYNC: Third-party synchronous motor
- RELUCT: Third-party reluctance motor
- 1L… IND: 1LE1, 1LG6, 1LA7, 1LA9 induction motors
- 1LE1 IND 100: 1LE1 . 9 with motor code on the rating plate
- 1PC1 IND: 1PC1 with motor code on the rating plate
- 1PH8 IND: Induction motor
- 1FP1: Reluctance motor
- 1F… SYN: 1FG1, 1FK7 synchronous motor, without encoder

MOT CODE P301

If you have selected a motor type > 100, then you must enter the motor code:

With the correct motor code, the inverter assigns the motor data the following values.

If you do not know the motor code, then you must set the motor code = 0, and enter the motor data from p0304 and onwards from the rating plate.

87 HZ

87 Hz motor operation The BOP-2 only displays this step if you previously selected IEC as the motor standard (EUR/USA, P100 = KW 50HZ).

MOT VOLT P304

Rated motor voltage

MOT CURR P305

Rated motor current

MOT POW P307

Rated motor power

MOT FREQ P310

Rated motor frequency

MOT RPM P311

Rated motor speed

MOT COOL
P335

Motor cooling:

- SELF: Natural cooling
- FORCED: Forced-air cooling
- LIQUID: Liquid cooling
- NO FAN: Without fan

TEC APPL
P501

Select the basic setting for the motor control:

- VEC STD: Constant load; typical applications include conveyor drives
- PUMP FAN: Speed-dependent load; typical applications include pumps and fans

MAc PAr
P15

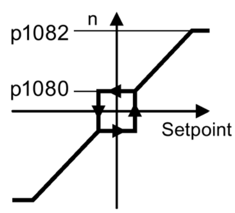
Select the default setting for the interfaces of the inverter that is suitable for your application.

Default setting of the interfaces (Page 32)

MIN RPM
P1080

MAX RPM
P1082

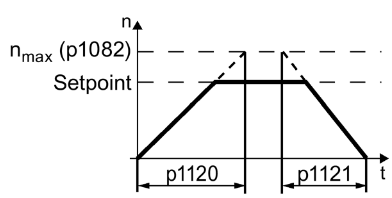
Minimum and maximum motor speed



RAMP UP
P1120

RAMP DWN
P1121

Ramp-up and ramp-down time of the motor



OFF3 RP
P1135

Ramp-down time after the OFF3 command

MOT ID
P1900

Motor data identification Select the method which the inverter uses to measure the data of the connected motor:

- OFF: No motor data identification
- STILL: Measure the motor data at standstill. The inverter switches off the motor after the motor data identification has been completed.

FINISH

Complete quick commissioning as follows:

1. Switchover the display using an arrow key: nO → YES
2. Press the OK key.

You have completed quick commissioning.

4.2.3 Dynamic Drive Control

EUR/USA P100__	Select the motor standard. • KW 50HZ: IEC • HP 60HZ: NEMA • KW 60HZ: IEC 60 Hz
INV VOLT P210__	Set the inverter supply voltage.
MOT TYPE P300__	Select the motor type. Depending on the particular inverter, it is possible that the BOP-2 does not list all of the following motor types. • INDUCT: Third-party induction motor • SYNC: Third-party synchronous motor • RELUCT: Third-party reluctance motor • 1L… IND: 1LE1, 1LG6, 1LA7, 1LA9 induction motors • 1LE1 IND 100: 1LE1 . 9 with motor code on the rating plate • 1PC1 IND: 1PC1 with motor code on the rating plate • 1PH8 IND: Induction motor • 1FP1: Reluctance motor • 1F… SYN: 1FG1, 1FK7 synchronous motor, without encoder
MOT CODE P301__	If you have selected a motor type > 100, then you must enter the motor code: With the correct motor code, the inverter assigns the motor data the following values. If you do not know the motor code, then you must set the motor code = 0, and enter the motor data from p0304 and onwards from the rating plate.
87 HZ __	87 Hz motor operation The BOP-2 only displays this step if you previously selected IEC as the motor standard (EUR/USA, P100 = KW 50HZ).
MOT VOLT P304__	Rated motor voltage
MOT CURR P305__	Rated motor current
MOT POW P307__	Rated motor power
MOT FREQ P310__	Rated motor frequency
MOT RPM P311__	Rated motor speed

MOT COOL
P335

Motor cooling:

- SELF: Natural cooling
- FORCED: Forced-air cooling
- LIQUID: Liquid cooling
- NO FAN: Without fan

TEC APPL
P502

Select the basic setting for the motor control:

- OP LOOP: Recommended setting for standard applications
- CL LOOP: Recommended setting for applications with short ramp-up and ramp-down times. This setting is not suitable for hoisting gear and cranes/lifting gear.
- HVY LOAD: Recommended setting for applications with a high break loose torque.

MAc PAr
P15

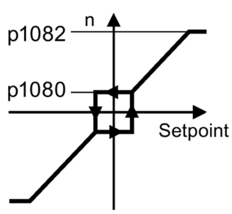
Select the default setting for the interfaces of the inverter that is suitable for your application.

Default setting of the interfaces (Page 32)

MIN RPM
P1080

MAX RPM
P1082

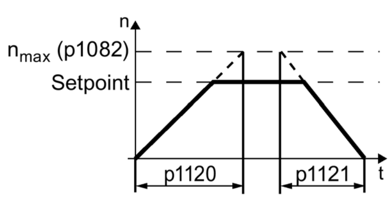
Minimum and maximum motor speed



RAMP UP
P1120

RAMP DWN
P1121

Ramp-up and ramp-down time of the motor



OFF3 RP
P1135

Ramp-down time after the OFF3 command

MOT ID
P1900

Motor data identification: Select the method which the inverter uses to measure the data of the connected motor:

- OFF: Motor data is not measured.

  STIL ROT: Recommended setting: Measure the motor data at standstill and with the motor rotating.

  The inverter switches off the motor after the motor data identification has been completed.
- STILL: Measure the motor data at standstill.

  The inverter switches off the motor after the motor data identification has been completed.

  Select this setting if the motor cannot rotate freely – for example, if the traversing range is mechanically limited.

- ROT: Measure the motor data with the motor rotating.

  The inverter switches off the motor after the motor data identification has been completed.
- ST RT OP: setting same as STIL ROT.

  The motor accelerates to the currently set setpoint after the motor data identification.
- STILL OP: setting same as STILL.

  After the motor data identification, the motor accelerates to the currently set setpoint.

Complete quick commissioning:

- Switch over the display using an arrow key: nO → YES
- Press the OK key.

You have completed quick commissioning.

4.2.4 Identifying the motor data and optimizing the closed-loop control

The inverter has several techniques to automatically identify the motor data and optimize the speed control.

To start the motor data identification routine, you must switch-on the motor via the terminal strip, fieldbus or from the operator panel.

> **WARNING**
>
> **Risk of death due to machine motion while motor data identification is active**
>
> For the stationary measurement, the motor can make several rotations. The rotating measurement accelerates the motor up to its rated speed. Secure dangerous machine parts before starting motor data identification:
>
> - Before switching on, ensure that nobody is working on the machine or located within its working area.
> - Secure the machine's work area against unintended access.
> - Lower hanging/suspended loads to the floor.

Preconditions

- You selected a method of motor data identification during quick commissioning, e.g. measuring motor data while the motor is stationary.

  When quick commissioning is complete, the inverter issues alarm A07991.
- The motor has cooled down to the ambient temperature.

  An excessively high motor temperature falsifies the motor data identification results.

Procedure when using the BOP-2 operator panel

To start the motor data identification, proceed as follows:

Press the HAND/AUTO key.

The BOP-2 displays the symbol indicating manual operation.

Switch on the motor.

During motor data identification, "MOT-ID" flashes on the BOP-2.

If the inverter again outputs alarm A07991, then it waits for a new ON command to start the rotating measurement.

If the inverter does not output alarm A07991, switch off the motor as described below, and switch over the inverter control from HAND to AUTO.

Switch on the motor to start the rotating measurement.

During motor data identification, "MOT-ID" flashes on the BOP-2.

The motor data identification can take up to 2 minutes depending on the rated motor power.

Depending on the setting, after motor data identification has been completed, the inverter switches off the motor - or it accelerates it to the setpoint.

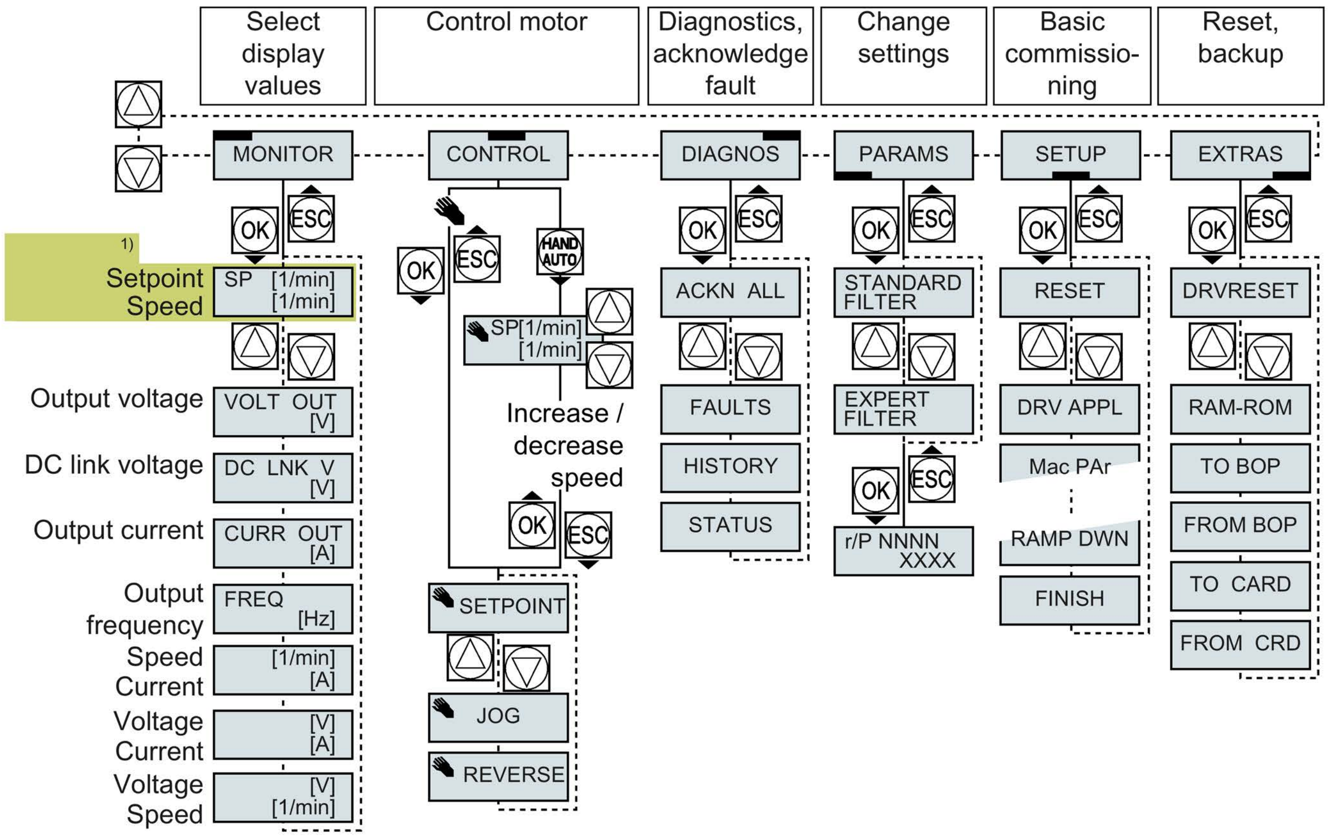
If required, switch off the motor.

Switch the inverter control from HAND to AUTO.

You have completed the motor data identification.

4.2.5 Additional settings

4.2.5.1 Operating the inverter with the BOP-2



1) Status display once the power supply for the inverter has been switched on.

Figure 4-1 Menu of the BOP-2

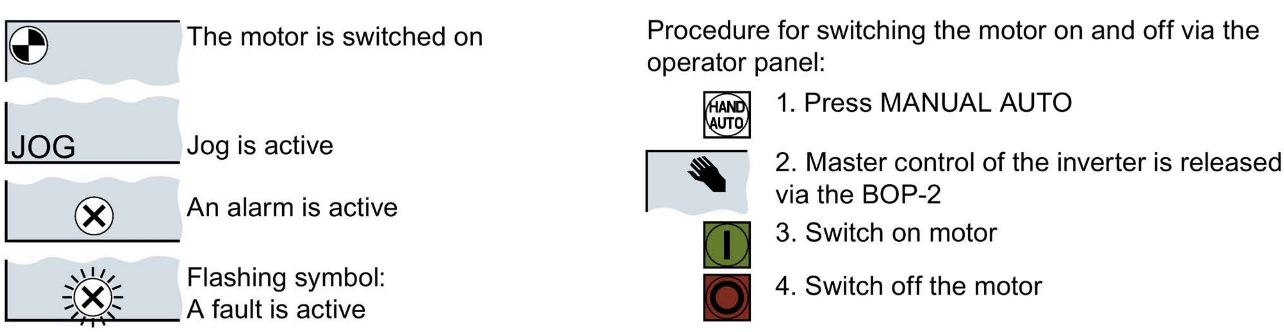


Figure 4-2 Other keys and symbols of the BOP-2

Changing settings using BOP-2

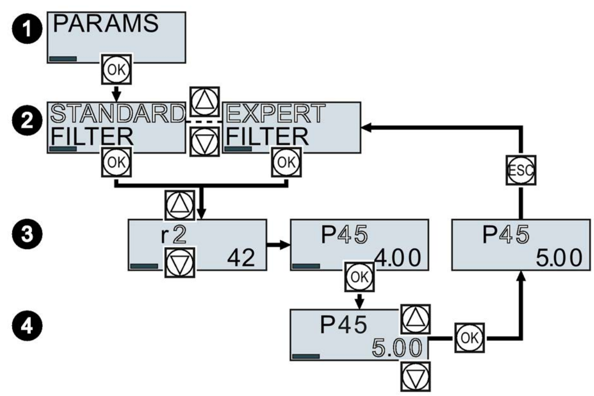
You can modify the settings of your inverter by changing the values of the its parameters. The inverter only permits changes to "write" parameters. Write parameters begin with a "P", e.g. P45.

The value of a read-only parameter cannot be changed. Read-only parameters begin with an "r", for example: r2.

Procedure

To change write parameters using the BOP-2, proceed as follows:

1. Select the menu to display and change parameters.
   Press the OK key.
2. Select the parameter filter using the arrow keys.
   Press the OK key.
   – STANDARD: The inverter only displays the most important parameters.
   – EXPERT: The inverter displays all of the parameters.



3. Select the required number of a write parameter using the arrow keys.
   Press the OK key.
4. Select the value of the write parameter using the arrow keys.
   Accept the value with the OK key.

You have now changed a write parameter using the BOP-2.

The inverter saves all the changes made using the BOP-2 so that they are protected against power failure.

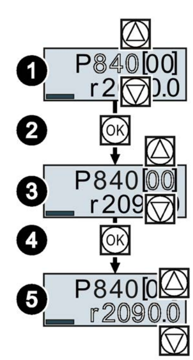
Changing indexed parameters

For indexed parameters, several parameter values are assigned to a parameter number. Each of the parameter values has its own index.

Procedure

To change an indexed parameter, proceed as follows:

1. Select the parameter number.
2. Press the OK key.
3. Set the parameter index.
4. Press the OK key.
5. Set the parameter value for the selected index.



You have now changed an indexed parameter.

Directly select the parameter number

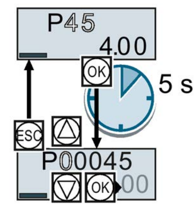
The BOP-2 offers the possibility of setting the parameter number digit by digit.

Precondition

The parameter number is flashing in the BOP-2 display.

Procedure

To select the parameter number directly, proceed as follows:



1. Press the OK button for longer than five seconds.
2. Change the parameter number digit-by-digit.
   If you press the OK button then the BOP-2 jumps to the next digit.
3. If you have entered all of the digits of the parameter number, press the OK button.

You have now entered the parameter number directly.

Entering the parameter value directly

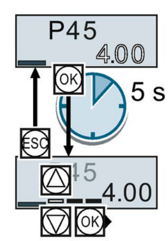
The BOP-2 offers the option of setting the parameter value digit by digit.

Precondition

The parameter value flashes in the BOP-2 display.

Procedure

To select the parameter value directly, proceed as follows:

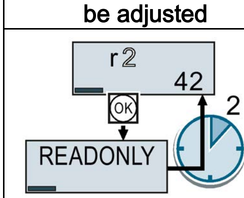
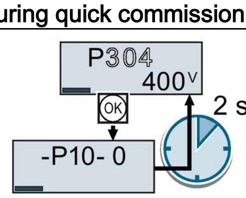
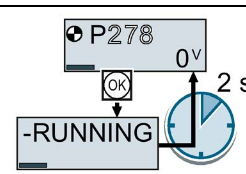


1. Press the OK button for longer than five seconds.
2. Change the parameter value digit-by-digit.
   If you press the OK button then the BOP-2 jumps to the next digit.
3. If you have entered all of the digits of the parameter value, press the OK button.

You have now entered the parameter value directly.

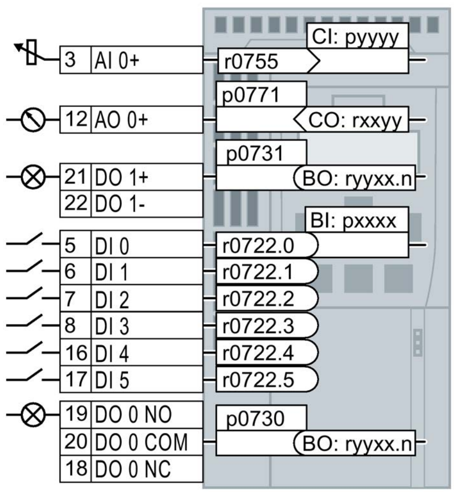
When cannot you change a parameter?

The inverter indicates why it currently does not permit a parameter to be changed:

<table>
<tr><th>Read parameters cannot be adjusted</th><th>The parameter can only be adjusted during quick commissioning.</th><th>A parameter can only be adjusted when the motor is switched off</th></tr>
<tr><td>
</td><td>
</td><td>
</td></tr>
</table>

The operating state in which you can change a parameter is provided in the List Manual for each parameter.

4.2.5.2 Changing the function of individual terminals



The function of the terminal is defined through a signal interconnection in the inverter:

- The inverter writes every input signal into a readable parameter. Parameter r0755 makes the signal of the analog input available, for example.

  To define the function of the input, the appropriate parameter (connector CI or BI) must be set to the parameter number of the input.
- Every inverter output is represented by a parameter that can be written to. The value of parameter p0771 defines the analog output signal, for example.

  To define the output function, you must set the parameter number of the output to the parameter number of the matching signal (binector CO or BO).

In the parameter list, the abbreviation CI, CO, BI or BO as prefix indicates as to whether the parameter is available as signal for the function of the terminal.

Defining the function of a digital input

Procedure

1.
2.

To define the function of a digital input, proceed as follows:

1. Select the function marked using a BI parameter.
2. Enter the parameter number of the required digital input 722.x into the BI parameter.

You have defined the digital input function.

P840 [00]
r722.2

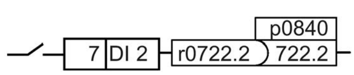


Figure 4-3 Example: p0840[00] = 722.2 → switch on the motor using DI 2

Advanced settings

When switching over the master control of the inverter (for example, if you select default setting 7), you must select the correct index of the parameter:

- Index 0 (e.g., P840[00]) applies for the interface assignment on the left side of the macro illustration.
- Index 1 (e.g., P840[01]) applies for the interface assignment on the right side of the macro illustration.

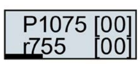
Defining the function of an analog input

Procedure

To define the function of an analog input, proceed as follows:

1. Select the function marked using a CI parameter.
2. Enter the parameter number of analog input 755[00] into the CI parameter.
3. Determine whether the analog input is a current or a voltage input:
   - Set the I/U switch at the front of the inverter to the correct position.
   - Set the p0756[00] parameter to the corresponding value.

You have now defined the analog input function.



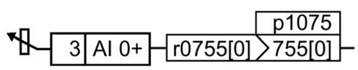


Figure 4-4 Example: p1075[00] = 755[00] → enter the supplementary setpoint via AI 0

Advanced settings

When switching over the master control of the inverter (for example, if you select default setting 7), you must select the correct index of the parameter:

- Index 0 (e.g. p1075[00]) applies to the assignment for the interface on the left-hand side of the macro representation.
- Index 1 (e.g. P1075[01]) applies to the assignment for the interface on the right-hand side of the macro representation.

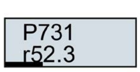
Defining the function of a digital output

Procedure

To define the function of a digital output, proceed as follows:

1. Select the function marked using a BO parameter.
2. Enter the number of the BO parameter into parameter p073x of the digital output.

You have defined the digital output function.



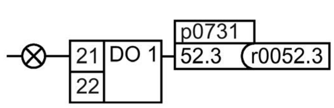


Figure 4-5 Example: p0731 = 52.3 → signal "fault" via DO 1

Defining the function of an analog output

Procedure

To define the function of an analog output, proceed as follows:

1. Select the function marked using a CO parameter.
2. Enter the number of the CO parameter into parameter p0771 of the analog output.
3. Use p0776[0] to determine whether the analog output is a current or voltage input.

You have now defined the analog output function.

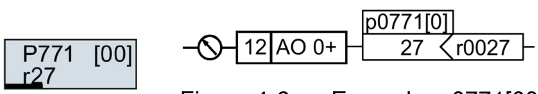
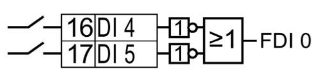


Figure 4-6 Example: p0771[00] = 27 → output the signal for the actual current via AO 0

4.2.5.3 Enabling the "Safe torque off" (STO) safety function

Requirement



You have selected a default setting of the interfaces, for which two terminals (as fail-safe digital input) are reserved for a safety function.

Default setting of the interfaces (Page 32)

Procedure

Proceed as follows to enable the STO safety function:

1. p0010 = 95 → the commissioning mode of the safety functions is active.
2. p9761 = … → when the safety function settings are password-protected, then you must enter the password.
3. p9762 = … → if you wish to change the password, enter a new password (1 … FFFF FFFF). If you wish to reset the password, then set p9762 = 0.
4. p9763 = … → if you have changed the password, then you must enter the password again to confirm the change.
5. p9601.0 = 1 → the terminal strip for controlling STO is selected.
6. p9659 = … → set the timer for the forced checking procedure.
7. p9700 = D0 → the inverter copies the fail-safe parameters.
8. p9701 = DC → confirm the change of the fail-safe parameters.
9. p0010 = 0 → the commissioning mode of the safety functions has been exited.
10. p0971 = 1 → the inverter saves the parameters in a non-volatile fashion (data cannot be lost when the power fails).
11. Wait until the inverter sets p0971 = 0.
12. Bring the inverter into a no voltage condition (400 V and 24 V).
13. Switch on the inverter power supply again.

You have enabled the STO safety function.

4.2.5.4 Parameter list

The following list contains the basic parameter information with access level 1 … 3. The complete parameter list is provided in the list manual.

Overview of the manuals (Page 86)

No.	Description			
Operation and visualization				
r0002	Drive operating display			
p0003	Access level			
p0010	Drive, commissioning parameter filter			
p0015	Macro drive unit			
	Default setting of the interfaces (Page 32)			
r0018	Control Unit firmware version			
r0020	Speed setpoint smoothed [100 % ≙ p2000]			
r0021	CO: Actual speed smoothed [100 % ≙ p2000]			
r0022	Speed actual value rpm smoothed [rpm]			
r0024	Output frequency smoothed [100 % ≙ p2000]			
r0025	CO: Output voltage smoothed [100 % ≙ p2001]			
r0026	CO: DC link voltage smoothed [100 % ≙ p2001]			
r0027	CO: Absolute actual current smoothed [100 % ≙ p2002]			
r0031	Actual torque smoothed [100 % ≙ p2003]			
r0032	CO: Active power actual value smoothed [100 % ≙ r2004]			
r0034	Motor utilization [100 ≙ 100%]			
r0035	CO: Motor temperature [100°C ≙ p2006]			
r0036	CO: Power unit overload I^2t [100 ≙ 100%]			
r0039	Energy consumption [kWh]			
	[0]	Energy balance (total)	[1]	Energy drawn
	[2]	Energy fed back		
p0040	0 → 1	Reset the energy consumption display		
r0041	Energy usage saved/energy saved			
r0042	CO: Process energy display			
	[0]	Energy balance (total)	[1]	Energy drawn
	[2]	Energy fed back		
p0043	BI: Release display of energy consumption			
	0 → 1: Start energy display r0042			
p0045	Smoothing time constant, display values [ms]			
r0046	CO/BO: Missing enable signals			

No.	Description	
r0047	Motor data identification routine and speed controller optimization	
r0050	CO/BO: Command Data Set CDS effective	
r0051	CO/BO: Drive Data Set DDS effective	
r0052	CO/BO: Status word 1	
	.00	Ready to start
	.01	Ready
	.02	Operation enabled
	.03	Fault active
	.04	Coast down active (OFF2)
	.05	Quick stop active (OFF3)
	.06	Closing lockout active
	.07	Alarm active
	.08	Deviation, setpoint/actual speed
	.09	Control requested
	.10	Maximum speed reached
	.11	I,M,P limit reached
	.12	Motor holding brake open
	.13	Alarm overtemperature motor
	.14	Motor rotates forwards
	.15	Alarm inverter overload
r0053	CO/BO: Status word 2	
r0054	CO/BO: Control word 1	
	.00	ON/OFF1
	.01	OFF2
	.02	OFF3
	.03	Enable ramp-function generator
	.04	Enable ramp-function generator
	.05	Continue ramp-function generator
	.06	Enable speed setpoint
	.07	Acknowledge fault
	.08	Jog bit 0
	.09	Jog bit 1
	.10	Master control by PLC
	.11	Direction reversal (setpoint)
	.13	Motorized potentiometer, raise
	.14	Motorized potentiometer, lower
	.15	CDS bit 0

No.	Description			
r0055	CO/BO: Supplementary control word			
	.00	Fixed setpoint, bit 0		
	.01	Fixed setpoint, bit 1		
	.02	Fixed setpoint, bit 2		
	.03	Fixed setpoint, bit 3		
	.04	DDS selection, bit 0		
	.05	DDS selection, bit 1		
	.08	Technology controller enable		
	.09	DC braking enable		
	.11	Droop enable		
	.12	Closed-loop torque control active		
	.13	External fault 1 (F07860)		
	.15	CDS bit 1		
r0056	CO/BO: Status word, closed-loop control			
r0060	CO: Speed setpoint before setpoint filter [100 % ≙ p2000]			
r0062	CO: Speed setpoint after filter [100 % ≙ p2000]			
r0063	CO: Speed actual value unsmoothed [100 % ≙ p2000]			
r0064	CO: Speed controller system deviation [100 % ≙ p2000]			
r0065	Slip frequency [100 % ≙ p2000]			
r0066	CO: Output frequency [100 % ≙ p2000]			
r0067	CO: Output current, maximum [100 % ≙ p2002]			
r0068	CO: Absolute current actual value unsmoothed [100 % ≙ p2002]			
r0070	CO: Actual DC link voltage [100 % ≙ p2001]			
r0071	Maximum output voltage [100 % ≙ p2001]			
r0072	CO: Output voltage [100 % ≙ p2001]			
r0075	CO: Current setpoint field-generating [100 % ≙ p2002]			
r0076	CO: Current actual value field-generating [100 % ≙ p2002]			
r0077	CO: Current setpoint torque-generating [100 % ≙ p2002]			
r0078	CO: Current actual value torque-generating [100 % ≙ p2002]			
r0079	CO: Torque setpoint, total [100 % ≙ p2003]			
r0080	CO: Actual torque value			
	[0]	unsmoothed	[1]	smoothed
r0082	CO: Active power actual value			
	[0]	unsmoothed	[1]	smoothed with p0045
	[2]	Electric power		

No.	Description			
	Commissioning			
p0096	Application class			
	0	Expert	1	Standard Drive Control
	2	Dynamic Drive Control		
p0100	IEC/NEMA motor standard			
	0	IEC motor (50 Hz, SI units)	1	NEMA motor (60 Hz, US units)
	2	NEMA motor (60 Hz, SI units)		
p0124	CU Identification via LED			
p0133	Motor configuration			
	.00	1: Delta 0: Star	.01	1: 87 Hz 0: No 87 Hz
p0170	Number of Command Data Sets (CDS)			
p0180	Number of Drive Data Sets (DDS)			
	Power Module			
p0201	Power unit code number			
r0204	Power unit, hardware properties			
p0205	Power unit application			
	0	Load cycle with high overload	1	Load cycle with light overload
r0206	Rated power unit power [kw/hp]			
r0207	Rated power unit current			
r0208	Rated power unit line supply voltage [V]			
r0209	Power unit, maximum current			
p0210	Drive unit line supply voltage [V]			
p0219	Braking resistor braking power [kW]			
p0230	Drive filter type, motor side			
	0	No filter	1	Motor reactor
	2	dv/dt filter	3	Siemens sine-wave filter
	4	Sine wave filter, third-party manufacturer		
p0233	Power unit motor reactor [mH]			
p0234	Power unit sine-wave filter capacitance [µF]			
r0238	Internal power unit resistance			
p0287	Ground fault monitoring thresholds [100 % ≙ r0209]			
r0289	CO: Maximum power unit output current [100 % ≙ p2002]			

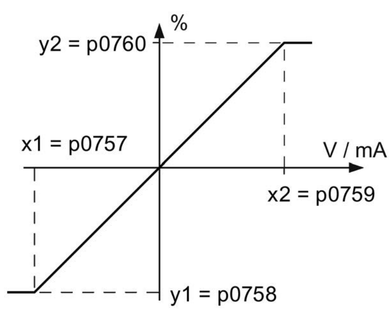
No.	Description					
p0290	Power unit overload response					
	0	Reduce output current or output frequency				
	1	No reduction, shutdown when overload threshold is reached				
	2	Reduce I_output or f_output and f_pulse (not using I2t).				
	3	Reduce the pulse frequency (not using I2t)				
	12	I_output or f_output and automatic pulse frequency reduction				
	13	Automatic pulse frequency reduction				
p0292	Power unit temperature alarm threshold [°C]					
p0295	Fan run-on time [s]					
Motor						
p0300	Motor type selection					
	0	No motor	1	Standard induction motor	2	Synchronous motor
	10	1LE1	13	1LG6	17	1LA7
	19	1LA9	100	1LE1	101	1PC1
	108	1PH8	271	1FG1	277	1FK7
p0301	Motor code number selection					
p0304	Rated motor voltage [V]					
p0305	Rated motor current [A]					
p0306	Number of motors connected in parallel					
p0307	Rated motor power [kW]					
p0308	Rated motor power factor					
p0309	Rated motor efficiency [%]					
p0310	Rated motor frequency [Hz]					
p0311	Rated motor speed [rpm]					
p0312	Rated motor torque [Nm]					
r0313	Motor pole pair number, current (or calculated)					
p0320	Motor rated magnetizing current/short-circuit current [A]					
p0322	Maximum motor speed [rpm]					
p0323	Maximum motor current [A]					
p0325	Motor pole position identification current 1. Phase [A]					
p0329	Motor pole position identification current [A]					
r0330	Rated motor slip					
r0331	Actual motor magnetizing current/short-circuit current					
r0333	Rated motor torque [Nm]					
p0335	Motor cooling type					

No.	Description			
p0340	Automatic calculation of motor/control parameters			
p0341	Motor moment of inertia [kgm²]			
p0342	Ratio between the total and motor moment of inertia [kgm²]			
p0344	Motor weight (for thermal motor model) [kg]			
r0345	Motor rated running-up time [s]			
p0346	Motor excitation build-up time [s]			
p0347	Motor de-excitation time [s]			
p0350	Motor stator resistance, cold [Ω]			
p0352	Cable resistance [Ω]			
r0394	Rated motor power [kW]			
r0395	Actual stator resistance			
r0396	Actual rotor resistance			
Technology and units				
p0500	Technology application			
	0	Standard drive	1	Pumps and fans
	2	Encoderless control up to f = 0	2	Pumps and fans, efficiency optimization
p0501	Technological application (Standard Drive Control)			
	0	Constant load (linear characteristic)	1	Speed-dependent load (parabolic characteristic)
p0502	Technology application (Dynamic Drive Control)			
	0	Standard drive (e.g. pump, fan)	1	Dynamic approach or reversing
	5	Heavy starting (e.g. extruders, compressors)		
p0505	Selecting the system of units			
	1	SI	2	Referred/SI
	3	US	4	Referred/US
p0514	Specific scaling, reference values			
p0515	Specific scaling, parameter referred to p0514[0]			
p0516	Specific scaling, parameter referred to p0514[1]			
…	…			
p0524	Specific scaling, parameter referred to p0514[9]			
p0530	Bearing, type selection			
p0531	Bearing, code number selection			
p0532	Bearing, maximum speed			
p0541	Load gear unit code number			
p0542	Load gear unit maximum speed			

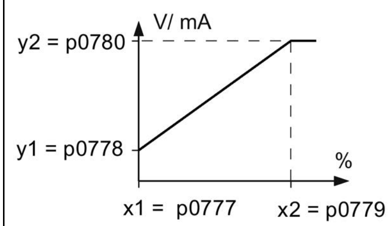
No.	Description					
p0543	Load gear unit maximum torque					
p0544	Load gear unit gear ratio (absolute value) total, numerator					
p0545	Load gear unit gear ratio (absolute value) total, nominator					
p0546	Load gear unit output direction of rotation inversion					
p0550	Brake type					
p0551	Brake code number					
p0552	Brake maximum speed					
p0553	Brake holding torque					
p0554	Brake moment of inertia					
p0573	Inhibit automatic reference value calculation					
p0595	Selecting technological units					
	1	%	2	1 referred, dimensionless		
	3	bar	4	°C	5	Pa
	6	ltr/s	7	m³/s	8	ltr/min
	9	m³/min	10	ltr/h	11	m³/h
	12	kg/s	13	kg/min	14	kg/h
	15	t/min	16	t/h	17	N
	18	kN	19	Nm	20	psi
	21	°F	22	gallon/s	23	inch³/s
	24	gallon/min	25	inch³/min	26	gallon/h
	27	inch³/h	28	lb/s	29	lb/min
	30	lb/h	31	lbf	32	lbf ft
	33	K	34	rpm	35	parts/min
	36	m/s	37	ft³/s	38	ft³/min
	39	BTU/min	40	BTU/h	41	mbar
	42	inch wg	43	ft wg	44	m wg
	45	% r.h.	46	g/kg	47	ppm
p0596	Reference quantity, technological units					
Thermal motor monitoring and motor model, maximum current						
p0601	Motor temperature sensor type					
	0	No sensor				
	1	PTC warning & timer				
	2	KTY84				
	4	Bimetallic NC contact warning & timer				
	6	PT1000				
p0604	Motor temperature alarm threshold [°C]					
p0605	Motor temperature fault threshold [°C]					

No.	Description			
p0610	Motor overtemperature response			
	0	No response, alarm only, no reduction of I_{max}		
	1	Alarm with reduction of I_{max} and fault		
	2	Alarm and fault, no reduction of I_{max}		
	12	Messages, no reduction of I_{max}, temperature is saved		
p0611	I²t motor model thermal time constant [s]			
p0612	Motor temperature model activation			
	.00	Activate motor temperature model 1 (I²t)	.01	Activate motor temperature model 2
	.02	Activate motor temperature model 3	.08	Activate motor temperature model 1 expansions
	.09	Activate motor temperature model 2 expansions	.12	Motor temperature model 1 ambient temperature can be set
p0613	Motor temperature model 1/3 ambient temperature [°C]			
p0614	Thermal resistor adaptation reduction factor			
p0615	I²t motor model fault threshold [°C]			
p0625	Motor ambient temperature [°C]			
p0637	Q flux, flux gradient saturated [mH]			
p0640	Current limit [A]			
p0650	Motor operating hours, current [h]			
p0651	Motor operating hours, maintenance interval [h]			
Command sources and terminals on the Control Unit				
r0720	CU number of inputs and outputs			
r0722	CO/BO: CU digital inputs, status			
	.00	DI 0 (terminal 5)	.01	DI 1 (terminal 6)
	.02	DI 2 (terminal 7)	.03	DI 3 (terminal 8)
	.04	DI 4 (terminal 16)	.05	DI 5 (terminal 17)
	.11	DI 11 (terminals 3, 4) AI 0		
r0723	CO/BO: CU digital inputs, status inverted			
p0724	CU digital inputs debounce time [ms]			
p0730	BI: CU signal source for terminal DO 0			
	NO: Terminal 19 / NC: Terminal 18			
p0731	BI: CU signal source for terminal DO 1			
	NO: Terminal 21			
r0747	CU, digital outputs status			
p0748	CU, invert digital outputs			

No.	Description			
r0751	BO: CU analog inputs status word			
r0752	CO: CU analog inputs input voltage/current actual AI0 (terminals 3/4)			
p0753	CU analog inputs smoothing time constant [ms]			
r0755	CO: CU analog inputs actual value in percent, AI0 (terminals 3/4) [100 ≙ 100%]			
p0756	CU analog input type (terminals 3, 4)			
	0	0 V ... +10 V	1	+2 V ... +10 V
	2	0 mA ... +20 mA	3	+4 mA ... +20 mA
	4	-10 V ... +10 V	8	No sensor connected



No.	Description			
p0757	CU analog input characteristic value x1			
p0758	CU analog input characteristic value y1 [%]			
p0759	CU analog input characteristic value x2			
p0760	CU analog input characteristic value y2 [%]			
p0761	CU analog input wire break monitoring response threshold			
p0762	CU analog inputs wire-break monitoring deceleration time [ms]			
p0764	CU analog inputs deadband [V]			
p0771	CI: CU analog output signal source, AO 0 (terminals 12, 13) [100 ≙ 100%]			
r0772	CU analog output, output value currently referred			
p0773	CU analog outputs smoothing time constant [ms]			
r0774	CU analog output, output voltage/current actual [100% ≙ p2001]			
p0775	CU analog output activate absolute value generation			
p0776	CU analog output type			
	0	0 mA ... +20 mA	1	0 V ... +10 V
	2	+4 mA ... +20 mA		



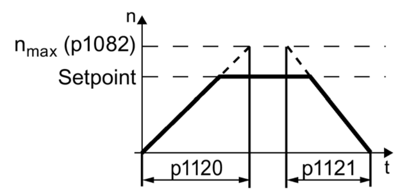
No.	Description	
p0777	CU analog output characteristic value x1 [%]	
p0778	CU analog output characteristic value y1 [V]	
p0779	CU analog output characteristic value x2 [%]	
p0780	CU analog output characteristic value y2 [V]	
p0782	BI: CU analog output invert signal source, AO 0 (terminals 12,13)	
r0785	BO: CU analog outputs status word	
	.00	1 = AO 0 negative
p0795	CU digital inputs, simulation mode	
p0796	CU digital inputs, simulation mode setpoint	
p0797	CU analog inputs, simulation mode	
p0798	CU analog inputs, simulation mode setpoint	
Change over and copy data sets		
p0802	Data transfer with memory card as source/target	
p0803	Data transfer with device memory as source/target	
p0804	Data transfer start	
	12	Transfer GSD / GSDML for PROFIBUS / PROFINET onto the memory card
p0806	BI: Inhibit master control	
r0807	BO: Master control active	
p0809	Copy Command Data Set CDS	
p0810	BI: Command data set selection CDS bit 0	
p0819	Copy drive data set DDS	
p0820	BI: Drive data set selection DDS, bit 0	
p0826	Motor changeover, motor number	
r0835	CO/BO: Data set changeover status word	
r0836	CO/BO: Command data set CDS selected	
r0837	CO/BO: Drive data set DDS selected	
Sequential control system (e.g. ON/OFF1)		
p0840	BI: ON/OFF 1	
p0844	BI: No coast down/coast down (OFF2) signal source 1	

No.	Description
p0845	BI: No coast down/coast down (OFF2) signal source 2
p0848	BI: No quick stop/quick stop (OFF3) signal source 1
p0849	BI: No quick stop/quick stop (OFF3) signal source 1
p0852	BI: Enable operation
p0854	BI: Master control by PLC
p0855	BI: Unconditionally release holding brake
p0856	BI: Enable speed controller
p0857	Power Module monitoring time [ms]
p0858	BI: Unconditionally close holding brake
p0860	BI: Line contactor, feedback signal
p0861	Line contactor, monitoring time [ms]
r0863	CO/BO: Drive coupling status word / control word
	.00 1 = closed-loop control, operation; .01 1 = operate line contactor
p0867	Power unit main contactor hold time after OFF1 [ms]
p0869	Configuration sequence control
	.00 1 = keep main contactor closed for STO
r0898	CO/BO: Control word sequence control
r0899	CO/BO: Status word sequence control
	Fieldbus
p0922	PROFIdrive telegram selection
	1 Standard telegram 1, PZD-2/2
	20 Standard telegram 20, PZD-2/6
	352 SIEMENS telegram 352, PZD-6/6
	353 SIEMENS telegram 353, PZD-2/2, PKW-4/4
	354 SIEMENS telegram 354, PZD-6/6, PKW-4/4
	999 Free telegram configuration with BICO
	Faults (Part 1)
r0944	CO: Counter for fault buffer changes
r0945	Fault code
r0946	Fault code list
r0947	Fault number
r0948	Fault time received in milliseconds [ms]
r0949	Fault value
p0952	Fault cases, counter
r0964	Device identification

No.	Description
p0965	PROFIdrive profile number
p0969	System runtime relative [ms]
	Restoring the factory setting Saving parameters
p0970	Reset drive parameters
	0 Inactive; 1 Reset parameters except for Safety
	5 Reset safety parameters; 10 Load setting 10
	11 Load setting 11; 12 Load setting 12
	100 Reset BICO interconnections
p0971	Save parameters
	0 Inactive
	1 Save in nonvolatile storage (RAM → ROM)
	10 Save in a non-volatile memory as setting 10
	11 Save in a non-volatile memory as setting 11
	12 Save in a non-volatile memory as setting 12
p0972	Drive unit reset
	Setpoint channel
p1000	Speed setpoint selection
p1001	CO: Fixed speed setpoint 1 [rpm]
p1002	CO: Fixed speed setpoint 2 [rpm]
…	…
p1015	CO: Fixed speed setpoint 15 [rpm]
p1016	Fixed speed setpoint mode
	1 Direct selection; 2 Selection, binary coded
p1020	BI: Fixed speed setpoint selection bit 0
p1021	BI: Fixed speed setpoint selection bit 1
p1022	BI: Fixed speed setpoint selection bit 2
p1023	BI: Fixed speed setpoint selection bit 3
r1024	CO: Fixed speed setpoint effective [100 % ≙ p2000]
r1025	BO: Fixed speed setpoint status
	.00 Fixed speed setpoint selected
p1030	Motorized potentiometer configuration
	00 Storage active
	01 Automatic operation, ramp-function generator active
	02 Initial rounding active
	03 Storage in NVRAM active
p1035	BI: Motorized potentiometer setpoint raise

No.	Description
p1036	BI: Motorized potentiometer setpoint lower
p1037	Motorized potentiometer maximum speed [rpm]
p1038	Motorized potentiometer minimum speed [rpm]
p1040	Motorized potentiometer start value [rpm]
p1043	BI: Motorized potentiometer, accept setting value
p1044	CI: Motorized potentiometer setting value [100 % ≙ p2000]
r1045	CO: Motorized potentiometer, setpoint in front of the ramp-function generator [rpm]
p1047	Motorized potentiometer ramp-up time [s]
p1048	Motorized potentiometer ramp-down time [s]
r1050	CO: Motorized potentiometer setpoint after the ramp-function generator [100 % ≙ p2000]
p1055	BI: Jog bit 0
p1056	BI: Jog bit 1
p1058	Jog 1 speed setpoint [rpm]
p1059	Jog 2 speed setpoint [rpm]
p1070	CI: Main setpoint [100 % ≙ p2000]
p1071	CI: Main setpoint scaling [100 ≙ 100%]
r1073	CO: Main setpoint effective [100 % ≙ p2000]
p1075	CI: Supplementary setpoint [100 % ≙ p2000]
p1076	CI: Supplementary setpoint scaling [100 ≙ 100%]
r1077	CO: Supplementary setpoint effective [100 % ≙ p2000]
r1078	CO: Total setpoint effective [100 % ≙ p2000]
p1080	Minimum speed [rpm]
p1081	Maximum speed scaling [%]
p1082	Maximum speed [rpm]
p1083	CO:Speed limit in positive direction of rotation [rpm]
r1084	CO: Speed limit positive effective [100 % ≙ p2000]
p1086	CO: Speed limit in negative direction of rotation [rpm]
r1087	CO: Speed limit negative effective [100 % ≙ p2000]
p1091	Skip speed 1 [rpm]
p1092	Skip speed 2 [rpm]
p1101	Skip speed bandwidth [rpm]
p1106	CI: Minimum speed signal source
p1110	BI: Inhibit negative direction
p1111	BI: Inhibit positive direction
p1113	BI: Setpoint inversion

No.	Description
r1114	CO: Setpoint after the direction limiting [100 % ≙ p2000]
r1119	CO: Ramp-function generator setpoint at the input [100 % ≙ p2000]

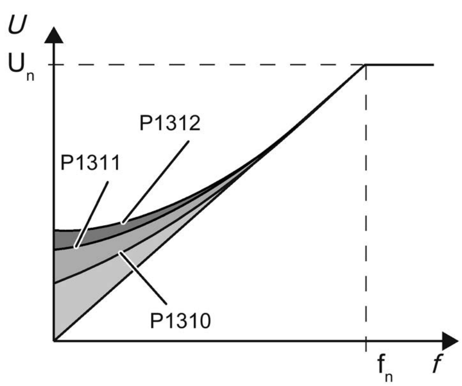


No.	Description			
p1120	Ramp-function generator ramp-up time [s]			
p1121	Ramp-function generator ramp-down time [s]			
p1130	Ramp-function generator initial rounding-off time [s]			
p1131	Ramp-function generator final rounding-off time [s]			
p1134	Ramp-function generator rounding-off type			
	0	Continuous smoothing	1	Discontinuous smoothing
p1135	OFF3 ramp-down time [s]			
p1136	OFF3 initial rounding-off time [s]			
p1137	OFF3 final rounding-off time [s]			
p1138	CI: Acceleration ramp scaling [100 ≙ 100%]			
p1139	CI: Ramp down scaling [100 ≙ 100%]			
p1140	BI: Enable ramp-function generator			
p1141	BI: Continue ramp-function generator			
p1142	BI: Enable speed setpoint			
r1149	CO: Ramp-function generator acceleration [100 % ≙ p2007]			
r1170	CO: Speed controller setpoint sum [100 % ≙ p2000]			
r1198	CO/BO: Control word, setpoint channel			
Functions (e.g. motor holding brake)				
p1200	Flying restart operating mode			
	0	Flying restart inactive		
	1	Flying restart always active (start in setpoint direction)		
	4	Flying restart always active (start only in setpoint direction)		
p1201	BI: Flying restart enable signal source			
p1202	Flying restart search current [100 % ≙ r0331]			
p1203	Flying restart search rate factor [%]			
	A higher value results in a longer search time.			

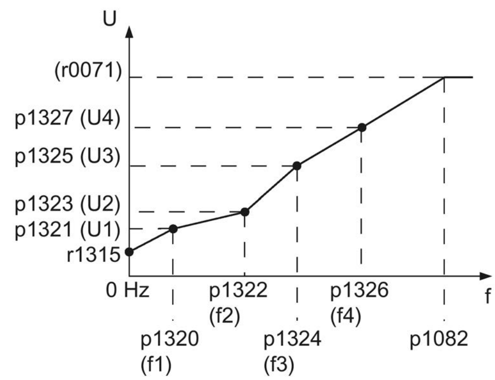
No.	Description	
p1206	Set fault number without automatic restart	
p1210	Automatic restart mode	
	0	Inhibit automatic restart
	1	Acknowledge all faults without restarting
	4	Restart after line supply failure, without additional start attempts
	6	Restart after fault with additional start attempts
	14	Restart after line supply failure following manual acknowledgement
	16	Restart after fault following manual acknowledgement
	26	Acknowledging all faults and restarting for an ON command
p1211	Automatic restart, start attempts	
p1212	Automatic restart, delay time start attempts [s]	
p1213	Automatic restart, monitoring time [s]	
	[0] Restart	[1] Reset start counter
p1215	Motor holding brake configuration	
	0	No motor holding brake being used
	3	Motor holding brake like sequential control, connection via BICO
p1216	Motor holding brake, opening time [ms]	
p1217	Motor holding brake, closing time [ms]	
p1226	Standstill detection threshold [rpm]	
p1227	Standstill detection monitoring time [s]	
p1230	BI: DC braking activation	
p1231	DC braking configuration	
	0	No function
	4	DC braking
	5	DC braking OFF1/OFF3
	14	DC braking below starting speed
p1232	DC braking, braking current [A]	
p1233	DC braking time [s]	
p1234	Speed at the start of DC braking [rpm]	
r1239	CO/BO: DC braking status word	
p1240	V_{DC} controller or V_{DC} monitoring configuration (vector control)	
	0	Inhibit V_{DC} controller
	1	Enable V_{DC_max} controller
	2	Enable V_{DC_min} controller (kinetic buffering)
	3	Enable V_{DC_min} controller and V_{DC_max} controller
r1242	V_{DC_max} controller switch-in level [100 % ≙ p2001]	

No.	Description	
p1243	V_{DC_max} controller dynamic factor [%]	
p1245	V_{DC_min} controller switch-in level (kinetic buffering) [%]	
r1246	V_{DC_min} controller switch-in level (kinetic buffering) [100 % ≙ p2001]	
p1247	V_{DC_min} controller dynamic factor (kinetic buffering) [%]	
p1249	V_{DC_max} controller speed threshold [rpm]	
p1250	V_{DC} controller proportional gain	
p1251	V_{DC} controller integral time [ms]	
p1252	V_{DC} controller rate time [ms]	
p1254	V_{DC_max} controller automatic ON level detection	
	0	Automatic detection inhibited
	1	Automatic detection enabled
p1255	V_{DC_min} controller time threshold [s]	
p1256	V_{DC_min} controller response (kinetic buffering)	
	0	Buffer V_{DC} until undervoltage, n<p1257 → F07405
	1	Buffer V_{DC} until undervoltage, n<p1257 → F07405, t>p1255 → F07406
p1257	V_{DC_min} controller speed threshold [rpm]	
r1258	CO: V_{DC} controller output	
p1271	Flying restart maximum frequency for the inhibited direction [Hz]	
p1280	V_{DC} controller or V_{DC} monitoring configuration (V/f)	
	0	Inhibit V_{DC} controller
	1	Enable V_{DC_max} controller
p1281	Vdc controller configuration	
r1282	V_{DC_max} controller switch-in level (V/f) [100 % ≙ p2001]	
p1283	V_{DC_max} controller dynamic factor (V/f) [%]	
p1284	V_{DC_max} controller time threshold (U/f) [s]	
p1288	V_{DC_max} controller ramp-function generator feedback factor (U/f)	
p1290	V_{DC} controller proportional gain (U/f)	
p1291	V_{DC} controller integral time (U/f) [ms]	
p1292	V_{DC} controller rate time (U/f) [ms]	
p1297	V_{DC_min} controller speed threshold (U/f) [rpm]	

No.	Description	
	V/f control	
p1300	Open-loop/closed-loop control operating mode	
	0	V/f control with linear characteristic
	1	V/f control with linear characteristic and FCC
	2	V/f control with parabolic characteristic
	3	V/f control with parameterizable characteristic
	4	V/f control with linear characteristic and ECO
	5	V/f control for drive requiring a precise frequency (e.g. textiles)
	6	V/f control for drive requiring a precise frequency and FCC
	7	V/f control for parabolic characteristic and ECO
	19	V/f control with independent voltage setpoint
	20	Speed control (without encoder)



No.	Description
p1302	V/f control configuration
p1310	Starting current (voltage boost) permanent [100 % ≙ p0305]
p1311	Starting current (voltage boost) acceleration [%]
p1312	Starting current (voltage boost) when starting [%]
r1315	Voltage boost, total [100 % ≙ p2001]



No.	Description
p1320 … p1327	U/f control programmable frequency f [Hz] and voltage U [V] characteristic
p1330	CI: V/f control independent voltage setpoint [100 % ≙ p2001]
p1331	Voltage limiting [V]
p1333	U/f control FCC starting frequency [Hz]
p1334	V/f control slip compensation starting frequency [Hz]
p1335	Slip compensation, scaling [100 % ≙ r0330]
p1336	Slip compensation limit value [100 % ≙ r0330]
r1337	CO: Actual slip compensation [100 ≙ 100%]
p1338	V/f mode resonance damping gain
p1340	I_{max} frequency controller proportional gain
r1343	CO: I_max controller frequency output [100 % ≙ p2000]
p1349	U/f mode resonance damping maximum frequency [Hz]
p1351	CO: Motor holding brake starting frequency [100 ≙ 100%]
p1352	CI: Motor holding brake starting frequency [100 ≙ 100%]

No.	Description	
Closed-loop speed control		
p1400	Speed control configuration	
	.00	1 = automatic Kp/Tn adaptation active
	.01	1 = sensorless vector control, freeze I action
	.05	1 = Kp/Tn adaptation active
	.06	1 = free Tn adaptation active
	.14	1= torque precontrol is always active 0 = torque precontrol is active when speed controller enabled
	.15	1 = sensorless vector control, speed precontrol active
	.16	1 = release I action for limitation 0 = block I action for limitation
	.18	1 = moment of inertia estimator active
	.20	1 = acceleration model is switched on
	.22	1 = obtain moment of inertia estimator value for pulse inhibit
	.24	1 = moment of inertia estimator actively accelerates the motor
r1438	CO: Speed controller speed setpoint [100 % ≙ p2000]	
p1452	Speed controller speed actual value smoothing time (SLVC) [ms]	
p1470	Speed controller encoderless operation P gain	
p1472	Speed controller sensorless operation integral time [ms]	
p1475	CI: Speed controller torque setting value for motor holding brake [100 % ≙ p2003]	
r1482	CO: Speed controller I torque output [100 % ≙ p2003]	
r1493	CO: Total moment of inertia [kgm²]	
p1496	Acceleration pre-control scaling [%]	
p1498	Load moment of inertia [kgm²]	
p1502	BI: Freezing the moment of inertia estimator	
	0 = moment of inertia estimator active 1 = determined moment of inertia is frozen	
p1511	CI: Supplementary torque 1 [100 % ≙ p2003]	
p1512	CI: Supplementary torque 1 scaling	
r1516	CO: Supplementary torque and acceleration torque [100 % ≙ p2003]	
p1520	CO: Torque limit upper [Nm]	
p1521	CO: Torque limit lower [Nm]	
p1522	CI: Torque limit upper [100 % ≙ p2003]	
p1523	CI: Torque limit lower [100 % ≙ p2003]	

No.	Description	
p1524	CO: Torque limit upper/motoring scaling [100 ≙ 100%]	
p1525	CO: Torque limit lower scaling [100 ≙ 100%]	
r1526	CO: Torque limit upper without offset [100 % ≙ p2003]	
r1527	CO: Torque limit lower without offset [100 % ≙ p2003]	
p1530	Power limit motoring [kW]	
p1531	Power limit regenerative [kW]	
r1538	CO: Upper effective torque limit [100 % ≙ p2003]	
r1539	CO: Lower effective torque limit [100 % ≙ p2003]	
r1547	CO: Torque limit for speed controller output	
	[0]	Upper limit [100 % ≙ p2003]
	[1]	Lower limit [100 % ≙ p2003]
p1552	CI: Torque limit upper scaling without offset [100 ≙ 100%]	
p1554	CI: Torque limit lower scaling without offset [100 ≙ 100%]	
p1560	Moment of inertia estimator, accelerating torque threshold value [100% ≙ r0333]	
p1561	Moment of inertia estimator change time inertia [ms]	
p1562	Moment of inertia estimator change time load [ms]	
p1563	CO: Moment of inertia estimator load torque positive direction of rotation [Nm]	
p1564	CO: Moment of inertia estimator load torque negative direction of rotation [Nm]	
p1570	CO: Flux setpoint [100 ≙ 100%]	
p1580	Efficiency optimization [%]	
r1598	CO: Flux setpoint total [100 ≙ 100%]	
p1610	Torque setpoint static (SLVC) [100 % ≙ r0333]	
p1611	Supplementary accelerating torque (SLVC) [100 % ≙ r0333]	
p1616	Current setpoint smoothing time [ms]	
r1732	CO: Direct-axis voltage setpoint [100 % ≙ p2001]	
r1733	CO: Quadrature-axis voltage setpoint [100 % ≙ p2001]	
p1740	Gain resonance damping with sensorless control	
p1745	Motor model error threshold stall detection [%]	

No.	Description			
p1750	Motor model configuration			
	.00	1 = forces open-loop speed-controlled starting		
	.01	1 = forces open-loop-controlled crossing of frequency zero		
	.02	1 = drive remains completely under closed-loop control even at frequency zero		
	.03	1 = motor model evaluates saturation characteristic		
	.06	1 = when motor is blocked, sensorless vector control remains under closed-loop speed control		
	.07	1 = use of robust switchover limits for model switchover (open/closed-loop) during generating operation		
p1755	Motor model changeover speed encoderless operation [rpm]			
p1780	Motor model adaptation configuration			
Gating unit				
p1800	Pulse frequency setpoint [kHz]			
r1801	CO: Pulse frequency [100 % ≙ p2000]			
p1806	Filter time constant V_{DC} correction [ms]			
p1810	Modulator configuration			
	.00	1 = averaging filter for voltage limiting		
	.01	1 = DC link voltage compensation in current control		
p1820	Reverse the output phase sequence			
	0	Off	1	On
r1838	CO/BO: Gating unit status word 1			
Motor data identification				
p1900	Motor data identification and rotating measurement			
	0	Inhibited		
	1	Identify the motor data at standstill and with the motor rotating		
	2	Identify motor data at standstill		
	3	Identify motor data with the motor rotating		
	11	Identify motor data and optimize the speed controller, operation		
	12	Identify motor data (at standstill), operation		
p1901	Test pulse evaluation configuration			
p1909	Motor data identification control word			
p1910	Motor data identification selection			
p1959	Rotating measurement configuration			

No.	Description			
p1960	Rotating measurement selection			
	0	Inhibited		
	1	Rotating measurement in encoderless operation		
	3	Speed controller optimization in encoderless operation		
p1961	Saturation characteristic speed to determine [%]			
p1965	Speed_ctrl_opt speed [100 % ≙ p0310]			
p1967	Speed_ctrl_opt dynamic factor [%]			
p1980	PolID procedure			
	1	Voltage pulsing 1st harmonic		
	4	Voltage pulsing, 2-phase		
	6	Voltage pulsing, 2-phase inverse		
	8	Voltage pulsing 2nd harmonic, inverted		
	10	Impressing DC current		
Reference values				
p2000	Reference speed reference frequency [rpm]			
p2001	Reference voltage [V]			
p2002	Reference current [A]			
p2003	Reference torque [Nm]			
r2004	Reference power			
p2006	Reference temperature [°C]			
p2010	Commissioning interface baud rate			
p2011	Commissioning interface address			
p2016	CI: Comm IF USS PZD send word			
Fieldbus				
p2030	Fieldbus interface protocol selection			
	0	No protocol	7	PROFINET
	10	Ethernet/IP		
r2032	Master control, control word effective			
	.00	ON / OFF1		
	.01	OFF2 inactive		
	.02	OFF3 inactive		
	.03	Enable operation		
	.04	Enable ramp-function generator		
	.05	Start ramp-function generator		
	.06	Enable speed setpoint		
	.07	Acknowledge fault		
	.08	Jog bit 0		
	.09	Jog bit 1		
	.10	Master control by PLC		

No.	Description			
p2037	PROFIdrive STW1.10 = 0 mode			
	0	Freeze setpoints and further process sign-of-life		
	1	Freeze setpoints and sign-of-life		
	2	Setpoints are not frozen		
p2038	PROFIdrive STW/ZSW interface mode			
	0	SINAMICS		
	2	VIK-NAMUR		
r2043	BO: PROFIdrive PZD state			
	.00	1 = setpoint failure	.02	1 = fieldbus running
p2044	PROFIdrive fault delay [s]			
r2050	CO: PROFIdrive PZD receive word			
	[0]	PZD 1 …	[7]	PZD 8
p2051	CI: PROFIdrive PZD send word			
	[0]	PZD 1 …	[7]	PZD 8
r2053	PROFIdrive diagnostics send PZD word			
	[0]	PZD 1 …	[7]	PZD 8
r2060	CO: IF1 PROFIdrive PZD receive double word			
	[0]	PZD 1 + 2 …	[10]	PZD 11 + 12
r2061	CI: IF1 PROFIdrive PZD send double word			
	[0]	PZD 1 + 2 …	[10]	PZD 11 + 12
r2063	IF1 PROFIdrive diagnostics PZD send double word			
	[0]	PZD 1 + 2 …	[10]	PZD 11 + 12
r2067	IF1 PZD maximum interconnected			
	[0]	Receiving	[1]	Sending
p2072	Response, receive value after PZD failure			
	.00	Unconditionally open holding brake (p0855)	1 = freeze value	
			0 = zero value	
r2074	PROFIdrive diagnostics bus address PZD receive			
	[0]	PZD 1 …	[7]	PZD 8
r2077	PROFIBUS diagnostics peer-to-peer data transfer addresses			
p2079	PROFIdrive PZD telegram selection extended			
	See p0922			
p2080	BI: Binector-connector converter, status word 1			
	The individual bits are combined to form status word 1.			
p2088	Binector-connector converter, invert status word			

No.	Description			
r2089	CO: Send binector-connector converter status word			
	[0]	Status word 1		
	[1]	Status word 2		
	[2]	Free status word 3		
	[3]	Free status word 4		
	[4]	Free status word 5		
r2090	BO: PROFIdrive PZD1 receive bit-serial			
r2091	BO: PROFIdrive PZD2 receive bit-serial			
r2092	BO: PROFIdrive PZD3 receive bit-serial			
r2093	BO: PROFIdrive PZD4 receive bit-serial			
r2094	BO: Connector-binector converter binector output			
r2095	BO: Connector-binector converter binector output			
p2098	Invert connector-binector converter binector output			
p2099	CI: Connector-binector converter signal source			
	Faults (Part 2) and alarms			
p2100	Setting the fault number for fault response			
p2101	Setting the fault response			
	0	None	1	OFF1
	2	OFF2	3	OFF3
	5	STOP2	6	DC braking
p2103	BI: 1. Acknowledge faults			
p2104	BI: 2. Acknowledge faults			
p2106	BI: External fault 1			
r2110	Alarm number			
p2111	Alarm counter			
p2112	BI: External alarm 1			
p2118	Change message type, message number			
p2119	Change message type, type			
	1	Fault	2	Alarm
	3	No message		
r2122	Alarm code			
r2123	Alarm time received [ms]			
r2124	Alarm value			
r2125	Alarm time removed [ms]			
p2126	Setting fault number for acknowledge mode			
p2127	Sets acknowledgement mode			
p2128	Selecting fault/alarm code for trigger			
r2129	CO/BO: Trigger word for faults and alarms			
r2130	Fault time received in days			
r2131	CO: Actual fault code			

No.	Description
r2132	CO: Actual alarm code
r2133	Fault value for float values
r2134	Alarm value for float values
r2135	CO/BO: Status word faults / alarms 2
r2136	Fault time removed in days
r2138	CO/BO: Control word, faults/alarms
r2139	CO/BO: Status word, faults/alarms 1
p2141	Speed threshold value 1 [rpm]
p2153	Speed actual value filter time constant [ms]
p2155	Speed threshold value 2 [rpm]
p2156	Switch-on delay comparison value reached [ms]
p2165	Load monitoring blocking monitoring upper threshold [rpm]
p2168	Load monitoring blocking monitoring torque threshold [Nm]
r2169	CO: Speed actual value smoothed signals [rpm]
p2170	Current threshold value [A]
p2171	Current threshold value reached delay time [ms]
p2172	DC-link voltage threshold [V]
p2174	Torque threshold value 1 [Nm]
p2191	Load monitoring torque threshold without load [Nm]
p2194	Torque threshold value 2 [%]
p2195	Torque utilization switch-off delay [ms]
r2197	CO/BO: Status word monitoring functions 1
r2198	CO/BO: Status word monitoring 2
r2199	CO/BO: Status word monitoring 3
Technology controller	
p2200	BI: Technology controller enable
p2201	CO: Techn. controller fixed value 1 [100 ≙ 100%]
p2202	CO: Techn. controller fixed value 2 [100 ≙ 100%]
…	…
p2215	CO: Techn. controller fixed value 15 [100 ≙ 100%]
p2216	Techn. controller fixed value selection method 1: Direct selection; 2: Binary selection
p2220	BI: Techn. controller fixed value selection bit 0
p2221	BI: Techn. controller fixed value selection bit 1
p2222	BI: Techn. controller fixed value selection bit 2
p2223	BI: Techn. controller fixed value selection bit 3
r2224	CO: Techn. controller fixed value active [100 ≙ 100%]

No.	Description
r2225	CO/BO: Techn. controller fixed value selection status word
r2229	Techn. controller number currently
p2230	Techn. controller motorized potentiometer configuration .00: Storage active .02: Initial rounding active .03: Non-volatile data save active for p2230.0 = 1 .04: Ramp-function generator always active
r2231	Techn. controller motorized potentiometer setpoint memory
p2235	BI: Techn. controller motorized potentiometer setpoint up
p2236	BI: Techn. controller motorized potentiometer setpoint down
p2237	Techn. controller motorized potentiometer maximum value [%]
p2238	Techn. controller motorized potentiometer minimum value [%]
p2240	Techn. controller motorized potentiometer start value [%]
r2245	CO: Techn. controller motorized potentiometer setpoint before RFG [100 ≙ 100%]
p2247	Techn. controller motorized potentiometer ramp-up time [s]
p2248	Techn. controller motorized potentiometer ramp-down time [s]
r2250	CO: Techn. controller motorized potentiometer setpoint after RFG [100 ≙ 100%]
p2251	Techn. controller mode 0: Techn. controller as main speed setpoint 1: Techn. controller as additional speed setpoint
p2252	Technology controller configuration .04: 1 = ramp function generator (up/down) bypass deactivated .05: 1 = integrator for skip speeds active .06: 1 = do not display internal controller limitation
p2253	CI: Techn. controller setpoint 1 [100 ≙ 100%]
p2254	CI: Techn. controller setpoint 2 [100 ≙ 100%]
p2255	Techn. controller setpoint 1 scaling [100 ≙ 100%]
p2256	Techn. controller setpoint 2 scaling [100 ≙ 100%]
p2257	Techn. controller ramp-up time [s]
p2258	Techn. controller ramp-down time [s]

No.	Description
r2260	CO: Techn. controller setpoint after ramp function generator [100 ≙ 100%]
p2261	Techn. controller setpoint filter time constant [s]
p2263	Techn. controller type
	0 D component in the actual value signal
	1 D component in the fault signal
p2264	CI: Techn. controller actual value [100 ≙ 100%]
p2265	Techn. controller actual value filter time constant [s]
r2266	CO: Techn. controller actual value after filter [100 ≙ 100%]
p2267	Techn. controller upper limit actual value [100 ≙ 100%]
p2268	Techn. controller lower limit actual value [100 ≙ 100%]
p2269	Techn. controller gain actual value [%]
p2270	Techn. controller actual value function selection
	0 No function 1 $\sqrt{x}$
	2 x^2 3 x^3
p2271	Techn. controller actual value inversion (sensor type)
	0 No inversion
	1 Inversion of the technology controller actual value signal
r2272	CO: Techn. controller actual value scaled [100 ≙ 100%]
r2273	CO: Techn. controller error [100 ≙ 100%]
p2274	Techn. controller actual differentiation time constant [s]
p2280	Techn. controller proportional gain
p2285	Techn. controller integral time [s]
p2286	BI: Hold techn. controller integrator
p2289	CI: Techn. controller pre-control signal [100 ≙ 100%]
p2290	BI: Technology controller limitation enable
	1 = enable technology controller output
p2291	CO: Techn. controller maximum limit [100 ≙ 100%]
p2292	CO: Techn. controller minimum limit [100 ≙ 100%]
p2293	Techn. controller ramp-up/ramp-down time [s]
r2294	CO: Techn. controller output signal [100 ≙ 100%]
p2295	CO: Techn. controller output scaling [100 ≙ 100%]
p2296	CI: Techn. controller output scaling [100 ≙ 100%]

No.	Description
p2297	CI: Techn. controller maximum limit signal source [100 ≙ 100%]
p2298	CI: Techn. controller minimum limit signal source [100 ≙ 100%]
p2299	CI: Techn. controller limit offset [100 ≙ 100%]
p2302	Techn. controller output signal start value [%]
p2306	Techn. controller fault signal inversion
	0 No inversion 1 Inversion of the fault signal
p2339	Techn. controller threshold value for I action stop at skip speed [%]
r2344	CO: Techn. controller last speed setpoint (smoothed) [100 ≙ 100%]
p2345	Techn. controller fault response
	0 Function inhibited
	1 For a fault: change over to r2344 (or p2302)
	2 For a fault: Change over to p2215
r2349	CO/BO: Techn. controller status word
p2350	PID Autotune Enable
	0 No function 1 Ziegler Nichols
	2 Slight overshoot 3 No overshoot
	4 Optimize P and I action of the technology controller only
p2354	PID tuning timeout length
p2355	PID tuning offset
p2900	CO: Fixed value 1 [100 ≙ 100%]
p2901	CO: Fixed value 2 [100 ≙ 100%]
r2902	CO: Fixed values [100 ≙ 100%]
p2930	CO: Fixed value M [Nm]
r2969	Direct axis flux model display
	Messages
r3113	CO/BO: NAMUR message bit bar
p3117	Change safety message type
	0 Safety messages are not reparameterized
	1 Safety messages are reparameterized
r3120	Component fault
	0 No assignment 1 Control Unit
	2 Power Module 3 Motor
r3121	Component alarm
	0 No assignment 1 Control Unit
	2 Power Module 3 Motor
r3122	Diagnostic attribute fault
r3123	Diagnostic attribute alarm

No.	Description			
p3233	Torque actual value filter time constant [ms]			
Energy-saving display				
p3320	Fluid flow machine P = f(n), Y coordinate: P flow 1%, point 1			
p3321	Fluid flow machine P = f(n), X coordinate: n flow 1%, point 1			
p3322	P = f(n), Y coordinate: P flow 2%, point 2			
p3323	P = f(n), X coordinate: n flow 2%, point 2			
…	…			
p3328	P = f(n), Y coordinate: P flow 5%, point 5			
p3329	P = f(n), X coordinate: n flow 5%, point 5			
Two/three wire control				
p3330	BI: 2-3 wire control 1			
p3331	BI: 2-3 wire control 2			
p3332	BI: 2-3 wire control 3			
r3333	CO/BO: 2-3 wire output			
	.00	2-3 wire ON		
	.01	2-3 wire reverse		
	.02	2-3 wire ON / invert		
	.03	2-3 wire reverse/invert		
Friction characteristic				
p3820	Friction characteristic, value n0			
p3821	Friction characteristic, value n1			
…	…			
p3829	Friction characteristic, value n9			
p3830	Friction characteristic, value M0			
p3831	Friction characteristic, value M1			
…	…			
p3839	Friction characteristic, value M9			
r3840	CO/BO: Friction characteristic status word			
	.00	1 = Friction characteristic OK	.01	1 = Recording of the friction characteristic activated
	.02	1 = Recording of the friction characteristic ended	.03	1 = Recording of the friction characteristic aborted
	.08	1 = Friction characteristic positive direction		
r3841	CO: Friction characteristic, output [Nm]			
p3842	Activate friction characteristic			
	1	Friction characteristic active		

No.	Description	
p3845	Activate friction characteristic plot	
	0	Recording of friction characteristic plot deactivated
	1	Recording of friction characteristic in all directions
	2	Recording of friction characteristic in positive direction only
	3	Recording of friction characteristic in negative direction only
p3846	Friction characteristic plot ramp-up/ramp-down time [s]	
p3847	Friction characteristic plot warm-up period [s]	
Compound braking		
p3856	Compound braking current [100 ≙ 100%]	
r3859	CO/BO: Compound braking status word	
Administration parameters		
p3900	Completion of quick commissioning	
r3925	Identification final display	
p3950	Service parameters	
p3981	Faults, acknowledge drive object	
p3985	Master control mode selection	
r3996	Parameter write inhibit status	
p5271	Online tuning controller configuration	
p5310	Moment of inertia precontrol configuration	
r5311	Moment of inertia precontrol status word	
p5312	Moment of inertia precontrol linear positive [s^2]	
p5313	Moment of inertia precontrol constant positive [$kgms^2$]	
p5314	Moment of inertia precontrol linear negative [s^2]	
p5315	Moment of inertia precontrol constant negative [$kgms^2$]	
p5316	Moment of inertia precontrol change time moment of inertia [ms]	
p5350	Mot_temp_mod 1/3 zero speed boost factor	
r5389	CO/BO: Mot_temp status word faults/alarms	
p5390	Mot_temp_mod 1/3 alarm threshold [°C]	
p5391	Mot_temp_mod 1/3 fault threshold [°C]	
r5397	Mot_temp_mod 3 ambient air temperature image p0613 [°C]	
r5398	Mot_temp_mod 3 alarm threshold image p5390 [°C]	
r5399	Mot_temp_mod 3 fault threshold image p5391 [°C]	

No.	Description
r5600	Pe hibernation ID
p5602	Pe hibernation pause time, minimum [s]
p5606	Pe hibernation duration, maximum [ms]
p5611	Pe energy-saving properties, general
	.00 Inhibit PROFIenergy
	.01 Drive triggers OFF1
	.02 Transition to hibernation from PROFIdrive state 4 possible
p5612	Pe energy-saving properties, mode-dependent
r5613	CO/BO: Pe energy-saving active/inactive
p5614	BI: Set Pe Switching On Inhibited signal source
r7758	Know-how protection Control Unit serial number
r7759	Know-how protection Control Unit reference serial number
p7760	Write protection/know-how protection status
	.00 1 = Write protection active
	.01 1 = Know-how protection active
	.02 1 = Know-how protection temporarily unlocked
	.03 1 = Know-how protection cannot be deactivated
	.04 1 = Memory card copy protection active
	.05 1 = basis copy protection active
	.06 1 = trace and measuring functions for diagnostic purposes active
p7761	Write protection
	0 Not active
	1 Active
p7762	Write access for control using multi-master third-party bus system
	0 Free write access independent of p7761
	1 No free write access (p7761 is active)
p7763	Know-how protection OEM exception list number of parameters
p7764	Know-how protection OEM exception list
p7765	Know-how protection memory card copy protection
	.00 1 = extended copy protection - linked to memory card and CU
	.01 1 = basic copy protection active - linked to memory card
	.02 1 = trace and measuring functions permitted for diagnostic purposes
p7766	Know-how protection password input
p7767	Know-how protection password new
p7768	Know-how protection password confirmation

No.	Description
p7769	Know-how protection memory card setpoint serial number
p7775	NVRAM data action
r7843	Memory card serial number
r8540	BO: STW1 from BOP/IOP in manual mode
r8541	CO: Speed setpoint from BOP/IOP in manual mode
p8542	BI: Active STW1 in BOP/IOP manual mode
p8543	CI: Active speed setpoint in BOP/IOP manual mode
p8552	IOP speed unit
p8558	BI: Selection IOP manual mode
r8570	Macro Drive object Display of the macro files stored in the inverter. See also p0015.
Identification & maintenance data (I&M)	
p8805	Identification and Maintenance 4 configuration
	0: Standard value for I&M 4 (p8809)
	1: User value for I&M 4 (p8809)
p8806	Identification and Maintenance 1
	[0…31] Plant ID (PID)
	[32…53] Location ID (LID)
p8807	Identification and Maintenance 2
	[0…15] YYY-MM-DD hh.mm
p8808	Identification and Maintenance 3
	[0…53] Arbitrary supplementary information and remarks (ASCII)
p8809	Identification and Maintenance 4 (signature)
PROFINET, EtherNet/IP	
r8859	PROFINET identification data
r8909	PN Device ID
p8920	PN Name of station
p8921	PN IP Address of Station
p8922	PN Default Gateway of Station
p8923	PN Subnet Mask of Station
p8924	PN DHCP mode
p8925	PN interfaces configuration
	0: No function
	1: Activate the configuration
	2: Activate the configuration and save
	3: Delete configuration

No.	Description
p8929	PN Remote Controller number
	0: Automation or Safety
	1: Automation and Safety
r8930	PN Name of Station active
r8931	PN IP Address of Station active
r8932	PN Default Gateway of Station active
r8933	PN Subnet Mask of Station active
r8934	PN DHCP mode active
r8935	PN MAC Address of Station
r8939	PN DAP ID
r8960	PN Subslot assignment
r8961	PN IP Addr Remote Controller 1
r8962	PN IP Addr Remote Controller 2
p8980	Ethernet/IP profile
	0: SINAMICS; 1: ODVA / AC/DC
p8981	Ethernet/IP ODVA STOP mode
	0: OFF1; 1: OFF2
p8982 p8983	Ethernet/IP ODVA speed (p8982) or torque (p8983) scaling
	123: 32; 124: 16
	125: 8; 126: 4
	127: 2; 128: 1
	129: 0.5; 130: 0.25
	131: 0.125; 132: 0.0625
	133: 0.03128
p8991	USB memory access
Parameter consistency and storage	
p9400	Safely remove memory card
	0: No memory card inserted
	1: Memory card inserted
	2: Request "safe removal" of the memory card
	3: "Safe removal" possible
	100: "Safe removal" not possible due to access
r9401	Safely remove memory card status
r9463	Set valid macro
p9484	BICO interconnections, search signal source
r9485	BICO interconnections, search signal source number
r9486	BICO interconnections, search signal source first index

No.	Description
Safety Integrated	
p9601	SI enable, functions integrated in the drive (processor 1)
p9610	SI PROFIsafe address (processor 1)
p9650	SI F-DI changeover, tolerance time (processor 1) [ms]
p9651	SI STO debounce time (processor 1) [ms]
p9659	SI forced checking procedure timer [h]
r9660	SI forced checking procedure remaining time [h]
r9670	SI module identifier, Control Unit
r9672	SI module identifier, Power Module
p9700	SI copy function
p9701	Acknowledge SI data change
p9761	SI password input [hex]
p9762	SI password new [hex]
p9763	SI password acknowledgment [hex]
r9768	SI PROFIsafe control words received (processor 1)
	[0] PZD 1 …; [7] PZD 8
r9769	SI PROFIsafe status words send (processor 1)
	[0] PZD 1 …; [7] PZD 8
r9770	SI version, safety functions integrated in the drive (processor 1)
r9771	SI common functions (processor 1)
r9772	CO/BO: SI status (processor 1)
r9773	CO/BO: SI status (processor 1 + processor 2)
r9776	SI diagnostics
	.00 1 = safety parameters changed, POWER ON required
	.01 1 = safety functions enabled
	.02 1 = safety components exchanged and save necessary
r9780	SI monitoring clock cycle (processor 1) [ms]
r9781	SI checksum to check changes (processor 1)
r9782	SI time stamp to check changes (processor 1) [h]
r9794	SI crosswise comparison list (processor 1)
r9795	SI diagnostics, STOP F (processor 1)
r9798	SI actual checksum SI parameters (processor 1)
p9799	SI reference checksum SI parameters (processor 1)
p9801	SI enable, functions integrated in the drive (processor 2)
p9810	SI PROFIsafe address (processor 2)

No.	Description
p9850	SI F-DI changeover, tolerance time (processor 2)
p9851	SI STO debounce time (processor 2) [µs]
r9871	SI common functions (processor 2)
r9872	CO/BO: SI status (Power Module)
r9898	SI actual checksum SI parameters (processor 2)
p9899	SI reference checksum SI parameters (processor 2)
	Diagnostics (internal)
r9976	System utilization [%]
	[1] Computation time utilization; [5] Highest gross utilization
	Free function blocks
r20001	Runtime group sampling time [ms]
	[0] Runtime group 0 ... [9] Runtime group 9
p20030	BI: AND 0 inputs
	[0] Input I0 … [3] Input I3
r20031	BO: AND 0 output Q
p20032	AND 0 runtime group
	1 Runtime group 1 ... 6 Runtime group 6
	9999 Not calculated
p20033	AND 0 run sequence
p20034	BI: AND 1 inputs → same as p20030
r20035	BO: AND 1 output Q
p20036	AND 1 runtime group → same as p20032
p20037	AND 1 run sequence
p20038	BI: AND 2 inputs → same as p20030
r20039	BO: AND 2 output Q
p20040	AND 2 runtime group → same as p20032
p20041	AND 2 run sequence
p20042	BI: AND 3 inputs → same as p20030
r20043	BO: AND 3 output Q
p20044	AND 3 runtime group → same as p20032
p20045	AND 3 run sequence
p20046	BI: OR 0 inputs → same as p20030
r20047	BO: OR 0 output Q
p20048	OR 0 runtime group → same as p20032
p20049	OR 0 run sequence
p20050	BI: OR 1 inputs → same as p20030
r20051	BO: OR 1 output Q
p20052	OR 1 runtime group → same as p20032
p20053	OR 1 run sequence
p20054	BI: OR 2 inputs → same as p20030
r20055	BO: OR 2 output Q
p20056	OR 2 runtime group → same as p20032
p20057	OR 2 run sequence
p20058	BI: OR 3 inputs → same as p20030
r20059	BO: OR 3 output Q
p20060	OR 3 runtime group → same as p20032
p20061	OR 3 run sequence
p20062	BI: XOR 0 inputs → same as p20030
r20063	BO: XOR 0 output Q
p20064	XOR 0 runtime group → same as p20032
p20065	XOR 0 run sequence
p20066	BI: XOR 1 inputs → same as p20030
r20067	BO: XOR 1 output Q
p20068	XOR 1 runtime group → same as p20032
p20069	XOR 1 run sequence
p20070	BI: XOR 2 inputs → same as p20030
r20071	BO: XOR 2 output Q
p20072	XOR 2 runtime group → same as p20032
p20073	XOR 2 run sequence
p20074	BI: XOR 3 inputs → same as p20030
r20075	BO: XOR 3 output Q
p20076	XOR 3 runtime group → same as p20032
p20077	XOR 3 run sequence
p20078	BI: NOT 0 input I
r20079	BO: NOT 0 inverted output
p20080	NOT 0 runtime group → same as p20032
p20081	NOT 0 run sequence
p20082	BI: NOT 1 input I
r20083	BO: NOT 1 inverted output
p20084	NOT 1 runtime group → same as p20032
p20085	NOT 1 run sequence
p20086	BI: NOT 2 input I
r20087	BO: NOT 2 inverted output
p20088	NOT 2 runtime group → same as p20032
p20089	NOT 2 run sequence
p20090	BI: NOT 3 input I
r20091	BO: NOT 3 inverted output
p20092	NOT 3 runtime group → same as p20032
p20093	NOT 3 run sequence
p20094	CI: ADD 0 inputs
	[0] Input X0 … [3] Input X3

No.	Description
r20095	CO: ADD 0 output Y = X0 + X1 + X2 + X3
p20096	ADD 0 runtime group
	5 Runtime group 5
	6 Runtime group 6
	9999 Not calculated
p20097	ADD 0 run sequence
p20098	CI: ADD 1 inputs → same as p20094
r20099	CO: ADD 1 output Y
p20100	ADD 1 runtime group → same as p20096
p20101	ADD 1 run sequence
p20102	CI: SUB 0 inputs
	[0] X1
	[1] X2
r20103	CO: SUB 0 difference Y = X1 - X2
p20104	SUB 0 runtime group → same as p20096
p20105	SUB 0 run sequence
p20106	CI: SUB 1 inputs → same as p20102
r20107	CO: SUB 1 difference Y = X1 - X2
p20108	SUB 1 runtime group → same as p20096
p20109	SUB 1 run sequence
p20110	CI: MUL 0 inputs
	[0] Factor X0 …
	[3] Factor X3
r20111	CO: MUL 0 product Y = X0 × X1 × X2 × X3
p20112	MUL 0 runtime group → same as p20096
p20113	MUL 0 run sequence
p20114	CI: MUL 1 inputs → same as p20110
r20115	CO: MUL 1 product Y = X0 × X1 × X2 × X3
p20116	MUL 1 runtime group → same as p20096
p20117	MUL 1 run sequence
p20118	CI: DIV 0 inputs
	[0] Dividend X0
	[1] Divisor X1
r20119	CO: DIV 0 quotient
	[0] Y = X0 / X1
	[1] Integer quotient YIN
	[2] Division remainder MOD = (Y - YIN) × X0
r20120	BO: DIV 0 divisor is zero QF
p20121	DIV 0 runtime group → same as p20096
p20122	DIV 0 run sequence
p20123	CI: DIV 1 inputs → same as p20118
r20124	CO: DIV 1 quotient → same as p20119
r20125	BO: DIV 1 divisor is zero QF
p20126	DIV 1 runtime group → same as p20096
p20127	DIV 1 run sequence
p20128	CI: AVA 0 input X
r20129	CO: AVA 0 output Y = $\lvert X \rvert$

No.	Description
r20130	BO: AVA 0 input negative SN (X < 0 ⇒ SN = 1)
p20131	AVA 0 runtime group → same as p20096
p20132	AVA 0 run sequence
p20133	CI: AVA 1 input X
r20134	CO: AVA 1 output Y = $\lvert X \rvert$
r20135	BO: AVA 1 input negative S (X < 0 ⇒ SN = 1)
p20136	AVA 1 runtime group → same as p20096
p20137	AVA 1 run sequence
p20138	BI: MFP 0 input pulse I
p20139	MFP 0 pulse duration [ms]
r20140	BO: MFP 0 output Q
p20141	MFP 0 runtime group → same as p20096
p20142	MFP 0 run sequence
p20143	BI: MFP 1 input pulse
p20144	MFP 1 pulse duration [ms]
r20145	BO: MFP 1 output Q
p20146	MFP 1 runtime group → same as p20096
p20147	MFP 1 run sequence
p20148	BI: PCL 0 input pulse I
p20149	PCL 0 pulse duration [ms]
r20150	BO: PCL 0 output Q
p20151	PCL 0 runtime group → same as p20096
p20152	PCL 0 run sequence
p20153	BI: PCL 1 input pulse I
p20154	PCL 1 pulse duration [ms]
r20155	BO: PCL 1 output Q
p20156	PCL 1 runtime group → same as p20096
p20157	PCL 1 run sequence
p20158	BI: PDE 0 input pulse I
p20159	PDE 0 pulse delay time [ms]
r20160	BO: PDE 0 output Q
p20161	PDE 0 runtime group → same as p20096
p20162	PDE 0 run sequence
p20163	BI: PDE 1 input pulse I
p20164	PDE 1 pulse delay time [ms]
r20165	BO: PDE 1 output Q
p20166	PDE 1 runtime group → same as p20096
p20167	PDE 1 run sequence
p20168	BI: PDF 0 input pulse I
p20169	PDF 0 pulse delay time [ms]
r20170	BO: PDF 0 output Q
p20171	PDF 0 runtime group → same as p20096

No.	Description
p20172	PDF 0 run sequence
p20173	BI: PDF 1 input pulse I
p20174	PDF 1 pulse delay time [ms]
r20175	BO: PDF 1 output Q
p20176	PDF 1 runtime group → same as p20096
p20177	PDF 1 run sequence
p20178	BI: PST 0 inputs
	[0] Input pulse I / [1] Reset input R
p20179	PST 0 pulse duration [ms]
r20180	BO: PST 0 output Q
p20181	PST 0 runtime group → same as p20096
p20182	PST 0 run sequence
p20183	BI: PST 1 inputs → same as p20178
p20184	PST 1 pulse duration [ms]
r20185	BO: PST 1 output Q
p20186	PST 1 runtime group → same as p20096
p20187	PST 1 run sequence
p20188	BI: RSR 0 inputs
	[0] Set S / [1] Reset R
r20189	BO: RSR 0 output Q
r20190	BO: RSR 0 inverted output QN
p20191	RSR 0 runtime group → same as p20032
p20192	RSR 0 run sequence
p20193	BI: RSR 1 inputs → same as p20188
r20194	BO: RSR 1 output Q
r20195	BO: RSR 1 inverted output QN
p20196	RSR 1 runtime group → same as p20032
p20197	RSR 1 run sequence
p20198	BI: DFR 0 inputs
	[0] Trigger input I / [1] D input D
	[2] Set S / [3] Reset R
r20199	BO: DFR 0 output Q
r20200	BO: DFR 0 inverted output QN
p20201	DFR 0 runtime group → same as p20032
p20202	DFR 0 run sequence
p20203	BI: DFR 1 inputs → same as p20198
r20204	BO: DFR 1 output Q
r20205	BO: DFR 1 inverted output QN
p20206	DFR 1 runtime group → same as p20032
p20207	DFR 1 run sequence
p20208	BI: BSW 0 inputs
	[0] Input I0 / [1] Input I1

No.	Description
p20209	BI: BSW 0 switch position I
r20210	BO: BSW 0 output Q
p20211	BSW 0 runtime group → same as p20032
p20212	BSW 0 run sequence
p20213	BI: BSW 1 inputs → same as p20208
p20214	BI: BSW 1 switch position I
r20215	BO: BSW 1 output Q
p20216	BSW 1 runtime group → same as p20032
p20217	BSW 1 run sequence
p20218	CI: NSW 0 inputs
	[0] Input X0 / [1] Input X1
p20219	BI: NSW 0 switch position I
r20220	CO: NSW 0 output Y
p20221	NSW 0 runtime group → same as p20096
p20222	NSW 0 run sequence
p20223	CI: NSW 1 inputs → same as p20218
p20224	BI: NSW 1 switch position I
r20225	CO: NSW 1 output Y
p20226	NSW 1 runtime group → same as p20096
p20227	NSW 1 run sequence
p20228	CI: LIM 0 input X
p20229	LIM 0 upper limit value LU
p20230	LIM 0 lower limit value LL
r20231	CO: LIM 0 output Y
r20232	BO: LIM 0 input variable at the upper limit QU
r20233	BO: LIM 0 input variable at the lower limit QL
p20234	LIM 0 runtime group → same as p20096
p20235	LIM 0 run sequence
p20236	CI: LIM 1 input X
p20237	LIM 1 upper limit value LU
p20238	LIM 1 lower limit value LL
r20239	CO: LIM 1 output Y
r20240	BO: LIM 1 input variable at the upper limit QU
r20241	BO: LIM 1 input variable at the lower limit QL
p20242	LIM 1 runtime group → same as p20096
p20243	LIM 1 run sequence
p20244	CI: PT1 0 inputs
	[0] Input x / [1] Setting value SV
p20245	BI: PT1 0 accept setting value S
p20246	PT1 0 smoothing time constant [ms]
r20247	CO: PT1 0 output Y
p20248	PT1 0 runtime group → same as p20096

No.	Description
p20249	PT1 0 run sequence
p20250	CI: PT1 1 inputs → same as p20244
p20251	BI: PT1 1 accept setting value S
p20252	PT1 1 smoothing time constant [ms]
r20253	CO: PT1 1 output Y
p20254	PT1 1 runtime group → same as p20096
p20255	PT1 1 run sequence
p20256	CI: INT 0 inputs → same as p20244
p20257	INT 0 upper limit value LU
p20258	INT 0 lower limit value LL
p20259	INT 0 integrating time constant [ms]
p20260	BI: INT 0 accept setting value S
r20261	CO: INT 0 output Y
r20262	BO: INT 0 integrator at the upper limit QU
r20263	BO: INT 0 integrator at the lower limit QL
p20264	INT 0 runtime group → same as p20096
p20265	INT 0 run sequence
p20266	CI: LVM 0 input X
p20267	LVM 0 interval mean value M
p20268	LVM 0 interval limit L
p20269	LVM 0 hysteresis HY
r20270	BO: LVM 0 input variable above interval QU
r20271	BO: LVM 0 input variable within interval QM
r20272	BO: LVM 0 input variable below interval QL
p20273	LVM 0 runtime group → same as p20096
p20274	LVM 0 run sequence
p20275	CI: LVM 1 input X
p20276	LVM 1 interval mean value M
p20277	LVM 1 interval limit L
p20278	LVM 1 hysteresis HY
r20279	BO: LVM 1 input variable above interval QU
r20280	BO: LVM 1 input variable within interval QM
r20281	BO: LVM 1 input variable below interval QL
p20282	LVM 1 runtime group → same as p20096
p20283	LVM 1 run sequence
p20284	CI: DIF 0 input X
p20285	DIF 0 differential time constant [ms]
r20286	CO: DIF 0 output Y
p20287	DIF 0 runtime group → same as p20096
p20288	DIF 0 run sequence
p20300	BI: NOT 4 input I
r20301	BO: NOT 4 inverted output

No.	Description			
p20302	NOT 4 runtime group → same as p20032			
p20303	NOT 4 run sequence			
p20304	BI: NOT 5 input I			
r20305	BO: NOT 5 inverted output			
p20306	NOT 5 runtime group → same as p20032			
p20307	NOT 5 run sequence			
p20308	CI: ADD 2 inputs → same as p20094			
r20309	CO: ADD 2 output Y			
p20310	ADD 2 runtime group → same as p20096			
p20311	ADD 2 run sequence			
p20312	CI: NCM 0 inputs			
	[0]	Input X0	[1]	Input X1
r20313	BO: NCM 0 output QU (QU = 1 if X0 > X1)			
r20314	BO: NCM 0 output QE (QE = 1 if X0 = X1)			
r20315	BO: NCM 0 output QL (QL = 1 if X0 < X1)			
p20316	NCM 0 runtime group → same as p20096			
p20317	NCM 0 run sequence			
p20318	CI: NCM 1 inputs			
	[0]	Input X0	[1]	Input X1
r20319	BO: NCM 1 output QU (QU = 1 if X0 > X1)			
r20320	BO: NCM 1 output QE (QE = 1 if X0 = X1)			
r20321	BO: NCM 1 output QL (QL = 1 if X0 < X1)			
p20322	NCM 1 runtime group → same as p20096			
p20323	NCM 1 run sequence			
p20324	BI: RSR 2 inputs			
	[0]	Set S	[1]	Reset R
r20325	BO: RSR 2 output Q			
r20326	BO: RSR 2 inverted output QN			
p20327	RSR 2 runtime group → same as p20032			
p20328	RSR 2 run sequence			
p20329	BI: DFR 2 inputs → same as p20198			
r20330	BO: DFR 2 output Q			
r20331	BO: DFR 2 inverted output QN			
p20332	DFR 2 runtime group → same as p20032			
p20333	DFR 2 run sequence			
p20334	BI: PDE 2 input pulse I			
p20335	PDE 2 pulse delay time [ms]			
r20336	BO: PDE 2 output Q			
p20337	PDE 2 runtime group → same as p20096			
p20338	PDE 2 run sequence			
p20339	BI: PDE 3 input pulse I			
p20340	PDE 3 pulse delay time [ms]			

No.	Description
r20341	BO: PDE 3 output Q
p20342	PDE 3 runtime group → same as p20096
p20343	PDE 3 run sequence
p20344	BI: PDF 2 input pulse I
p20345	PDF 2 pulse delay time [ms]
r20346	BO: PDF 2 output Q
p20347	PDF 2 runtime group → same as p20096
p20348	PDF 2 run sequence
p20349	BI: PDF 3 input pulse I
p20350	PDF 3 pulse delay time [ms]
r20351	BO: PDF 3 output Q
p20352	PDF 3 runtime group → same as p20096
p20353	PDF 3 run sequence
p20354	BI: MFP 2 input pulse
p20355	MFP 2 pulse duration [ms]
r20356	BO: MFP 2 output Q
p20357	MFP 2 runtime group → same as p20096
p20358	MFP 2 run sequence
p20359	BI: MFP 3 input pulse
p20360	MFP 3 pulse duration [ms]
r20361	BO: MFP 3 output Q
p20362	MFP 3 runtime group → same as p20096
p20363	MFP 3 run sequence
p20372	CI: PLI 0 input X
r20373	CO: PLI 0 output Y
p20374	PLI 0 X coordinate A transition point [0] Transition point 0 … [19] Transition point 19
p20375	PLI 0 Y coordinate B transition point [0] Transition point 0 … [19] Transition point 19
p20376	PLI 0 runtime group → same as p20096
p20377	PLI 0 run sequence
p20378	CI: PLI 1 input X
r20379	CO: PLI 1 output Y
p20380	PLI 1 X coordinate A transition point → same as p 20374
p20381	PLI 1 Y coordinate B transition point → same as p 20375
p20382	PLI 1 runtime group → same as p20096
p20383	PLI 1 run sequence
p60022	Selecting a PROFIsafe telegram

No.	Description
r61000	PROFINET Name of Station
r61001	PROFINET IP of Station

5 Troubleshooting and additional information

5.1 List of alarms and faults

Axxxxx Alarm

Fyyyyy: Fault

Table 5- 1 The most important alarms and faults

Number	Cause	Remedy
F01000	Internal software error	Replace the inverter.
F01001	FloatingPoint exception	Switch off the inverter and switch on again
F01015	Internal software error	Upgrade firmware or contact technical support.
F01018	Power-up aborted more than once	1. Switch off the inverter power supply and switch it on again. 2. After this fault, the inverter powers up with the factory settings. 3. Recommission the inverter.
A01028	Configuration error	Explanation: The parameter assignments on the memory card were made with a different type of module (article no.). Check the module parameters and recommission if necessary.
F01033	Unit switchover: Reference parameter value invalid	Set the value of the reference parameter to a value other than 0.0 (p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004).
F01034	Unit switchover: Calculation of the parameter values after reference value change unsuccessful	Select the value of the reference parameter so that the parameters involved can be calculated in the per unit notation (p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004).
F01040	Parameters must be saved	Backup parameter (p0971). Switch off the inverter and switch on again.
F01044	Loading memory data card defective	Replace the memory card or the inverter.
F01105	CU: Insufficient memory	Reduce number of data sets.
F01122	Frequency at the probe input too high	Reduce the frequency of the pulses at the probe input.
F01205	CU: Time slice overflow	Contact technical support.
F01250	CU hardware fault	Replace the inverter.
F01512	An attempt has been made to establish a conversion factor for scaling which does not exist	Create scaling or check transfer value.
A01590	Motor maintenance interval elapsed	Carry out the maintenance.
F01600	STOP A initiated	Select STO and then deselect again.
F01650	Acceptance test required	Carry out an acceptance test and create test certificate. Switch off the Control Unit and switch on again.

<table>
<tr><th>Number</th><th>Cause</th><th colspan="2">Remedy</th></tr>
<tr><td rowspan="6">F01659</td><td rowspan="6">Write task for parameter rejected</td><td colspan="2">Cause: The inverter should be reset to the factory setting. However, it is not permissible to reset the safety functions as the safety functions are currently enabled.
Remedy with operator panel:</td></tr>
<tr><td>p0010 = 30</td><td>Parameter reset</td></tr>
<tr><td>p9761 = …</td><td>Enter password for the safety functions.</td></tr>
<tr><td>p0970 = 5</td><td>Reset start safety parameter.
The inverter sets p0970 = 5 once it has reset the parameter.</td></tr>
<tr><td colspan="2">Then reset the inverter to the factory setting again.</td></tr>
<tr></tr>
<tr><td>F01662</td><td>CU hardware fault</td><td colspan="2">Switch off the inverter and switch on again, upgrade the firmware or contact technical support.</td></tr>
<tr><td>A01666</td><td>Static 1 signal at the F-DI for safe acknowledgement</td><td colspan="2">Set F-DI to a logical 0 signal.</td></tr>
<tr><td>A01698</td><td>Commissioning mode active for safety functions</td><td colspan="2">This message is withdrawn after the Safety commissioning has ended.</td></tr>
<tr><td>A01699</td><td>Switch-off signal path test required</td><td colspan="2">After the next time that the "STO" function is deselected, the message is withdrawn and the monitoring time is reset</td></tr>
<tr><td>F03505</td><td>Analog input, wire break</td><td colspan="2">Check the connection to the signal source for interrupts.
Check the level of the signal supplied.
The input current measured by the analog input can be read out in r0752.</td></tr>
<tr><td>A03520</td><td>Temperature sensor fault</td><td colspan="2">Check that the sensor is connected correctly.</td></tr>
<tr><td>A05000
A05001
A05002
A05004
A05006</td><td>Power Module overtemperature</td><td colspan="2">Check the following:
- Is the ambient temperature within the defined limit values?
- Are the load conditions and duty cycle configured accordingly?
- Has the cooling failed?</td></tr>
<tr><td>F06310</td><td>Supply voltage (p0210) incorrectly parameterized</td><td colspan="2">Check the parameterized supply voltage and if required change (p0210).
Check the line voltage.</td></tr>
<tr><td>F07011</td><td>Motor overtemperature</td><td colspan="2">Reduce the motor load.
Check ambient temperature.
Check sensor's wiring and connection.</td></tr>
<tr><td>A07012</td><td>I2t motor model overtemperature</td><td colspan="2">Check and if necessary reduce the motor load.
Check the motor's ambient temperature.
Check thermal time constant p0611.
Check overtemperature fault threshold p0605.</td></tr>
<tr><td>A07015</td><td>Motor temperature sensor alarm</td><td colspan="2">Check that the sensor is connected correctly.
Check the parameter assignment (p0601).</td></tr>
<tr><td>F07016</td><td>Motor temperature sensor fault</td><td colspan="2">Make sure that the sensor is connected correctly.
Check the parameterization (p0601).</td></tr>
<tr><td>F07086
F07088</td><td>Unit switchover: Parameter limit violation</td><td colspan="2">Check the adapted parameter values and if required correct.</td></tr>
</table>

Number	Cause	Remedy
F07320	Automatic restart aborted	Increase the number of restart attempts (p1211). The current number of start attempts is shown in r1214. Increase the wait time in p1212 and/or monitoring time in p1213. Create ON command (p0840). Increase the monitoring time of the power unit or switch off (p0857). Reduce the wait time for resetting the fault counter p1213[1] so that fewer faults are registered in the time interval.
A07321	Automatic restart active	Explanation: The automatic restart (AR) is active. During voltage recovery and/or when remedying the causes of pending faults, the drive is automatically switched back on.
F07330	Search current measured too low	Increase search current (P1202), check motor connection.
A07400	V_{DC_max} controller active	If the controller is not to intervene: • Increase the ramp-down times. • Deactivate the V_{DC_max} controller (p1240 = 0 for vector control, p1280 = 0 for V/f control).
A07409	V/f control, current limiting controller active	The alarm automatically disappears after one of the following measures: • Increase the current limit (p0640). • Reduce load. • Increase the ramp-up time to the speed setpoint.
F07426	Technology controller actual value limited	• Adapt the limits to the signal level (p2267, p2268). • Check the actual value scaling (p2264).
A07444	PID autotuning is activated	Automatic setting of the PID controller (autotuning) is active (p2350 > 0). The alarm disappears automatically after completion of the autotuning.
F07445	PID autotuning canceled	The inverter has canceled the automatic setting of the PID controller (autotuning) because of a fault. Remedy: Increase p2355 and restart autotuning.
F07801	Motor overcurrent	Check current limits (p0640). V/f control: Check the current limiting controller (p1340 … p1346). Increase acceleration ramp (p1120) or reduce load. Check motor and motor cables for short-circuit and ground fault. Check motor for star-delta connection and rating plate parameterization. Check power unit / motor combination. Select flying restart function (p1200) if switched to rotating motor.
A07805	Drive: Power unit overload I2t	• Reduce the continuous load. • Adapt the load cycle. • Check the assignment of rated currents of the motor and power unit.
F07807	Short-circuit detected	• Check the inverter connection on the motor side for any phase-phase short-circuit. • Rule out that line and motor cables have been interchanged.
A07850	External alarm 1	The signal for "external alarm 1" has been triggered. Parameter p2112 defines the signal source of the external alarm. Remedy: Rectify the cause of this alarm.

Number	Cause	Remedy
F07860	External fault 1	Remove the external causes for this fault.
F07900	Motor blocked	• Make sure that the motor can rotate freely. • Check the torque limit: r1538 for a positive direction of rotation; r1539 for a negative direction of rotation.
F07901	Motor overspeed	Activate precontrol of the speed limiting controller (p1401 bit 7 = 1).
F07902	Motor stalled	Check whether the motor data has been parameterized correctly and perform motor identification. Check the current limits (p0640, r0067, r0289). If the current limits are too low, the drive cannot be magnetized. Check whether motor cables are disconnected during operation.
A07903	Motor speed deviation	Increase p2163 and/or p2166. Increase the torque, current and power limits.
A07910	Motor overtemperature	Check the motor load. Check the motor's ambient temperature. Check the KTY84 or PT1000 sensor.
A07920	Torque/speed too low	The torque deviates from the torque/speed envelope curve. • Check the connection between the motor and the load. • Adapt the parameterization corresponding to the load.
A07921	Torque/speed too high	
A07922	Torque/speed out of tolerance	
F07923	Torque/speed too low	• Check the connection between the motor and the load. • Adapt the parameterization corresponding to the load.
F07924	Torque/speed too high	
A07927	DC braking active	Not required
A07980	Rotary measurement activated	Not required
A07981	No enabling for rotary measurement	Acknowledge pending faults. Establish missing enables (see r00002, r0046).
A07991	Motor data identification activated	Switch on the motor and identify the motor data.
F08501	Setpoint timeout	• Check the PROFINET connection. • Set the controller to RUN mode. • If the error occurs repeatedly, check the monitoring time set (p2044).
F08502	Monitoring time, sign-of-life expired	• Check the PROFINET connection.
F08510	Send configuration data not valid	• Check the PROFINET configuration
A08511	Receive configuration data not valid	
A08526	No cyclic connection	• Activate the control with cyclic operation. • Check the parameters "Name of Station" and "IP of Station" (r61000, r61001).
A08565	Consistency error affecting adjustable parameters	Check the following: • IP address, subnet mask or default gateway is not correct. • IP address or station name used twice in the network. • Station name contains invalid characters.

Number	Cause	Remedy
F13100	Know-how protection: Copy protection error	The know-how protection and the copy protection for the memory card are active. An error occurred during checking of the memory card. • Insert a suitable memory card and switch the inverter power supply temporarily off and then on again (POWER ON). • Deactivate the copy protection (p7765).
F13101	Know-how protection: Copy protection cannot be activated	Insert a valid memory card.
F30001	Overcurrent	Check the following: • Motor data, if required, carry out commissioning • Motor's connection method (Y / Δ) • V/f operation: Assignment of rated currents of motor and Power Module • Line quality • Make sure that the line commutating reactor is connected properly • Power cable connections • Power cables for short-circuit or ground fault • Power cable length • Line phases If this doesn't help: • V/f operation: Increase the acceleration ramp • Reduce the load • Replace the power unit
F30002	DC-link voltage overvoltage	Increase the ramp-down time (p1121). Set the rounding times (p1130, p1136). Activate the DC-link voltage controller (p1240, p1280). Check the line voltage (p0210). Check the line phases.
F30003	DC-link voltage undervoltage	Check the line voltage (p0210).
F30004	Inverter overtemperature	Check whether the inverter fan is running. Check whether the ambient temperature is in the permissible range. Check whether the motor is overloaded. Reduce the pulse frequency.
F30005	I2t inverter overload	Check the rated currents of the motor and inverter. Reduce current limit p0640. When operating with V/f characteristic: Reduce p1341.
F30011	Line phase failure	Check the inverter's input fuses. Check the motor cables.
F30015	Motor cable phase failure	Check the motor cables. Increase the ramp-up or ramp-down time (p1120).

Number	Cause	Remedy
F30021	Ground fault	• Check the power cable connections. • Check the motor. • Check the current transformer. • Check the cables and contacts of the brake connection (a wire might be broken).
F30022	Power Module: Monitoring V_{CE}	Check or replace the inverter.
F30027	Time monitoring for DC link pre-charging	Check the line voltage. Check the line voltage setting (p0210).
F30035	Overtemperature, intake air	• Check whether the fan is running. • Check the fan filter elements. • Check whether the ambient temperature is in the permissible range.
F30036	Overtemperature, inside area	
F30037	Rectifier overtemperature	See F30035 and, in addition: • Check the motor load. • Check the line phases
A30049	Internal fan defective	Check the internal fan and if required replace.
F30052	Incorrect Power Module data	Replace the inverter or upgrade the inverter firmware.
F30053	Error in FPGA data	Replace the inverter.
F30059	Internal fan defective	Check the internal fan and if required replace.
F30074	Communications fault between Control Unit and Power Module	There is a communication error between the Control Unit and the Power Module. Possible cause: • The external 24 V Control Unit power supply has dipped to ≤95 % of the rated voltage for ≤3 ms
A30502	DC link overvoltage	• Check the device supply voltage (p0210). • Check the line reactor dimensioning
F30662	CU hardware fault	Switch off the inverter and switch on again, upgrade the firmware or contact technical support.
F30664	CU power up aborted	Switch off the inverter and switch on again, upgrade the firmware or contact technical support.
F30850	Software fault in the Power Module	Replace the inverter or contact technical support.
A30920	Temperature sensor fault	Check that the sensor is connected correctly.
A50001	PROFINET configuration error	A PROFINET control is attempting to establish a connection with a faulty configuration telegram. Check to see whether "Shared Device" is activated (p8929 = 2).
A50010	PROFINET name of station invalid	Correct the name of station (p8920) and activate (p8925 = 2).
A50020	PROFINET: Second control missing	"Shared Device" is activated (p8929 = 2). However, only the connection to a PROFINET control is present.

For further information, please refer to the List Manual.

Overview of the manuals (Page 86)

5.2 Spare parts

Spare part			Article number
	1 set of small parts for installation	Frame size D … frame size F	6SL3200-0SK08-0AA0
	1 set of shield plates and mounting accessories	Frame size D	6SL3262-1AD01-0DA0
		Frame size E	6SL3262-1AE01-0DA0
		Frame size F	6SL3262-1AF01-0DA0
	1 set of connection covers	Frame size D	6SL3200-0SM13-0AA0
		Frame size E	6SL3200-0SM14-0AA0
		Frame size F	6SL3200-0SM15-0AA0
	Fan unit for the heat sink, comprising a housing that can be plugged on with integrated fan	Frame size D	6SL3200-0SF15-0AA0
		Frame size E	6SL3200-0SF16-0AA0
		Frame size F	6SL3200-0SF17-0AA0

Additional information is provided in the Internet:

Spares on Web (https://www.automation.siemens.com/sow?sap-language=EN)

5.3 Technical support

+49 (0)911 895 7222

+44 161 446 5545

+39 (02) 24362000

+34 902 237 238

+33 (0) 821 801 122

You can find additional telephone numbers for Technical Support in the Internet:

Product support (http://www.siemens.com/automation/service&support)

5.4 Overview of the manuals

Manuals with additional information that can be downloaded

- Compact operating instructions SINAMICS G120C, FSAA ... FSC
(https://support.industry.siemens.com/cs/ww/en/view/109736227)
Commissioning inverters, frame sizes FSAA … FSC
- Compact operating instructions SINAMICS G120C, FSD ... FSF
(https://support.industry.siemens.com/cs/ww/en/ps/13221/man)
Commissioning inverters, frame sizes FSD … FSF (this manual)
- SINAMICS G120C operating instructions.
(https://support.industry.siemens.com/cs/ww/en/view/109478830)
Installing, commissioning and maintaining the inverter. Advanced commissioning
- EMC installation guideline
(http://support.automation.siemens.com/WW/view/en/60612658)
EMC-compliant control cabinet design, potential equalization and cable routing
- SINAMICS G120C List Manual
(https://support.industry.siemens.com/cs/ww/en/view/109477254)
Parameter list, alarms and faults. Graphic function diagrams
- "Fieldbus" function manual
(https://support.industry.siemens.com/cs/ww/en/view/109477369)
Configuring fieldbuses
- "Safety Integrated" function manual
(https://support.industry.siemens.com/cs/ww/en/view/109477367)
Configuring PROFIsafe. Installing, commissioning and operating fail-safe functions of the inverter.

- BOP-2 operating instructions (https://support.industry.siemens.com/cs/ww/en/view/42185248)
  Using the operator panel.

- IOP operating instructions (https://support.industry.siemens.com/cs/ww/en/view/109478559)
  Using the operator panel, mounting the door mounting kit for IOP.

- Accessories manual (https://support.industry.siemens.com/cs/ww/en/ps/13225/man)
  Installation descriptions for inverter components, e.g. line reactors and line filters. The printed installation descriptions are supplied together with the components.

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Further information

SINAMICS converters:
www.siemens.com/sinamics

Safety Integrated:
www.siemens.com/safety-integrated

PROFINET:
www.siemens.com/profinet

Siemens AG
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Motion Control
Postfach 3180
91050 ERLANGEN
Germany

SINAMICS G120C
DOCUMENTATION PACK

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For additional information on SINAMICS G120, scan the QR code.