



SINAMICS G120X

Scope of delivery

- The delivery comprises at least the following components:
- A ready to run converter with loaded firmware. Each converter comprises a Power Module and a Control Unit.
 - One set of connectors for connecting the I/O control terminals
 - One set of shield connection kit for the Power Module (available for FSA to FSG only)
 - One set of shield connection kit for the Control Unit (available for FSD to FSJ only)
 - Compact Installation Instructions in English and German
 - A printed full-size drill pattern (available for FSD to FSJ only), which allows easy drilling of the necessary mounting holes.
 - The converter contains open-source software (OSS). The OSS license terms are saved in the converter.

Options for upgrading and downgrading the firmware can be found on the Internet:
<https://support.industry.siemens.com/cs/us/en/view/67364620>

WARNING
Danger to life if the safety instructions and installation instructions are not observed
The compact installation instructions only contain the most important information for installing the converter. If the safety instructions and installation instructions in the associated documentation are not observed, accidents involving severe injuries or death can occur.
• Observe the safety instructions and installation instructions given in the associated documentation.

SINAMICS G120X Operating Instructions

<https://support.industry.siemens.com/cs/ww/en/ps/25454/man>

Language versions:

Rating plate example

Article number

Product serial number

FS code

SIEMENS G120X

1P 6SL3200-2YE42-0UF0

S XAH002-002137

FS01 01

RS: AG

600V AC Class		600V AC Class	
Motor Rating	3kW	4hp	
Voltage	3AC 500-600V	3AC 500-600V	
Input Freq.	43-63Hz		
Current	5A	5A	
Voltage	3AC 0-INPUT V		
Output Freq.	0-50Hz		
Current	5A	5A	

Use 75°C Copper Conductors only
Use in PD2 and OVCIII env. only
SCCR 100kA
UL TYPE

Input: 3AC 500-690V +/-10%
Motor: IEC 55Kw
IE2 2.1%
18.3kg IP20
KCC-REV S49-SINAMICS

CE
EAC
UK

REFER TO USER MANUAL
<http://siemens.automation.siemens.com>

Siemens AG, Frauenaaracher Str. 80, DE-91056 Erlangen

Made in United Kingdom

Dimensions and clearance distances FSA ... FSJ - mm (inches)

Side-by-side mounting restrictions for FSA ... FSC:
A lateral clearance of 50 mm or greater is required for ambient temperature higher than 50 °C.

Frame size	Height	Height including shield plate	Width	Depth	Clearance A	Clearance B	Additional depth		
							With Operator Panel	With SINAMICS G120 Smart Access	With I/O Extension Module ¹⁾
FSA	232 (9.1)	330 (12.9)	73 (2.8)	209 (8.2)	80 (3.1)	100 (3.9)			
FSB	275 (10.8)	383 (15.1)	100 (3.9)	209 (8.2)	80 (3.1)	100 (3.9)			
FSC	295 (11.6)	423 (16.7)	140 (5.5)	209 (8.2)	80 (3.1)	100 (3.9)			
FSD	472 (18.6)	625 (24.6)	200 (7.9)	239 (9.4)	300 (11.8)	350 (13.8)	9 (0.4)	7 (0.3)	27 (1.1)
FSE	551 (21.7)	729 (28.7)	275 (10.8)	239 (9.4)	300 (11.8)	350 (13.8)			
FSF	709 (27.9)	969 (38.1)	305 (12)	360 (14.2)	300 (11.8)	350 (13.8)			
FSG	999 (39.3)	1255 (49.4)	305 (12)	360 (14.2)	300 (11.8)	350 (13.8)			
FSH ²⁾	1696 (66.7)	/	548 (21.6)	393 (15.4)	0	250 (9.8)	/	/	/
FSJ ²⁾	1621 (63.8)	/	801 (31.5)	393 (15.4)	0	250 (9.8)	/	/	/

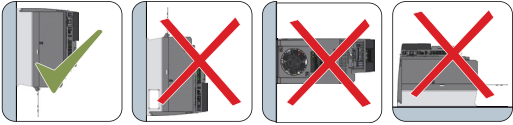
¹⁾ Additional depth of 11.8 mm/9.8 mm is required with an operator panel/SINAMICS G120 Smart Access mounted onto the I/O Extension Module.
²⁾ For FSH and FSJ, a clearance distance of 100 mm is required at the front of the converter; a clearance distance of 30 mm is required between individual converters.

Drill patterns FSH/FSJ ¹⁾

Frame size	Fixing Dimensions - mm (inches)								
	A1	A2	A3	A4	A5	B	G1	G2	Ø
FSH	160 (6.3)	150 (5.9)	160 (6.3)	225 (8.9)	225 (8.9)	1419 (55.9)	39 (1.5)	49 (1.9)	8.5 (0.3)
FSJ	200 (7.9)	290 (11.4)	200 (7.9)	345 (13.6)	345 (13.6)	1399 (55.1)	60.5 (2.4)	60.5 (2.4)	8.5 (0.3)

¹⁾ Fixings (bolts, washers, nuts): 7 × M8; tightening torque: 25 Nm (221.26 lbf.in)

Correct mounting orientation



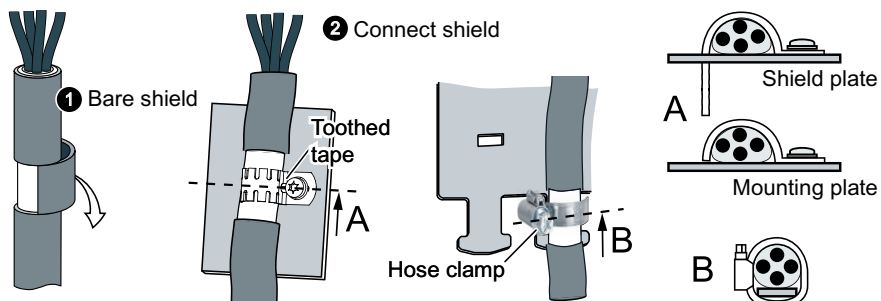
Cable cross-sections and tightening torques

Frame size	Terminal/connector type/tool				Maximum cable cross-section		Tightening torque		Stripped insulation length mm (in)
					mm ²	AWG	Nm	lbf.in	
FSA	Line, motor, PE and DC link	Screw-type terminal		Slot or pozi screw-driver	1.5 ... 2.5	16 ... 14	0.5	4.4	9 ... 10 (0.4)
FSB					1.5 ... 6	16 ... 10	1.3	11.5	12 ... 13 (0.47)
FSC					1.5 ... 16	16 ... 6	1.3	11.5	12 ... 13 (0.47)
FSD	Line, motor and PE	Screw-type terminal		Torque wrench for TX20	10 ... 35	8 ... 2	4.5	39.8	18 (0.7)
	DC link				16	6	1.7	15	10 (0.4)
FSE	Line, motor and PE	Screw-type terminal		Torque wrench for TX40	25 ... 70	6 ... 3/0	10	88.5	25 (1)
	DC link					Torque wrench for TX20	26.7 ... 35	3 ... 2	3.7 ¹⁾
FSF	Line, motor and PE	Cable lug according to SN71322 for M10 bolts		Wrench (size 17 mm)	35 ... 2 × 120	1 ... 2 × 4/0	22 ... 25	194.7 ... 221.3	/
	DC link	Screw-type terminal		Torque wrench for TX40	25 ... 70	6 ... 3/0	8 ... 10	71 ... 88.5	25 (1)
FSG	Line, motor and PE	Cable lug according to SN71322 for M10 bolts		Wrench (size 17 mm)	35 ... 2 × 185	1 ... 2 × 350 MCM	22 ... 25	194.7 ... 221.3	/
	DC link	Screw-type terminal		Torque wrench for TX40	25 ... 70	6 ... 3/0	8 ... 10	71 ... 88.5	25 (1)
FSH	Line, motor, PE and DC link	Cable lug according to DIN46234 for M12 bolts		Wrench (size 18 mm)	4 × 240	4 × 500 MCM	50	442.5	/
FSJ					6 × 240	6 × 500 MCM			

Drill patterns

Frame size	Fixing Dimensions - mm (inches)			Fixings	Tightening torque - Nm (lbf.in)
	A	B	Ø		
FSA	55 (2.2)	221.5 (8.7)	5 (0.2)	4 × M4	2.5 (22.1)
FSB	80 (3.2)	265 (10.4)	5 (0.2)	4 × M4	2.5 (22.1)
FSC	118 (4.6)	283 (11.1)	5.5 (0.2)	4 × M5	2.5 (22.1)
FSD	170 (6.7)	430 (16.9)	6.0 (0.2)	4 × M5	6 (53.1)
FSE	230 (9.1)	509 (20.0)	6.5 (0.3)	4 × M6	10 (88.5)
FSF	270 (10.6)	680 (26.8)	8.5 (0.3)	4 × M8	25 (221.3)
FSG	265 (10.4)	970.5 (38.2)	12.0 (0.5)	4 × M10	50 (442.5)

EMC shield cable preparation

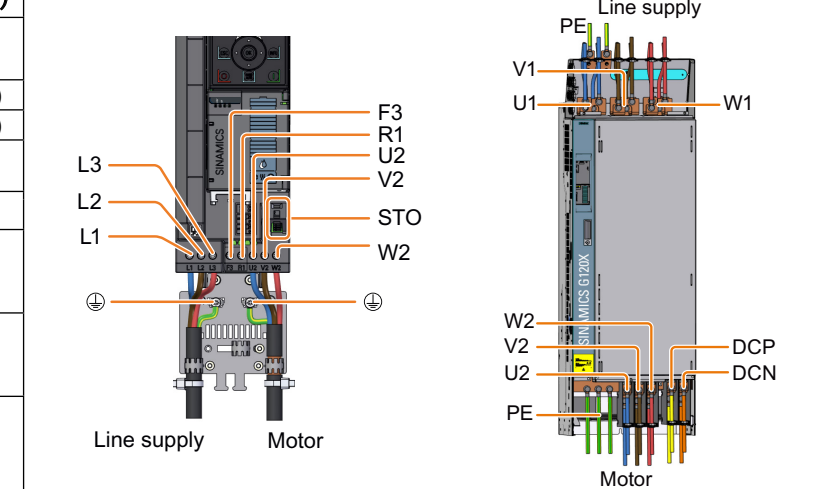


Wiring example FSB

No. Description

①	Unshielded line cable
②	Cable tie
③	Communication cable
④	Cabinet backplane
⑤	Shielded control cable
⑥	Toothed tape
⑦	Shielded motor cable

Connection example FSB



FSH and FSJ Switch / Terminals S41, X41 and X9

- STO deactivation: move STO switch to OFF position.
- STO activation: move STO switch to ON position and wire STO signals according to Operating Instructions.

Maximum permissible motor cable lengths - m (ft)

The following values are valid for a pulse frequency set at the factory.

200 V converter	Second environment, C2	No EMC category	
	With external filter	With shielded motor cable	With unshielded motor cable
FSA ... FSC	50 (164.0)	150 (492.1)	300 (984.3)
FSD ... FSE		200 (656.2)	300 (984.3)
FSF		300 (984.3)	450 (1476.4)

400 V converter	First environment, C2 and Second environment, C2	Second environment, C3		No EMC category	
	With integrated C2 filter	With integrated C3 filter	With external filter	With shielded motor cable	With unshielded motor cable
FSA ... FSC	150 (492.1) ¹⁾	/	50 (164.0)	150 (492.1)	300 (984.3)
FSD ... FSE				200 (656.2)	300 (984.3)
FSF		150 (492.1)	/	300 (984.3)	450 (1476.4)
FSG				150 (492.1) ²⁾	200 (656.2)
FSH/FSJ	/	150 (492.1) ²⁾	/	150 (492.1)	200 (656.2)

¹⁾ 2 kHz pulse frequency for FSF, 75 kW and 90 kW.

²⁾ For motor cable lengths of 100 m (328.1 ft) ... 150 m (492.1 ft), an additional basic interference suppression module shall be provided on the line side (available on request).

690 V converter	Second environment, C3		Second environment, C2	No EMC category	
	With integrated C3 filter	With external filter	With integrated C2 filter	With shielded motor cable	With unshielded motor cable
FSD ... FSE	/	50 (164.0)	100 (328.1)	200 (656.2)	300 (984.3)
FSF ... FSG	150 (492.1)	50 (164.0)	/	300 (984.3)	450 (1476.4)
FSH ... FSJ	150 (492.1) ¹⁾	/	/	150 (492.1)	200 (656.2)

¹⁾ For motor cable lengths of 100 m (328.1 ft) ... 150 m (492.1 ft), an additional basic interference suppression module shall be provided on the line side (available on request).

CU Interfaces

①	Terminal strip X134
②	Status LEDs
③	Analog Input selection DIP switch
④	Connection to Operator Panel or SINAMICS G120 Smart Access or I/O Extension Module
⑤	Memory card slot ¹⁾
⑥	Fixing hole for I/O Extension Module
⑦	Terminal strip X132
⑧	Terminal strip X133
⑨	Fieldbus interface

NOTE

To reach environment class 3C3, re-fit the protective covers (including dummy SD card, covers for fieldbus connectors) if the corresponding interfaces are not in use.

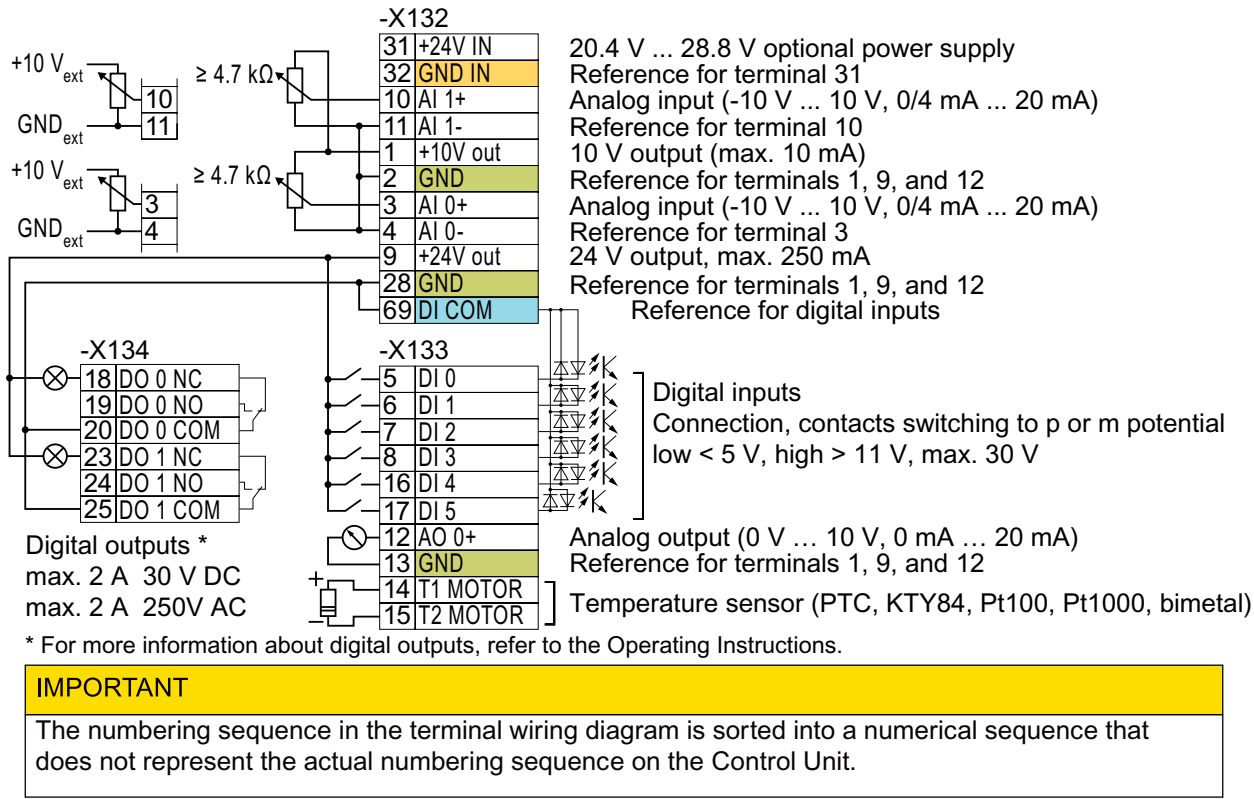
Fieldbus connections

PROFINET

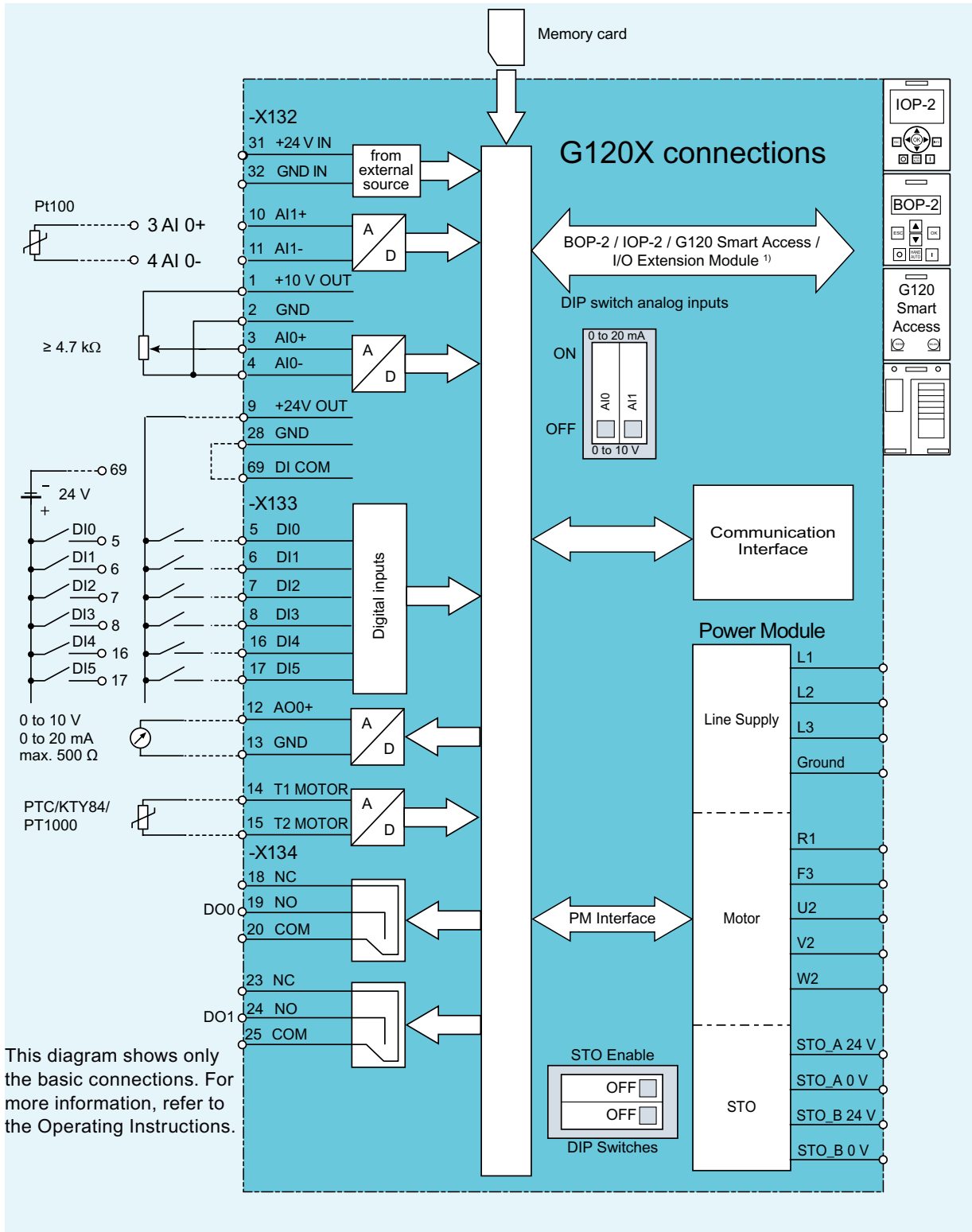
PROFIBUS DP

USS

Terminal strips with wiring example



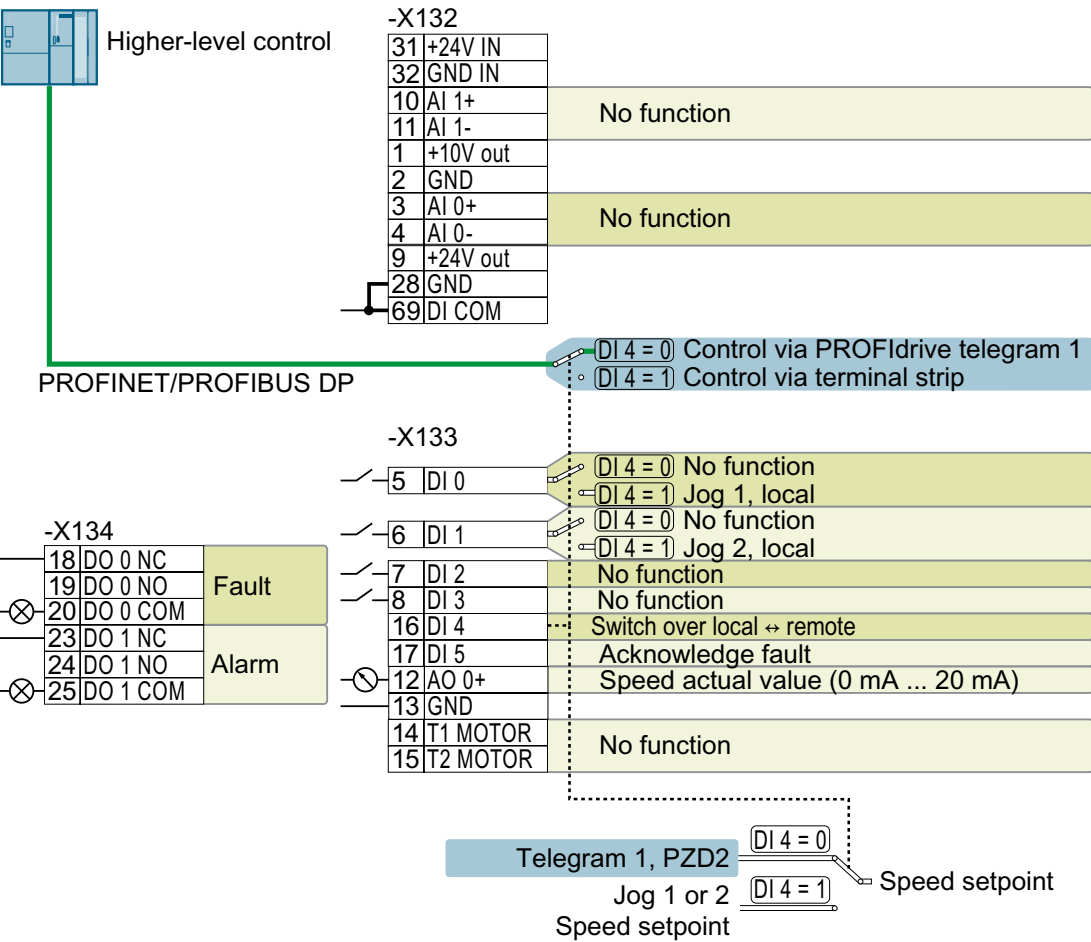
Block diagram



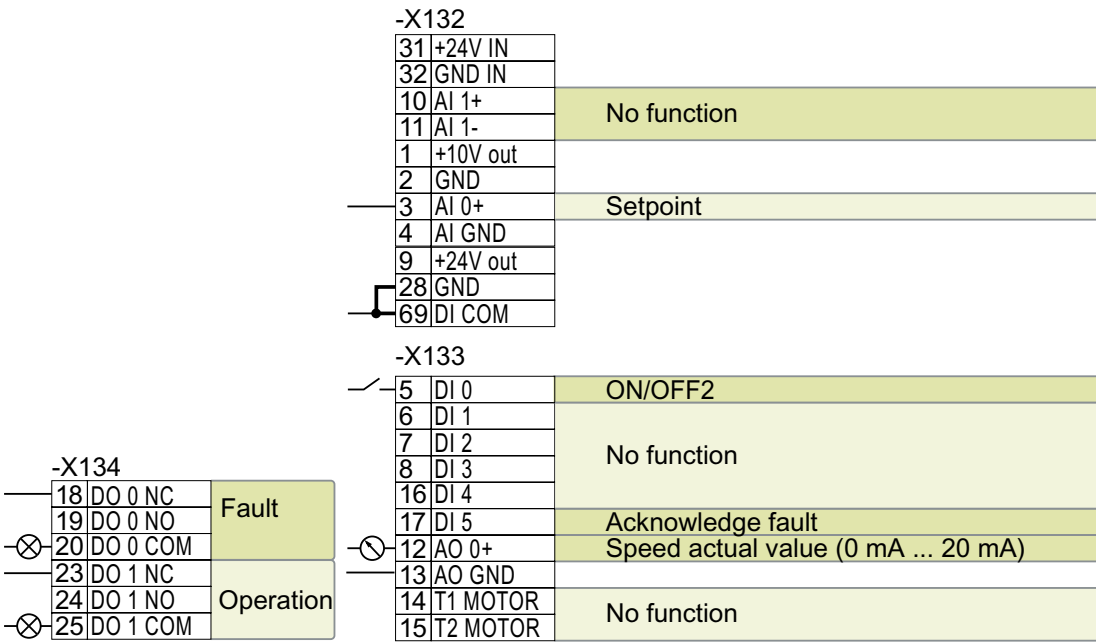
1) You can also mount a BOP-2, IOP-2 or SINAMICS G120 Smart Access on the I/O Extension Module.

Factory settings of the converter

Converter with PROFINET or PROFIBUS DP interface



Converter with USS interface



Operator Panels and commissioning tools

BOP-2 operating instructions
<https://support.industry.siemens.com/cs/en/view/109483379>

IOP-2 operating instructions
<https://support.industry.siemens.com/cs/us/en/view/109781592>

SINAMICS G120 Smart Access operating instructions
<https://support.industry.siemens.com/cs/us/en/view/109792113>

Commissioning with SINAMICS G120 Smart Access

The SINAMICS G120 Smart Access enables the wireless connection of mobile devices such as tablets, smartphones or laptops over Wi-Fi to the SINAMICS G120X converter series. The module is set up using a conventional browser and standard operating system. The server functionality eliminates the need to download any additional software.

Technical support contact

Online support application
<https://support.industry.siemens.com/cs/en/sc/2067>

Product registration
<https://myregistration.siemens.com/>

SINAMICS G120 product information
<https://www.siemens.com/press/en/pressrelease/?press=en/pressrelease/2018/digitalfactory/pr2018040224dfen.htm>

SINAMICS G120X product information for Protective Devices
<https://support.industry.siemens.com/cs/us/en/view/109762895>

Data regarding the power loss in accordance with Ecodesign Regulation (EU) 2019/1781 and IEC 61800-9-2

You can find data regarding power loss on the Internet:
<https://support.industry.siemens.com/cs/ww/en/view/94059311>

Macro settings (p0015)

The available macro settings depend on which fieldbus the converter supports, USS, PROFINET or PROFIBUS DP. You can set the macros from one of the following commissioning dialogues:

- BOP-2 -> *Mac Par*
- IOP-2 -> *I/O Setup*
- SINAMICS G120 Smart Access -> *I/O configuration*

Prerequisite: SINAMICS G120X I/O Extension Module is required to expand the I/O terminals.

Terminal		Macro settings							
		41	42	43	44	45	46	47	48
5	DI 0	ON/OFF2	ON/OFF2	ON/OFF2	ON/OFF2	ON/OFF2	ON/OFF2, local	ON/OFF2	ON/OFF2
6	DI 1	-	-	Service pump 1	Service pump 1	Fixed speed 1	ON/OFF2, remote	-	Service pump 1
7	DI 2	-	-	Service pump 2	Service pump 2	Fixed speed 2	-	-	Service pump 2
8	DI 3	-	-	-	Service pump 3	Fixed speed 3	-	-	-
16	DI 4	-	Manual ↔ Auto	Manual ↔ Auto	Manual ↔ Auto	-	Local ↔ Remote	-	Manual ↔ Auto
17	DI 5	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault
18...20	DO 0	Fault	Fault	Fault	Fault	Fault	Fault	Fault	Fault
23...25	DO 1	Operation	Operation	Operation	Pump 1	Operation	Operation	Operation	Operation
97...99	DO 2	Ready for operation	Ready for operation	Pump 1	Pump 2	Ready for operation	Ready for operation	Ready for operation	Pump 1
94...96	DO 3	Alarm	Alarm	Pump 2	Pump 3	Alarm	Alarm	Alarm	Pump 2
3, 4	AI 0	Setpoint	PID setpoint	PID setpoint	PID setpoint	-	Setpoint, local	-	-
10, 11	AI 1	-	PID feedback	PID feedback	PID feedback	-	Setpoint, remote	PID feedback	PID feedback
12	AO 0	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value
85	AO 1	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value
Terminal		Macro settings							
		49	51	52	54	55	57	58	59
5	DI 0	ON/OFF2	ON/OFF2	ON/OFF2, local	ON/OFF2	ON/OFF2, local	Jog 1, local	ON/OFF2	ON/OFF2
6	DI 1	Service pump 1	-	ON/OFF2, remote	-	ON/OFF2, remote	Jog 2, local	MOP up	-
7	DI 2	Service pump 2	-	-	-	-	-	MOP down	-
8	DI 3	Service pump 3	-	-	-	-	-	-	-
16	DI 4	Manual ↔ Auto	-	Local ↔ Remote	-	Local ↔ Remote	Local ↔ Remote	-	-
17	DI 5	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	Acknowledge fault	-
18...20	DO 0	Fault	Fault	Fault	Fault	Fault	Fault	Fault	-
23...25	DO 1	Pump 1	Operation	Operation	Operation	Operation	Operation	Operation	-
97...99	DO 2	Pump 2	Ready for operation	Ready for operation	Ready for operation	Ready for operation	Ready for operation	Ready for operation	-
94...96	DO 3	Pump 3	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	-
3, 4	AI 0	-	-	Setpoint, local	-	Setpoint, local	-	-	-
10, 11	AI 1	PID feedback	-	-	-	-	-	-	-
12	AO 0	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value	Speed actual value	-
85	AO 1	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value	Current actual value	-

NOTE

It is recommended to reset the converter to factory defaults before switching to a new macro setting.

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Subject to change

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