

Compact Installation Instructions

Edition 12/2018



SINAMICS G120XA

Scope of delivery

- The delivery comprises at least the following components:
- A ready-to-run inverter with loaded firmware - each inverter consists of a Power Module with a Control Unit. Options for upgrading and downgrading the firmware can be found on the Internet: <http://support.automation.siemens.com/VW/news/en/67364620>
 - One set of terminal strips for connecting the I/O control terminals.
 - One set of shield connection kit for the Power Module (available for FSA to FSC Only).
 - One set of shield connection kit for the Control Unit (available for FSD to FSG only).
 - Compact Installation Instructions in Chinese and English.
 - The inverter contains open-source software (OSS). The OSS license terms are saved in the inverter.
 - One pluggable RS485 connector for the Modbus/US\$ connection.
 - For G120XA FSD - FSG a printed full-size drill pattern is supplied with each inverter. This allows the easy drilling of the necessary mounting holes.

Technical data

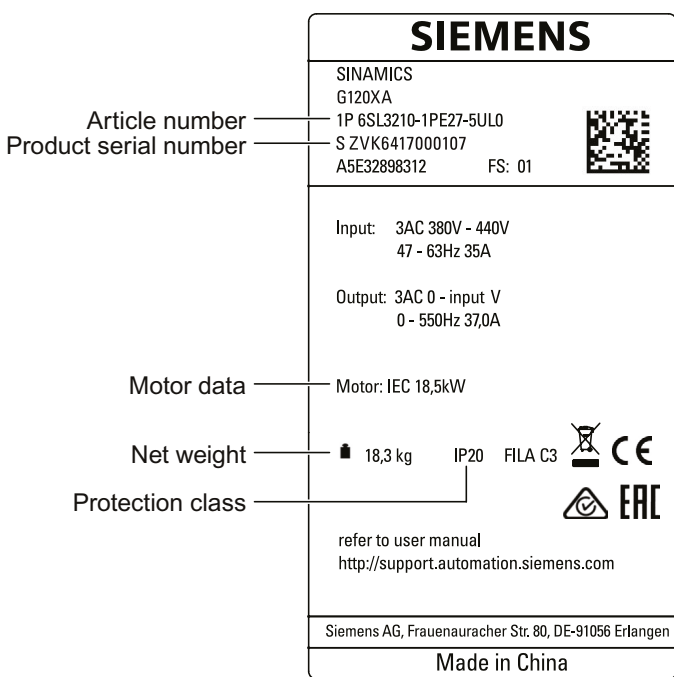
380 V ... 440 V	Rated output power (kW)	Rated output current (A)	Article number	
Frame size	Based on a low overload		Without filter	With filter
FSA	0.75	2.2	6SL3220-1YD10-0UB0	6SL3220-1YD10-0CB0
	1.1	3.1	6SL3220-1YD12-0UB0	6SL3220-1YD12-0CB0
	1.5	4.1	6SL3220-1YD14-0UB0	6SL3220-1YD14-0CB0
	2.2	5.6	6SL3220-1YD16-0UB0	6SL3220-1YD16-0CB0
	3	7.3	6SL3220-1YD18-0UB0	6SL3220-1YD18-0CB0
FSB	4	8.8	6SL3220-1YD20-0UB0	6SL3220-1YD20-0CB0
	5.5	12.5	6SL3220-1YD22-0UB0	6SL3220-1YD22-0CB0
	7.5	16.5	6SL3220-1YD24-0UB0	6SL3220-1YD24-0CB0
FSC	11	25	6SL3220-1YD26-0UB0	6SL3220-1YD26-0CB0
	15	31	6SL3220-1YD28-0UB0	6SL3220-1YD28-0CB0
FSD	18.5	37	6SL3220-1YD30-0UB0	6SL3220-1YD30-0CB0
	22	43	6SL3220-1YD32-0UB0	6SL3220-1YD32-0CB0
	30	58	6SL3220-1YD34-0UB0	6SL3220-1YD34-0CB0
	37	68	6SL3220-1YD36-0UB0	6SL3220-1YD36-0CB0
	45	82.5	6SL3220-1YD38-0UB0	6SL3220-1YD38-0CB0
FSE	55	103	6SL3220-1YD40-0UB0	6SL3220-1YD40-0CB0
	75	136	6SL3220-1YD42-0UB0	6SL3220-1YD42-0CB0
FSF	90	164	6SL3220-1YD44-0UB0	6SL3220-1YD44-0CB0
	110	201	6SL3220-1YD46-0UB0	6SL3220-1YD46-0CB0
	132	237	6SL3220-1YD48-0UB0	6SL3220-1YD48-0CB0
FSG	160	289	-	6SL3220-1YD50-0CB0
	200	364	-	6SL3220-1YD52-0CB0
	250	436	-	6SL3220-1YD54-0CB0
FSH	315	590	-	6SL3220-1YD56-0CB0
	355	645	-	6SL3220-1YD58-0CB0
FSJ	400	725	-	6SL3220-1YD60-0CB0
	450	820	-	6SL3225-1YD62-0CB0
	500	895	-	6SL3225-1YD64-0CB0
	560	1015	-	6SL3225-1YD66-0CB0
Without operator panel			1	1
With operator panel BOP-2			2	2
With operator panel IOP-2			3	3

Cable cross-sections and tightening torques

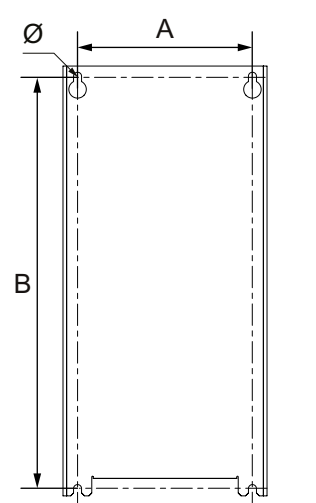
Inverter frame size	Terminals	Terminal/connector type	Cable cross-section (mm²)	Screw tightening torque (Nm)	Stripped insulation length (mm)
FSA	Line, motor and PE	Screw-type terminals	1.5 ... 2.5	0.5	9 ... 10
FSB			1.5 ... 6	0.6	12 ... 13
FSC			1.5 ... 16	1.3	12 ... 13
FSD	Line, motor and PE	Screw-type terminal	10 ... 35	4.5	18
FSE	Line, motor and PE	Screw-type terminal	25 ... 70	10	25
FSF	Line, motor and PE	Cable lug according to SN71322 for M10 screws	35 ... 2 × 120	22 ... 25	--
FSG	Line, motor and PE	Cable lug according to SN71322 for M10 screws	35 ... 2 × 185	50	--
FSH	Line, motor, PE and DC	Cable lug according to DIN 46234 for M12 screws ¹⁾	2 × 240	50	--
FSJ			4 × 240		

¹⁾ Alternative copper busbars can be used for line and motor connections. Make sure that you use copper busbars of the same cross-sections as the connecting busbars of the inverter itself (FSH: 60 mm × 6 mm; FSJ 450 kW to 500 kW: 80 mm × 6 mm; FSJ 560 kW: 80 mm × 8 mm).

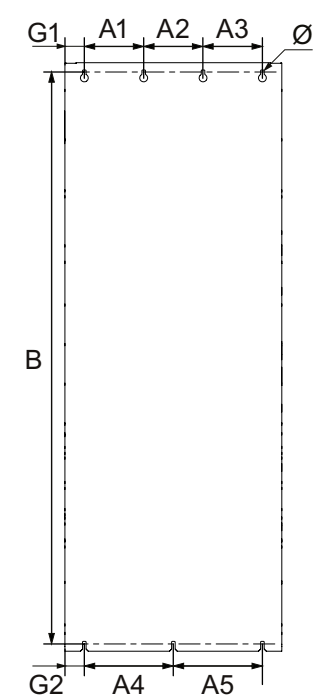
Rating plate example



Drill patterns FSA to FSG



Drill patterns FSH and FSJ



NOTE
For G120XA FSD to FSG a printed drill pattern is supplied with each inverter. This can be used to easily drill the necessary mounting holes.

Dimensions and clearance distances (mm) FSA to FSJ

Frame Size	Height	Height including shield plate	Width	Depth	Clearance A	Clearance B	Additional depth with OP	Additional depth with G120 Smart Access
FSA	232	330	73	209	80	100	9	7
FSB	275	383	100	209	80	100	9	7
FSC	295	423	140	209	80	100	9	7
FSD	472	625 ¹⁾	200	239	300	350	9	7
FSE	551	729 ¹⁾	275	239	300	350	9	7
FSF	709	969 ¹⁾	305	360	300	350	9	7
FSG	999	1255 ¹⁾	305	360	300	350	9	7
FSH	1487	-	548	410	200	200 ²⁾	-	-
FSJ	1438	-	801	410	200	200 ²⁾	-	-

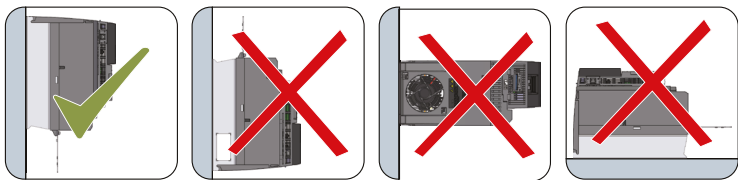
- ¹⁾ The shield plate for the Power Module FSD to FSG is available as an option only.
²⁾ FSH and FSJ require 30 mm clearance between individual inverters and 100 mm clearance at the front.

Maximum permissible motor cable lengths

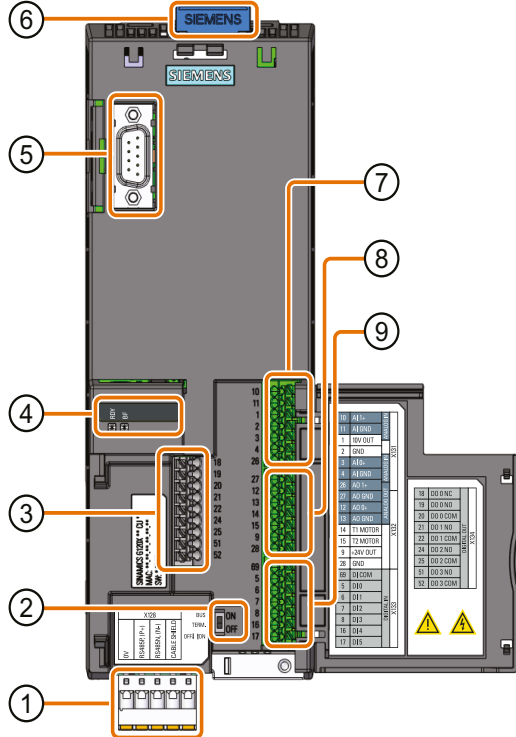
Inverter frame size	EMC category: Second environment, C3		No EMC category	
	Shielded with integrated filter	Shielded with external filter	Shielded	Unshielded
FSA ... FSC ¹⁾	50 m	50 m	100 m	150 m
FSD ... FSE ¹⁾	100 m	50 m	200 m	300 m
FSF	150 m	50 m	300 m	450 m
FSG ¹⁾	150 m	---	300 m	450 m
FSF ... FSJ ²⁾	100 m	---	150 m/300 m ³⁾	200 m/450 m ³⁾

¹⁾ The values are valid for a pulse frequency set at the factory
²⁾ The values are valid for a pulse frequency = 2 kHz
³⁾ With output reactor or dv/dt filter

Correct inverter mounting orientation

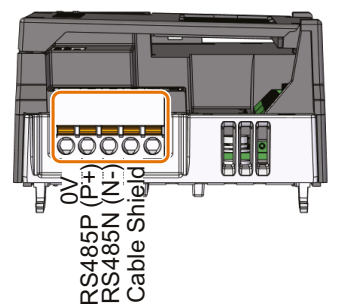


CU interfaces

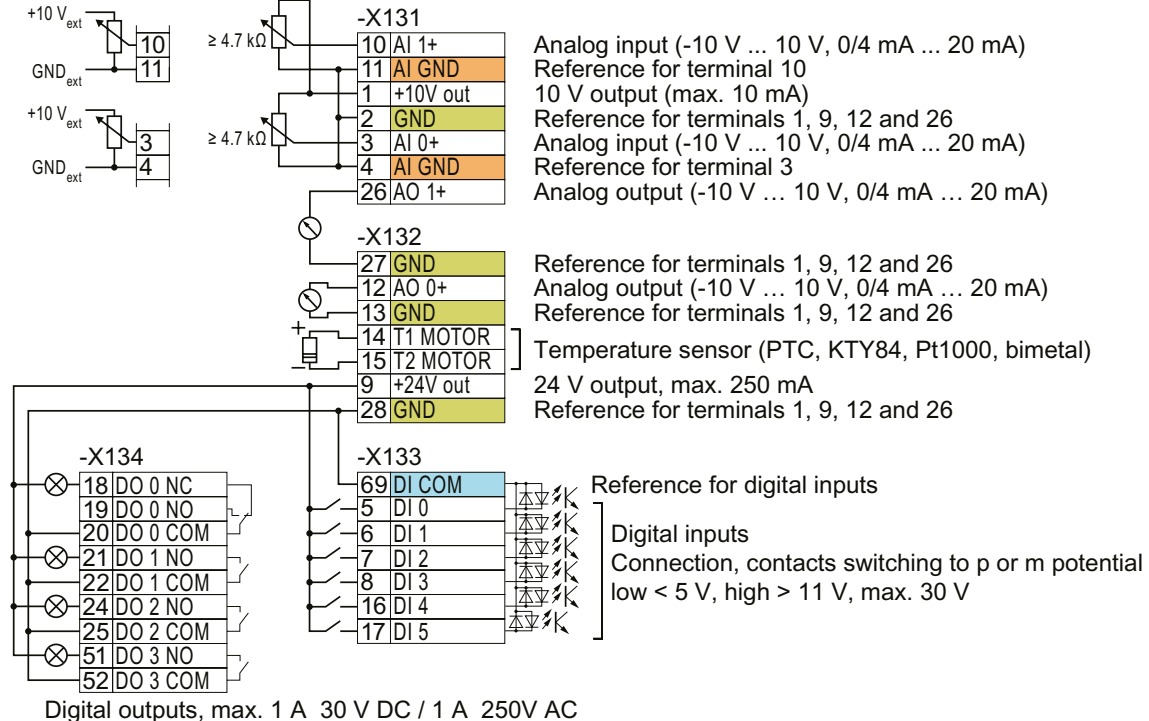


- 1 Modbus RTU/US\$ interfaces
- 2 Bus termination switch
- 3 Terminal strip X134
- 4 Status LEDs
- 5 Interface X21 to operator panel or SINAMICS G120 Smart Access
- 6 Memory card slot
- 7 Terminal strip X131
- 8 Terminal strip X132
- 9 Terminal strip X133

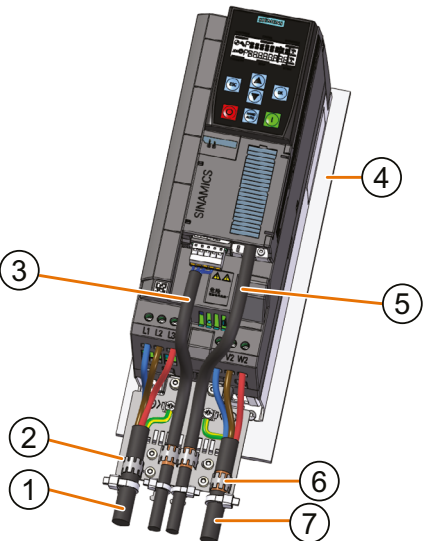
Modbus RTU/US\$ interfaces



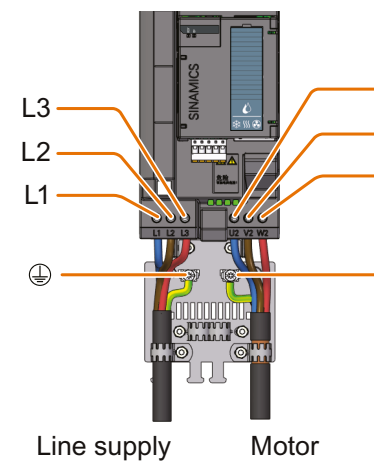
Terminals (factory settings)



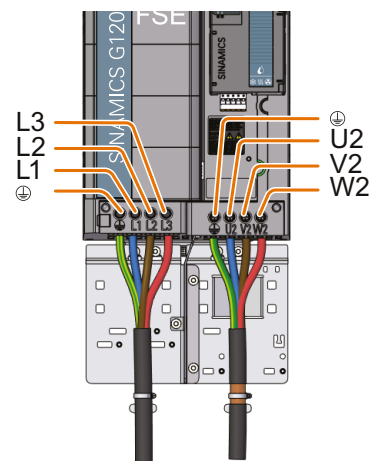
EMC wiring example



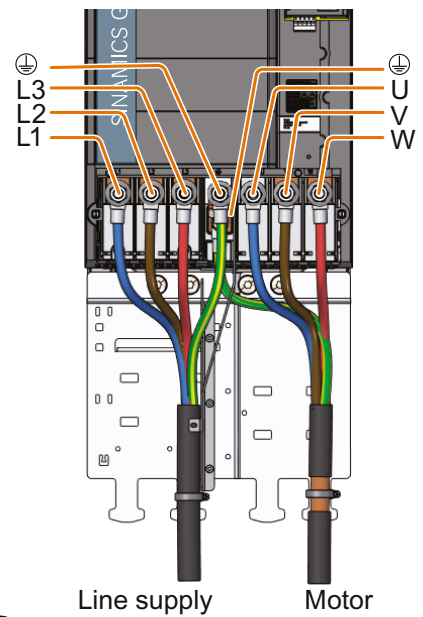
Connections FSA - FSC



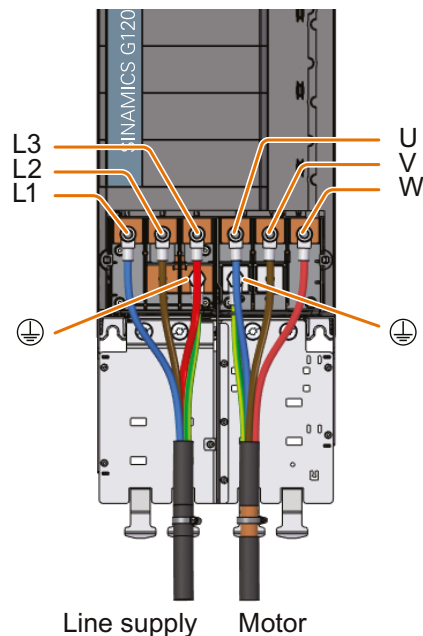
Connections FSD - FSE



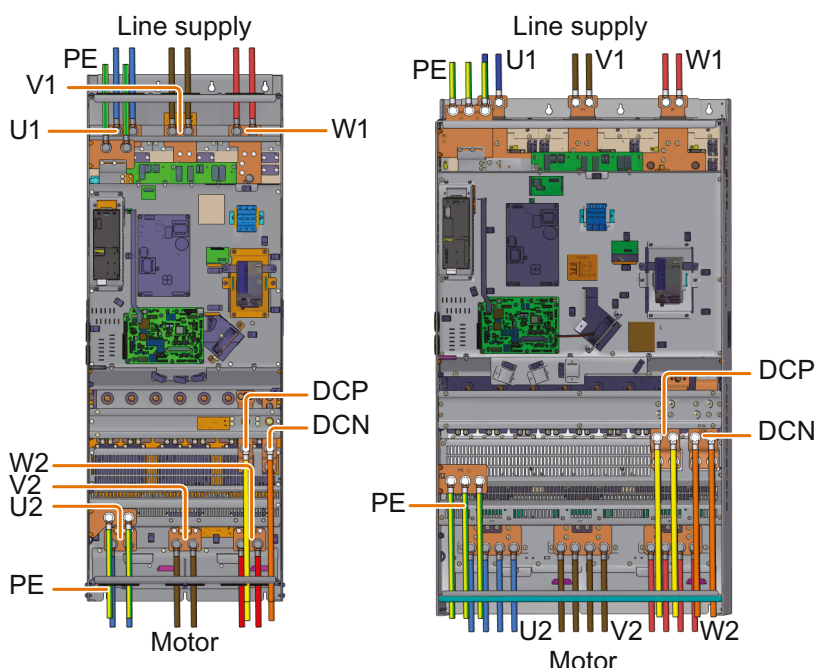
Connections FSF



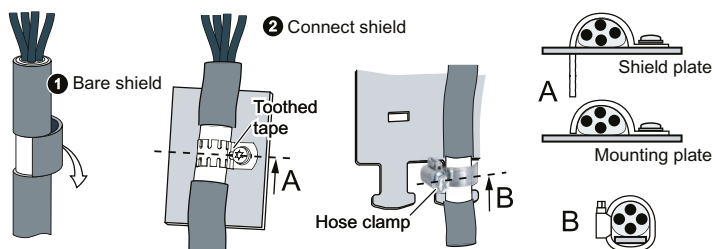
Connections FSG



Connections FSH and FSJ



EMC shield cable preparation



EMC installation guideline

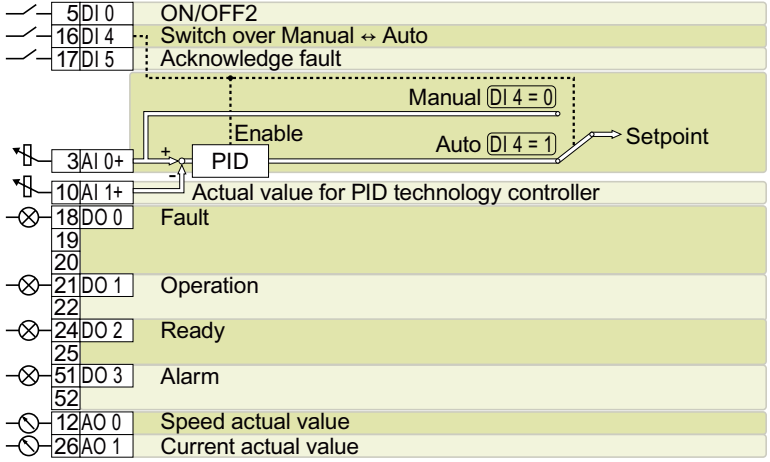


Macro settings (p0015)

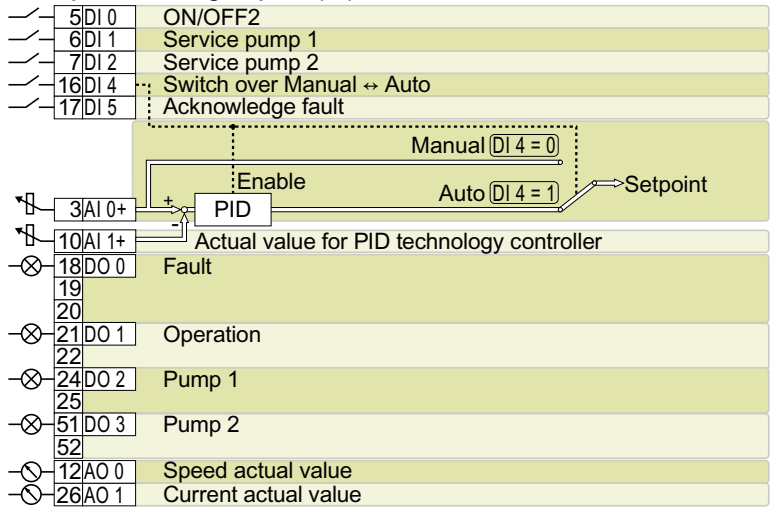
Factory settings (41)

5DI 0	ON/OFF2
17DI 5	Acknowledge fault
3AI 0+	Setpoint
18DO 0	Fault
21DO 1	Operation
24DO 2	Ready
51DO 3	Alarm
12AO 0	Speed actual value
26AO 1	Current actual value

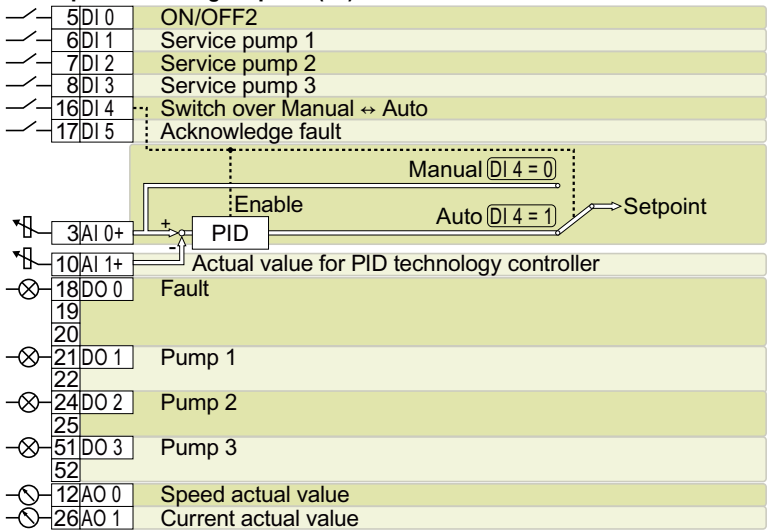
PID Controller with analog setpoint (42)



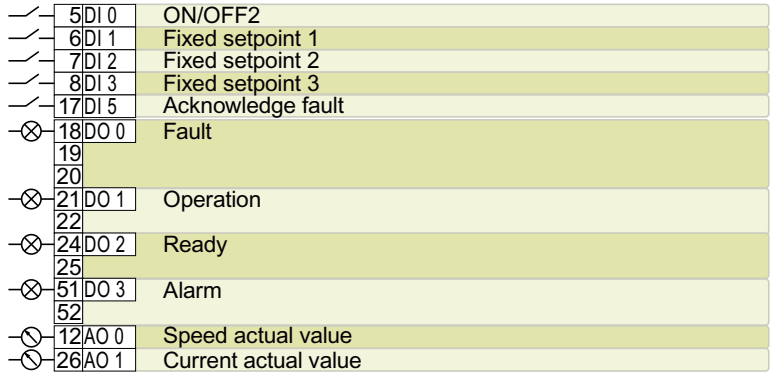
2 Pumps with analog setpoint (43)



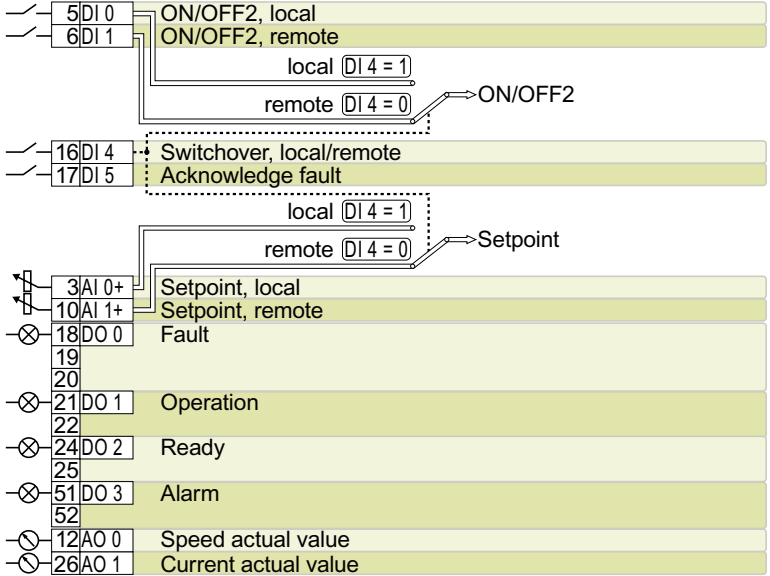
3 Pumps with analog setpoint (44)



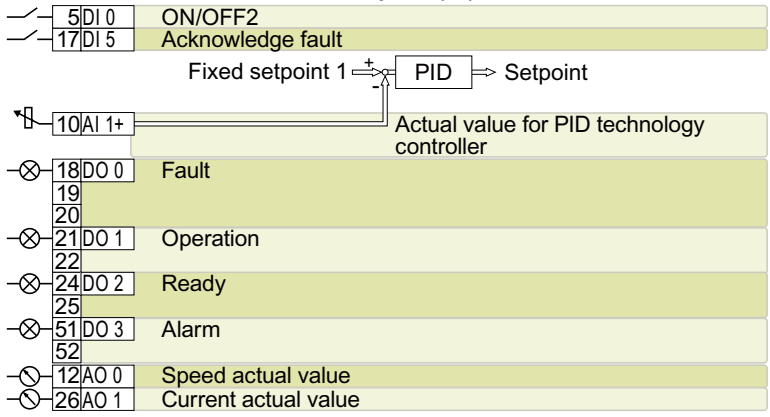
Closed-loop speed control with fixed speed setpoint (45)



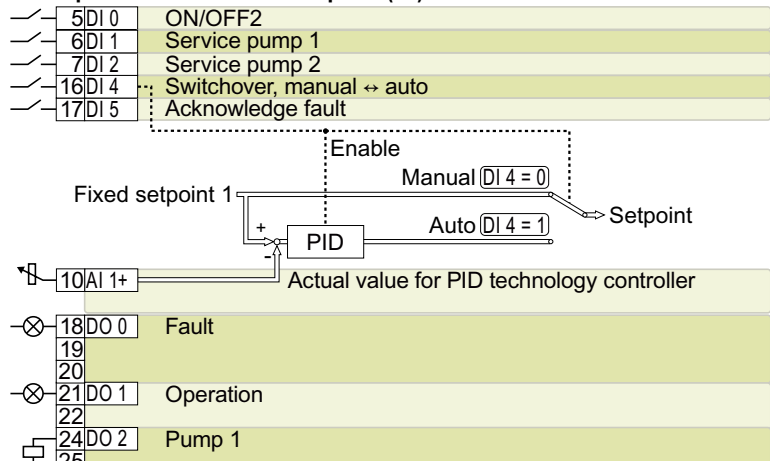
Closed-loop speed control local/remote (46)



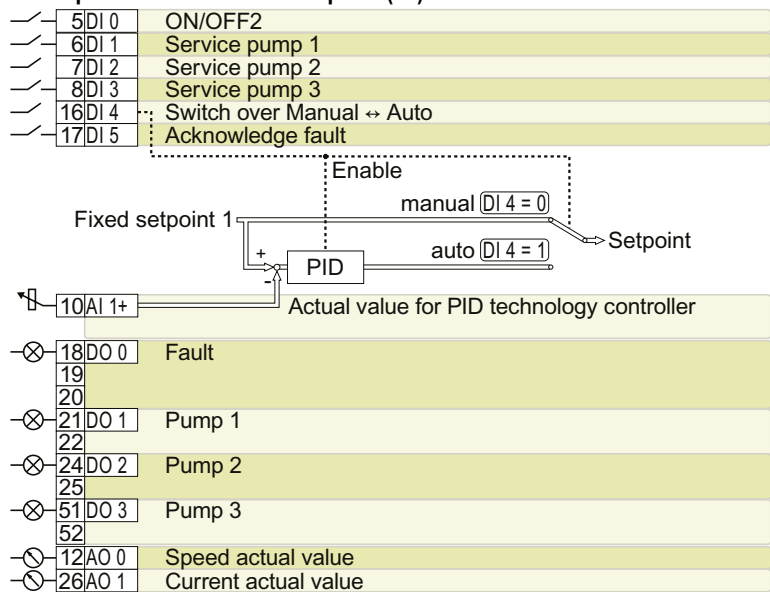
PID Controller with internal fixed setpoint (47)



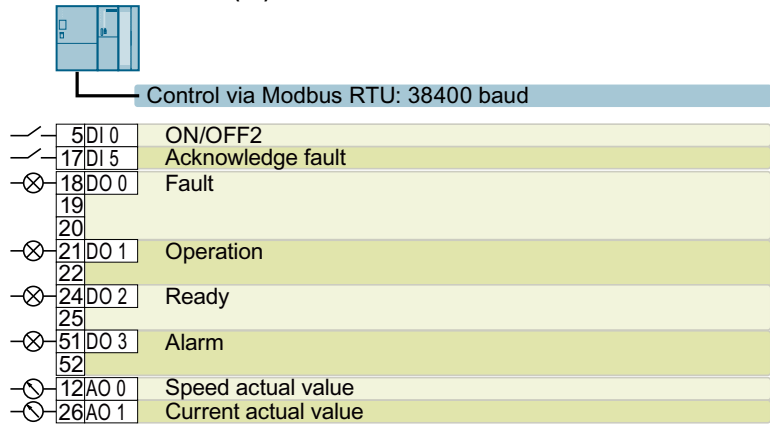
2 Pumps with internal fixed setpoint (48)



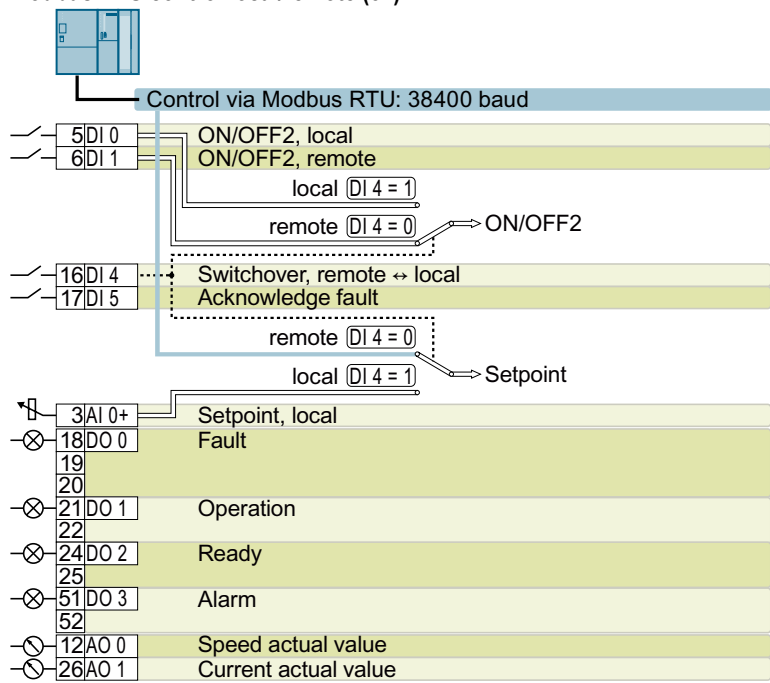
3 Pumps with internal fixed setpoint (49)



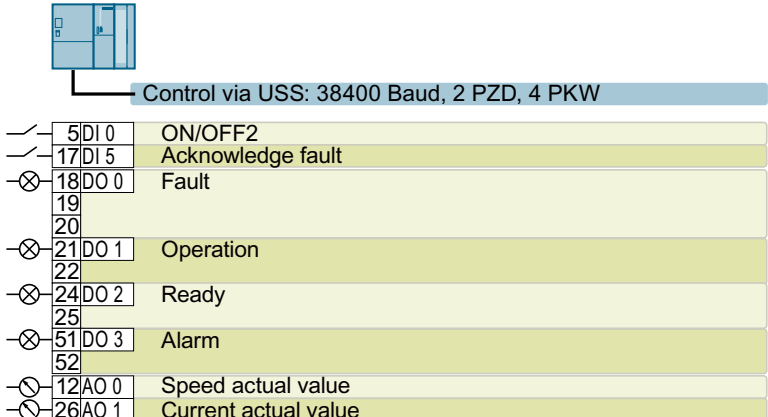
Modbus RTU Control (51)



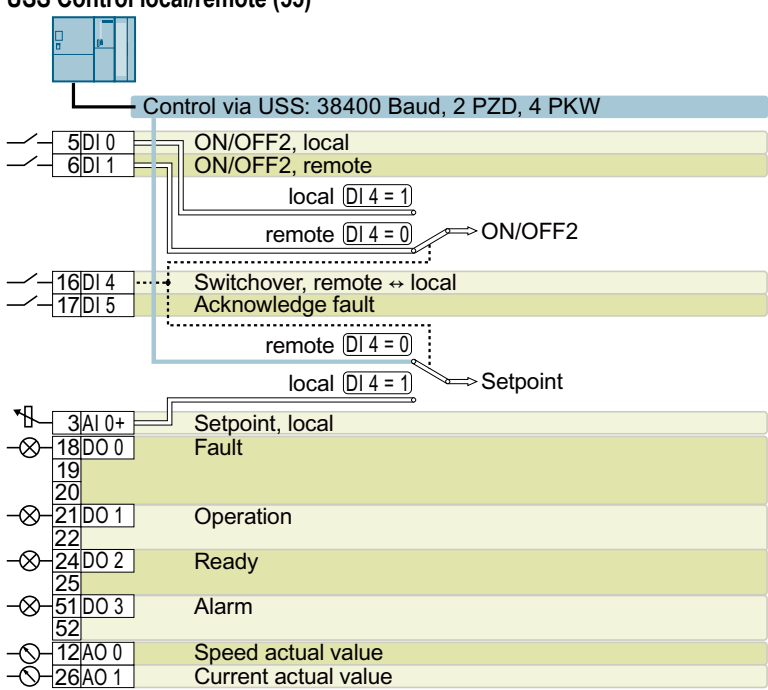
Modbus RTU control local/remote (52)



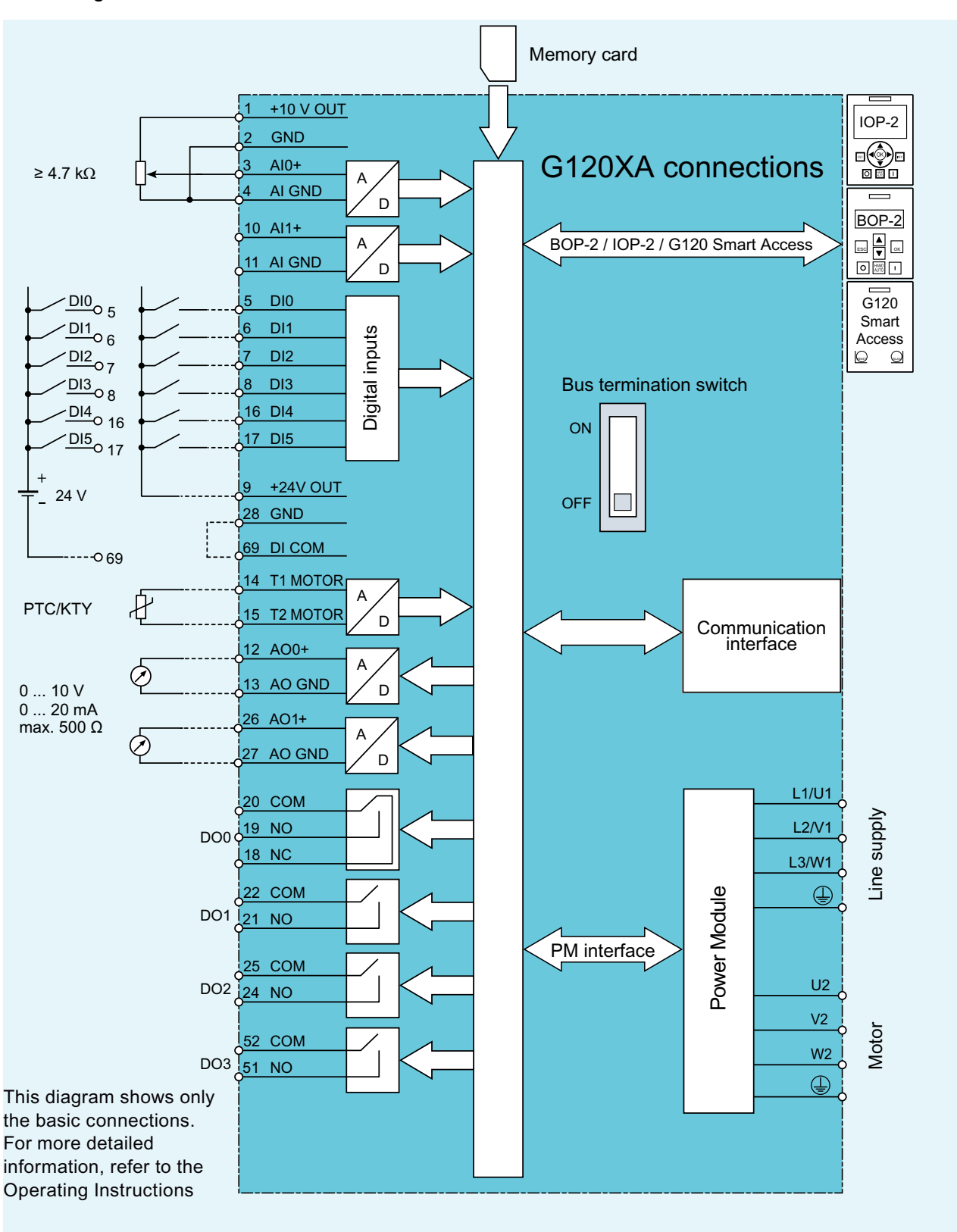
USS Control (54)



USS Control local/remote (55)



Block Diagram



BOP-2 commissioning procedure



*Depending on the Drive Application that is selected, the commissioning sequence shown may vary.

Operator panels and commissioning tools

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

IOP-2 operating instructions
<https://support.industry.siemens.com/cs/ww/en/view/109752613>

SINAMICS G120 Smart Access operating instructions
<https://support.industry.siemens.com/cs/ww/en/view/109758094>

Commissioning with SINAMICS G120 Smart Access

The new SINAMICS G120 Smart Access enables the wireless connection of mobile devices such as tablets, smartphones or laptops over Wi-Fi to the SINAMICS G120XA inverter 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/ww/en/sci/2067>

Product registration
www.siemens.com/drive-registration

SINAMICS G120 product information
<https://www.siemens.com/press/en/pressrelease/press=en/pressrelease/2018/digitalfactory/pr2018040224dien.htm>

For more information on the permissible types for the branch circuit protection devices, see the Product Information of Protective Devices for SINAMICS G120XA Inverter.

SINAMICS G120XA product information for Protective Devices
<https://support.industry.siemens.com/cs/ww/en/ps/13213>

Declaration of Conformity
<https://support.industry.siemens.com/cs/ww/en/ps/13222/cert>

European Low Voltage Directive
Europäische Niederspannungsrichtlinie
Directive européenne basse tension
Direttiva europea "Baja tensione"
Direttiva europea sulla bassa tensione

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Änderungen vorbehalten

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