SIEMENS

SINAMICS V20

Quick launch guide

siemens.com/sinamics-v20

Safety information

For full safety information, please reference the SINAMICS V20 Getting Started Manual (Section 1, pages 1–3)

Technical support information

For technical assistance in your area:

U.S.A.	+1 423 262 5710
Germany	+49 911 895 7222
China	+86 400 810 4288

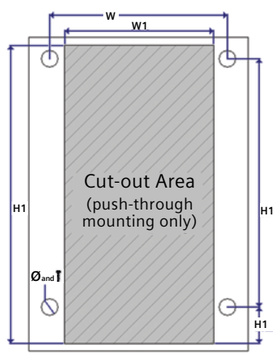
Additional service contact information:

siemens.com/automation/support-request

Dimensions

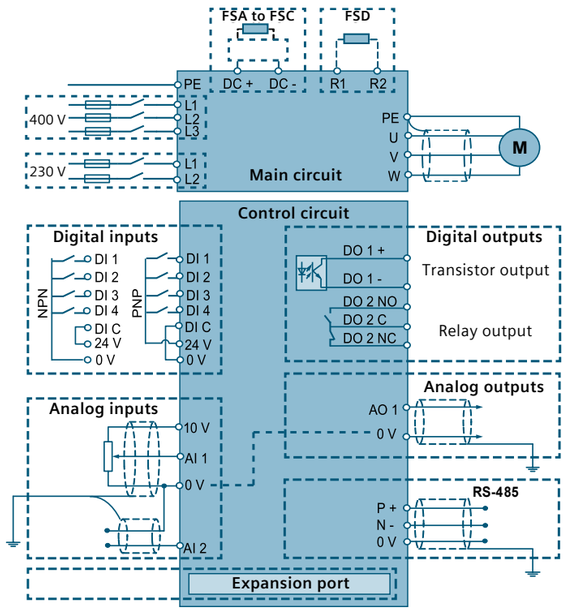
	Width (mm)		Height (mm)			Depth (mm)	Weight (kg)	Ø	Screw
Frame size	W1	W2	H1	H2	H3	D	WT approx.		type
FSA without fan	79	90	–	140	150	145.5	1	4.6 mm	M4
FSA	79	90	166	140	150	145.5	1.05	4.6 mm	M4
FSB	127	140	160	135	–	164.5	1.8	4.6 mm	M4
FSC	170	184	182	140	–	169	2.6	5.8 mm	M5
FSD	223	240	206.5	166	–	172.5	4.3	5.8 mm	M5

Please refer to Section 2.1 (page 4) of the SINAMICS V20 Getting Started Manual for full dimensions (shown in mm).

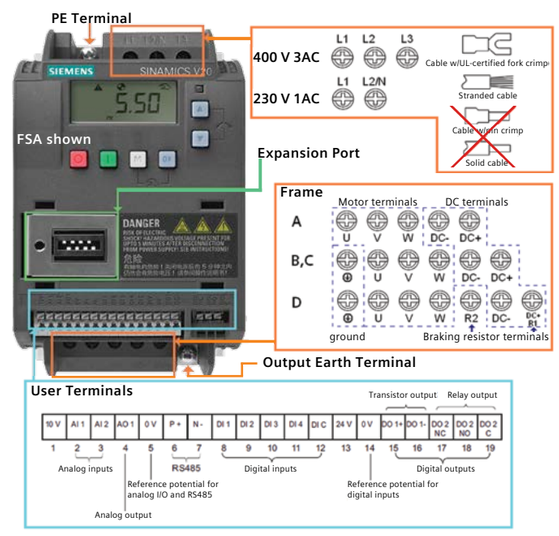


Wiring and terminal description

Connection diagram



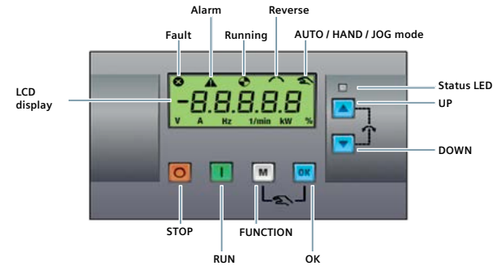
Terminal diagram



Recommended fuse types for different frame sizes can be found in Section 2.2 (page 6) of the SINAMICS V20 Getting Started Manual.

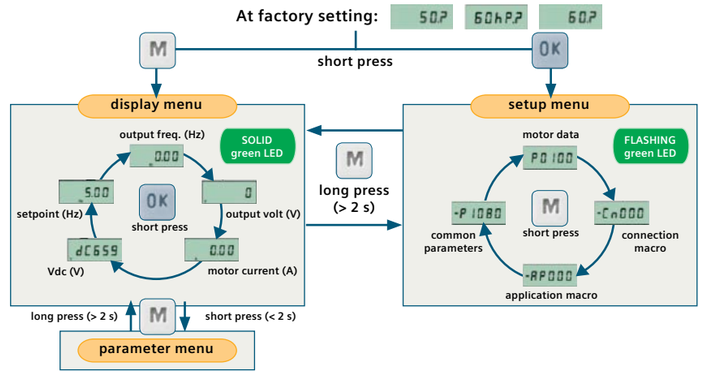
Basic operator panel (BOP)

Button functions



O	**Stops the drive** Single press: OFF1 stop reaction in HAND mode Double press (< 2 s) or long press (> 3 s) OFF2 stop reaction: the drive allows the motor to coast to a stop without ramp-down times
I	**Starts the drive in HAND / JOG mode**
M	**Multi-function button** Short press (< 2 s): ▪ Enters parameter menu or moves to next screen ▪ Restarts digit by digit editing on selected item ▪ Press twice in digit by digit editing to discard change and return Long press (> 2 s): ▪ Returns the status screen ▪ Enters the setup menu
OK	Short press (< 2 s): ▪ Switches between status values ▪ Enters edit value mode or change to the next digit ▪ Clears faults Long press (> 2 s): quick parameter number or value edit
OK + M	▪ Press to switch between HAND (with hand icon) / JOG (with flashing hand icon) / AUTO (no icon) mode ▪ *Note: Jog mode is only available if the motor is stopped*
▲	▪ Moves the selection up through a menu, increases a value or a setpoint Long press (> 2 s): To quickly scroll up the values
▼	▪ Moves the selection down through a menu, decreases a value or a setpoint Long press (> 2 s): To quickly scroll down the values
▲ + ▼	▪ Reverses the direction of the rotation of the motor

Navigation between menus with the M button



Upon power up, the drive defaults to the display menu, Section 3 (page 11) of the SINAMICS V20 Getting Started Manual.

Starting the motor

1. **Power up the drive**
2. **Set to factory default**
3. **Enter motor data**
4. **Select connection macros**

   Cn000 — No choosen connection macro
   Cn001 — BOP as the only control source
   Cn002 — Control from terminals (PNP / NPN)
   Cn003 — Fixed speeds
   Cn004 — Fixed speeds in binary mode
   Cn005 — Analog input and fixed frequency
   Cn006 — External push button control
   Cn007 — External push buttons with analog control
   Cn008 — PID control with analog reference
   Cn009 — PID control with the fixed value reference
   Cn010 — USS control
   Cn011 — MODBUS RTU control

5. **Select application macro**

   AP000 — Factory default setting
   AP010 — Simple pump applications
   AP020 — Simple fan applications
   AP021 — Compressor applications
   AP030 — Conveyor applications

6. **Set general parameter settings**
7. **Start motor**

Connection macro wiring diagrams found in the SINAMICS V20 Getting Started Manual (section 3.2.2, page 13)

Connection macros are fixed and cannot be modified. If your setup requires different parameters, select Ch000 to set parameters manually

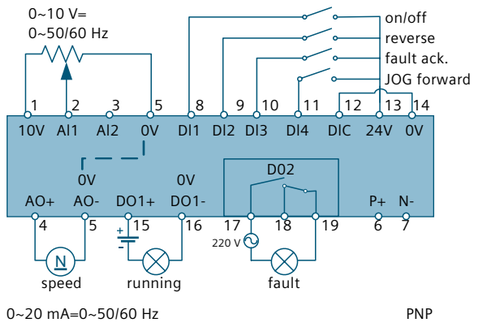
Application macro and factory default settings are found in the SINAMICS V20 Getting Started Manual (section 3.2.3, page 16)

Common parameter descriptons can be found in the SINAMICS V20 Getting Started Manual (section 3.2.4, page 16)

Connection macro wiring diagram

Cn002 — Control from terminals (PNP / NPN):

- external control
- potentiometer with setpoint
- Hand/auto switch between the BOP and terminals by pressing M + OK



SINAMICS V20 programming example

The example below walks through a quick commissioning for a basic conveyor application (AP030) that is controlled by the BOP using the connection Cn001. The motor will be set to have a minimum frequency of 5 Hz and is characterized by the following:

Enter relevant motor data in the underlined sections and highlighted boxes below:

Voltage: _____ ex: 400 V Power: _____ ex: 0.37 kW Freq.: _____ ex: 50/60 Hz
Current: _____ ex: 1.10 A Eff.: _____ ex: 70 % Motor RPM: _____ ex: 1500 RPM

Step	Current display value	Press button	New display value	Press button	Comments
1	**Power up drive**				Starting from display menu
2	**Set to factory default**				
2.1	Any	M < 2 s			Switches to the parameter menu
	Parameter menu				
2.2	Any	▲ or ▼	P0010	OK	
2.3	0	▲	30	OK	Commissioning parameters→factory reset
2.4	P0010	▲	P0970	OK	
2.5	0	▲	21	OK	Activates factory reset
	50?				
3	**Enter motor data**				
3.1	50?	OK		OK	Set P0100 = 0, motor type IEC, kW
3.2	P0304	OK		OK	
3.3	460	▲ or ▼		OK	P0304 — Motor voltage
3.4	P304	▲	P0305	OK	
3.5	1.10	▲ or ▼		OK	P0305 — Motor current
3.6	P0305	▲	P0307	OK	
3.7	0.50	▲ or ▼		OK	P0307 — Motor Hp
3.8	P0307	▲	P0309	OK	
3.9	0.7	▲ or ▼		OK	P0309 — Motor efficiency
3.10	P0309	▲	P0310	OK	
3.11	60.00	▲ or ▼		OK	P0310 — Motor Hz.
3.12	P0310	▲	P0311	OK	
3.13	1750	▲ or ▼		OK	P0311 — Motor RPM
3.14	P0311	▲	P1900	OK	
3.15	0	▲	2	OK	Activate motor ID tune
	Alarm icon appears on screen				
4	**Select connection macro**				
4.1	P1900	M < 2 s			
4.2	-Cn000	▲	Cn001	OK	Select connection macro 1
4.3	-Cn001	M < 2 s			
5	**Select application macro**				
5.1	-AP000	▲	AP030	OK	Select application macro 30
5.2	-AP030	M < 2 s			
	88888 briefly fills the display				Drive processing internal data
6	**Set general parameter settings**				
6.1	P1080	OK			
6.2	20.00	▼	5.0	OK	Lower minimum frequency
6.3	P1080	M > 2 s			Exit quick commissioning
7	**Start motor**				

Troubleshooting

Common fault acknowledgement

Fault code list

Fault	Description	Fault	Description
F1	Overcurrent	F62	Parameter cloning contents invalid
F2	Overvoltage	F63	Parameter cloing contents incompatible
F3	Undervoltage	F64	Drive attempted to do an automatic clone during startup
F4	Drive overtemperature	F71	USS setpoint fault
F5	Drive I^2t	F72	USS / MODBUS setpoint fault
F6	Chip temperature rise exceeds critical levels	F80	AI lost input signal
F11	Motor overtemperature	F85	External fault
F12	Drive temperature signal lost	F100	Watchdog reset
F20	DC ripple too high	F101	Stack overflow
F35	Auto restart after n	F221	PID feedback below minimum value
F41	Motor data identification failure	F222	PID feedback above maximum value
F51	Parameter EEPROM fault	F350	Configuration vector for the drive failed
F52	Drive software fault	F395	Acceptance test / confirmation pending
F60	Asic timeout	F410	Cavitation protection failure
F61	MMC / SD card parameter cloning failed	F452	Belt failure

- *To navigate through the current list of faults, press ▲ or ▼*
- *To clear / acknowledge the fault, press OK or acknowledge externally if the drive has been setup so*
- *To ignore the fault, press M*
- *After you acknowledge or ignore the fault, the screen returns to the previous display. The fault icon remains active until the fault is cleared / acknowledged*

Setting common parameters

Parameter	Description	Parameter	Description
P1080[0]	Minimum motor frequency	P1001[0]	Fixed frequency setpoint 1
P1082[0]	Maximum motor frequency	P1002[0]	Fixed frequency setpoint 2
P1120[0]	Ramp-up time	P1003[0]	Fixed frequency setpoint 3
P1121[0]	Ramp-down time	P2201[0]	Skip frequency setpoint 1
P1058[0]	JOG frequency	P2202[0]	Skip frequency setpoint 2
P1060[0]	JOG ramp-up time	P2203[0]	Skip frequency setpoint 3

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