Sourcetronic Low-Voltage Special-Purpose VFD Quick Start Guide

This guide briefly describes the external wiring, terminals, keypads, quick running, common function parameter settings, common faults and solutions, and common communication cards and PG cards of Sourcetronic low-voltage special-purpose variable-frequency drives (including ST600/ST600 IP55).

Visit www.sourcetronic.com for more information and STEP and EPLAN macro download.

Scan the QR code to view the full version of the product manual and further downloads.

Warning

- This guide only provides the basic installation and commissioning information. Failure to comply with the safety instructions and installation and commissioning instructions in the relevant documentation may result in accidents such as equipment damage, personal injury, or even death.
- Only trained and qualified professionals are allowed to carry out related operations.

Danger

- Do not perform any operations including wiring, inspection, or component replacement when power supply is applied. Before performing these operations, ensure all the input power supplies have been disconnected, and wait for at least the time designated on the VFD or until the DC bus voltage is less than 36V.

Minimum waiting time	VFD model
5 minutes	3PH 380V 1.5–110kW, 660V 22–132kW
15 minutes	3PH 380V 132–315kW, 660V 160–355kW
20 minutes	3PH 380V >355kW, 660V >400kW

1 External wiring

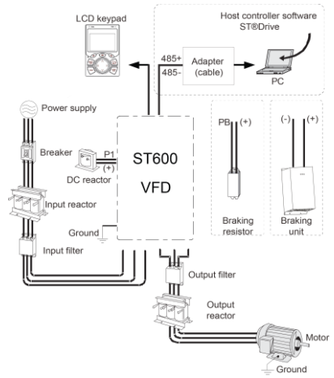


Figure 2-1 Typical VFD wiring

2 Terminal

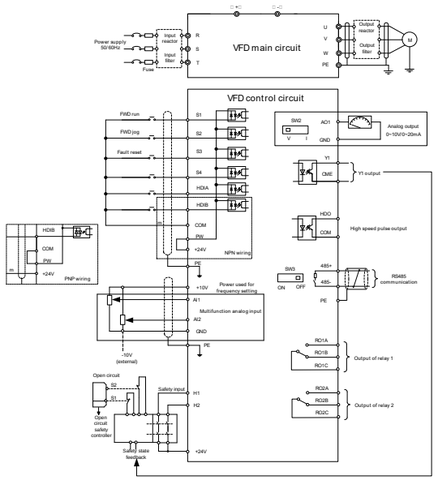
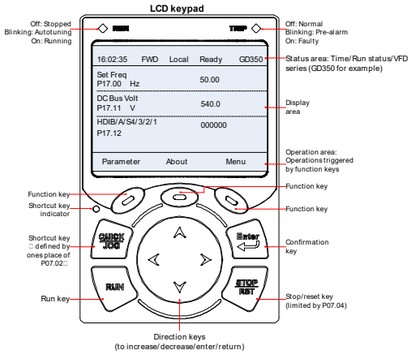


Table 2-1 VFD terminal description

Terminal	Description
Main circuit terminal	
R, S, T	3PH AC input terminals, connected to the grid
U, V, W	3PH AC output terminals, connected to the motor in most cases
P1	• P1 and (+) connect to external DC reactor terminals. • (+) and (-) connect to external braking unit terminals or shared DC bus terminals. • PB and (+) connect to external braking resistor terminals.
(+)	
(-)	
PB	
⏚	PE terminal. The PE terminals of each machine must be grounded reliably.
Control circuit terminals	
+10V	Locally provided +10.5V power supply
AI1	Analog input. Range: 0–10V/0–20mA. Function code P05.50 specifies whether to use voltage or current input.
AI2	Analog input. Range: -10V – +10V
GND	Reference ground of +10.5V
AO1	Analog output. Range: 0–10V/0–20mA. SW2 is used to select voltage or current output.
RO1A	Relay output. RO1A: NO; RO1B: NC; RO1C: common Contact capacity: 3A/AC 250V, 1A/DC 30V
RO1B	
RO1C	
RO2A	Relay output. RO2A: NO; RO2B: NC; RO2C: common Contact capacity: 3A/AC 250V, 1A/DC 30V
RO2B	
RO2C	
HDO	Switch capacity: 50mA/30V. Output frequency range: 0–50kHz. Duty ratio: 50%
COM	Reference ground of +24V
CME	Common terminal of open collector output; short connected to COM by default
Y1	Switch capacity: 50mA/30V; Output frequency range: 0–1kHz
485+	RS485 differential signal communication port. The standard communication interface should use shielded twisted pair. Determine whether to connect the 120Ω terminal matching resistor of RS485 communication through the DIP switch or jumper.
485-	
PE	Grounding terminal
PW	External power input terminal for digital input circuits. In NPN mode, short connect PW and +24V. In PNP mode, short connect PW and COM.
+24V	User power supply provided by the VFD. Max. output current: 200mA
S1–S4	Digital input • Internal impedance: 3.3kΩ • 12–30V voltage input is acceptable • Bidirectional input terminals, supporting both NPN and PNP connection methods • Max. input frequency: 1kHz • Programmable digital input terminals, the functions of which can be set through the related parameters
HDIA	• Channels for both high frequency pulse input and digital input • Max. input frequency: 50kHz • Duty ratio: 30%–70% • Support for quadrature encoder input when both HDIA and HDIB are available, with the speed measurement function
HDIB	
+24V—H1	Safe torque off (STO) inputs • STO redundant input, connected to the external NC contact. When the contact opens, STO acts and the VFD stops output. • Safety input signal wires use shielded wires whose length is within 25m. • The H1 and H2 terminals are short connected to +24V by default. Remove the jumper from the terminals before using the STO function.
+24V—H2	

3 Keypad

The keypad may vary depending on the product.



4 Quick running

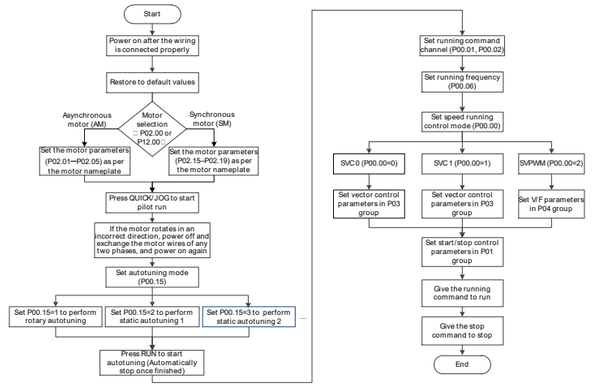
4.1 Check before power-on

- Ensure that all terminals have been securely connected.
- Ensure that the motor power matches the VFD power.

4.2 Operating upon first power-on

Ensure the wiring and power are correct, and close the air switch of the AC power at the VFD input side to power on the VFD. The LCD keypad interface enters the setup wizard, which guides you to complete the setup.

The quick startup flowchart is as follows:



5 Common function parameter setup

The following briefly describes only some common function parameters and typical values.

"○" indicates that the value of the parameter can be modified when the VFD is in stopped or running state.

"◉" indicates that the value of the parameter cannot be modified when the VFD is in running state.

"●" indicates that the value of the parameter is detected and recorded, and cannot be modified.

(The VFD automatically checks and constrains the modification of parameters, which helps prevent incorrect modifications.)

Note: Function parameters may vary with product. For details, see the corresponding product e-manual of full version.

Function code	Name	Description	Default	Modify
P00.00	Speed control mode	0: Sensorless vector control (SVC) mode 0 1: Sensorless vector control (SVC) mode 1 2: Space voltage vector control mode 3: Closed-loop vector control mode	2	◉
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication	0	○
P00.02	Communication mode of running commands	0: Modbus/Modbus TCP 1: PROFIBUS/CANopen/DeviceNet 2: Ethernet 3: EtherCAT/PROFINET/ Ethernet IP 4: Programmable expansion card 5: Wireless communication card 6: Reserved **Note:** The options 0 (for Modbus TCP), 1, 2, 3, 4 and 5 are add-on functions, valid only when configured with related expansion cards.	0	○
P00.03	Max. output frequency	Max(P00.04, 10)–630.00Hz	50.00Hz	◉
P00.04	Upper limit of running frequency	P00.05–P00.03 (Max. output frequency)	50.00Hz	◉
P00.05	Lower limit of running frequency	0.00Hz–P00.04 (Upper limit of running frequency)	0.00Hz	◉
P00.06	Setting channel of A frequency command	0: Keypad 1: AI1 2: AI2 3: AI3 4: High-speed pulse HDIA 5: Simple PLC program 6: Multi-step speed running 7: PID control 8: Modbus/Modbus TCP communication	0	○
P00.07	Setting channel of B frequency command		15	○
P00.10	Frequency set through keypad	0.00 Hz–P00.03 (Max. output frequency)	50.00Hz	○
P00.11	ACC time 1	0.0–3600.0s	Model depended	○
P00.12	DEC time 1		Model depended	○
P00.13	Running direction	0: Run at the default direction. 1: Run at the opposite direction. 2: Disable reverse running.	0	○
P00.14	Carrier frequency	Carrier frequency: 1kHz, 10kHz, 15kHz Electromagnetic noise: 1kHz High, 10kHz, 15kHz Low Noise and leakage current: 1kHz Low, 10kHz, 15kHz High Heat dissipation: 1kHz Low, 10kHz, 15kHz High	Model depended	○
P00.15	Motor parameter autotuning	0: No operation 1: Rotary autotuning 1 2: Static autotuning 1 (full) 3: Static autotuning 2 (partial)	0	◉
P00.18	Function parameter restore	0: No operation 1: Restore defaults (excluding motor parameters) 2: Clear fault records 5: Restore defaults (factory test mode) 6: Restore defaults (including motor parameters)	0	◉
P01.00	Start mode	0: Direct start 1: Start after DC braking 2: Start after speed tracking	0	◉
P01.08	Stop mode	0: Decelerate to stop 1: Coast to stop	0	○
P01.09	Starting frequency of DC braking for stop	0.00Hz–P00.03 (Max. output frequency)	0.00Hz	○
P01.11	DC braking current for stop	0.0–100.0%	0.0%	○
P01.12	DC braking time for stop	0.00–50.00s	0.00s	○
P01.18	Terminal-based running command protection at power-on	0: Invalid at power-on 1: Valid at power-on	0	◉
P02.00	Type of motor 1	0: Asynchronous motor (AM) 1: Synchronous motor (SM)	0	◉
P02.01	Rated power of AM 1	0.1–3000.0kW	Model depended	◉
P02.02	Rated frequency of AM 1	0.01Hz–P00.03 (Max. output frequency)	50.00Hz	◉
P02.03	Rated speed of AM 1	1–60000rpm	Model depended	◉
P02.04	Rated voltage of AM 1	0–1200V	Model depended	◉
P02.05	Rated current of AM 1	0.8–6000.0A	Model depended	◉
P02.15	Rated power of SM 1	0.1–3000.0kW	Model depended	◉
P02.16	Rated frequency of SM 1	0.01Hz–P00.03 (Max. output frequency)	50.00Hz	◉
P02.17	Number of pole pairs of SM 1	1–128	2	◉
P02.18	Rated voltage of SM 1	0–1200V	Model depended	◉
P02.19	Rated current of SM 1	0.8–6000.0A	Model depended	◉
P02.23	Counter-emf of SM 1	0–10000	300	○
P03.00	Speed-loop proportional gain 1	0.0–200.0	20.0	○
P03.01	Speed-loop integral time 1	0.000–10.000s	0.200s	○
P03.03	Speed-loop proportional gain 2	0.0–200.0	20.0	○
P03.04	Speed-loop integral time 2	0.000–10.000s	0.200s	○
P03.09	Current-loop proportional coefficient P	0–65535	1000	○
P03.11	Torque setting method	0: Keypad (P03.12) 1: Keypad (P03.12) 2: AI1 3: AI2 4: AI3 5: Pulse frequency HDI 6: Multi-step torque 7: Modbus communication	0	○
P04.01	Torque boost of motor 1	0.0%: (Automatic torque boost), 0.1%–10.0%	0	○
P04.09	V/F slip compensation gain of motor 1	0.0–200.0%	100.0%	○
P04.10	Low-frequency oscillation control factor of motor 1	0–100	10	○

Function code	Name	Description	Default	Modify
P04.11	High-frequency oscillation control factor of motor 1	0–100	10	○
P05.01	Function of S1	0: No function 1: Run forward 2: Run reversely 3: Three-wire running control (SIN) 4: Jog forward 5: Jog reversely 6: Coast to stop 7: Reset faults 9: External fault input 10: Increase frequency setting (UP) 11: Decrease frequency setting (DOWN)	1	◉
P05.02	Function of S2		4	◉
P05.03	Function of S3		7	◉
P05.04	Function of S4		0	◉
P05.29	AI2 lower limit	-10.00V–P05.31	-10.00V	○
P05.35	AI2 upper limit	P05.33–10.00V	10.00V	○
P06.01	Y1 output	0: Invalid 1: Running 2: Running forward 3: Running reversely 4: Jogging 5: VFD in fault 6: Frequency level detection FDT1 8: Frequency reached	0	○
P06.03	RO1 output		1	○
P06.04	RO2 output		5	○
P06.14	AO1 output	0: Running frequency 1: Set frequency 3: Rotation speed (Relative to the speed corresponding to max. output frequency) 4: Output current (Relative to twice the VFD rated current) 5: Output current (Relative to twice the motor rated current) 6: Output voltage (Relative to 1.5 times the VFD rated voltage) 7: Output power (Relative to twice the motor rated power)	0	○
P06.16	HDO high-speed pulse output		0	○
P06.17–P06.21	AO1 output upper/lower limit settings	For details, see the full version of corresponding product e-manual.		○
P07.00	User password	0–65535	0	○
P07.27–P07.32	Present fault type – 5th-last fault type	0–76 (0: No fault) For details, see the full version of corresponding product e-manual.	0	○
P08.28	Auto fault reset count	0–10	0	○
P08.29	Auto fault reset interval	0.1–3600.0s	1.0s	○
P14.00	Local communication address	1–247 **Note:** The communication address of a slave cannot be set to 0.	1	○
P14.01	Communication baud rate	0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS	4	○
P14.02	Data bit check	0: No check (N, 8, 1) for RTU 1: Even check (E, 8, 1) for RTU 2: Odd check (O, 8, 1) for RTU 3: No check (N, 8, 2) for RTU 4: Even check (E, 8, 2) for RTU 5: Odd check (O, 8, 2) for RTU	1	○
P15.01	Module address	0–127	2	○
P15.02–P15.12 and P16.32–P16.42	Received PZD2 – Received PZD12	0–31 1: Set frequency (0–Fmax, unit: 0.01Hz) 2: PID reference (-1000–1000, in which 1000 corresponds to 100.0%) 3: PID feedback (-1000–1000, in which 1000 corresponds to 100.0%) 4: Torque setting (-3000–+3000, in which 1000 corresponds to 100.0% of the motor rated current) 5: Setting of the upper limit of forward running frequency (0–Fmax, unit: 0.01Hz) 6: Setting of the upper limit of reverse running frequency (0–Fmax, unit: 0.01Hz) 7: Upper limit of the electromotive torque (0–3000, in which 1000 corresponds to 100.0% of the motor rated current) 8: Upper limit of braking torque (0–3000, in which 1000 corresponds to 100% of the motor rated current)	0	○
P15.13–P15.23 and P16.43–P16.53	Sent PZD2 – Sent PZD12	0–31 1: Running frequency (x100, Hz) 4: Output voltage (x1, V) 5: Output current (x10, A) 6: Actual output torque (x10, %) 7: Actual output power (x10, %) 8: Rotation speed of running (x1, RPM)	0	○
P20.00	Encoder type display	0: Incremental encoder 1: Resolver-type encoder 2: Sin/Cos encoder 3: EnDat absolute encoder	0	•

Function code	Name	Description	Default	Modify
P20.01	Encoder pulses	0–16000 pulses per turn	1024	◉
P20.02	Encoder direction	0x000–0x111 Ones place: AB direction 0: Forward 1: Reverse Tens place: Z pulse direction (reserved) 0: Forward 1: Reverse Hundreds: CD/UVW pole signal direction 0: Forward 1: Reverse	0x000	◉
P20.03	Detection time of encoder offline fault	0.0–10.0s	2.0s	○

6 Common faults and solutions

Note: Our fault code scheme is being upgraded. Some products use the old scheme and the others use the new one, which are listed in "Fault code display".

Fault code display		Fault type	Possible cause	Solution
OUt1	E1	Inverter unit U-phase protection	•ACC/DEC too fast. •IGBT module damaged. •Misoperation caused by interference. •Drive wires poorly connected. •To-ground short circuit occurred. •Sparks occurred inside due to poor use environment conditions.	•Increase ACC/DEC time. •Change the inverter unit. •Check whether the devices and system are grounded reliably. •Check for loose drive wires. •Check for abnormal motor wiring and motor-to-ground short connection. •Remove the dust or oil stain inside the VFD regularly.
OUt2	E2	Inverter unit V-phase protection		
OUt3	E3	Inverter unit W-phase protection		
OC1	E4	Overcurrent during ACC	•ACC/DEC too fast. •Grid voltage too low. •VFD power too small. •Load sudden change or exception. •Whether three-phase output currents are in balance. •Strong external interference sources (contactor switchover or improper grounding).	•Increase ACC/DEC time. •Increase grid input voltage. •Select a VFD with larger power. •Check for motor stalling, short connection, and load device exceptions. •Check for abnormal VFD 3PH output voltage and motor 3PH resistance imbalance. •Check for strong interference (whether motor cable far away from contactor and system grounded reliably).
OC2	E5	Overcurrent during DEC		
OC3	E6	Overcurrent during constant speed running		
OV1	E7	Overvoltage during ACC	ACC/DEC time too short. Abnormal input voltage. Motor started during rotating. Load energy regeneration too large. Dynamic braking disabled.	•Increase ACC/DEC time. •Check the input power. •Use the speed tracking start function. •Add dynamic braking devices or regenerative units. •Set dynamic braking function parameters.
OV2	E8	Overvoltage during DEC		
OV3	E9	Overvoltage during constant speed running		
UV	E10	Bus undervoltage fault	•Grid voltage too low. •Abnormal voltage display. •Abnormal buffer contactor closing.	•Increase grid input voltage. •Contact us.
OL1	E11	Motor overload	•Grid voltage too low. •Incorrect motor rated current. •Motor stalling or load sudden change too great.	•Increase grid input voltage. •Reset the motor rated current in the motor parameter group. •Check the load and adjust the torque boost value.
OL2	E12	VFD overload	•ACC too fast. •Motor restarted during rotating. •Grid voltage too low. •Load too heavy. •VFD power too small.	•Increase ACC time. •Avoid restart upon stop or enable speed tracking start. •Increase grid input voltage. •Select a VFD with larger power.
SPI	E13	Input phase loss	•R/S/T input phase loss or violent fluctuation. •Input-side screws are loose.	•Check for abnormal input power and loose input cables. •Set parameters to screen out the fault.
SPO	E14	Output phase loss	•Output cables broken or short connected to the ground. •U/V/W output phase loss or seriously asymmetrical 3PH loads.	•Check for loose or broken output cables. •Check for sharp load fluctuation and motor 3PH resistance imbalance.
OH2	E16	Inverter module overheat	•Air duct blocked or fan damaged. •Ambient temperature too high.	•Ventilate the air duct or replace the fan. •Keep good ventilation to lower ambient temperature.

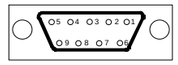
Fault code display		Fault type	Possible cause	Solution
			•Long-time overload running.	•Select a VFD with larger power.
CE	E18	RS485 communication fault	•Improper baud rate. •Communication line fault. •Incorrect communication address. •Communication suffers from strong interference.	•Set a proper baud rate. •Check the communication port wiring. •Set the communication address correctly. •Replace or change wiring to enhance anti-interference.
tE	E20	Motor autotuning fault	•Motor capacity and VFD capacity mismatched. •Improper motor parameter setting. •Autotuned parameter settings deviate sharply from the standard ones. •Autotuning timeout.	•Change the VFD model. •Set the motor type and nameplate parameters correctly. •Empty the motor load and re-perform autotuning. •Check motor wiring and parameter settings. •Check whether the upper limit frequency is greater than 2/3 of the rated frequency.
dEu	E34	Speed deviation fault	•Load too heavy or stalled.	•Check for overload, increase speed deviation detection time, or prolong ACC/DEC time. •Check motor parameter settings and re-perform motor parameter autotuning. •Check speed loop control parameter settings.
STo	E35	Mal-adjustment fault	•Load exception. •Incorrect SM parameter settings. •Autotuned motor parameters inaccurate. •VFD disconnected from the motor. •Flux weakening application.	•Check for overload or stalling. •Check motor parameter and counter EMF settings. •Re-perform motor parameter autotuning. •Increase maladjustment detection time. •Adjust flux weakening coefficient and current loop parameters.

7 Common communication cards and PG cards

7.1 Common communication cards

7.1.1 PROFIBUS-DP communication card (STX503)

It uses a 9-pin D-type connector, as shown in the following figure:



Connector pin		Description
1, 2, 7, 9	-	Unused
3	B-Line	Data+ (twisted pair 1)
4	RTS	Request sending
5	GND_BUS	Isolation ground
6	+5V BUS	Isolated power supply of 5 V DC
8	A-Line	Data- (twisted pair 2)
Housing	SHLD	PROFIBUS cable shielding line

7.1.2 CAN multi-protocol communication card (STX505C)

It uses European-style screw terminals.

Terminal symbol	Name	Description
PGND	Isolation ground	Isolation ground
PE	Shielded cable	CAN bus shield
CANH	CAN positive input	CAN bus high-level signal
CANL	CAN negative input	CAN bus low-level signal
CAN	CAN terminal resistor switch	OFF: No terminal resistor is connected between CAN_H and CAN_L.
		ON: A terminal resistor is connected between CAN_H and CAN_L.

Note: For this card, before power-on, set the DIP switch according to the protocol selection relationship to correspond to the actually used protocol.

DIP switch SW2		
1	2	Protocol
OFF	OFF	CANopen
ON	OFF	CAN master/slave

7.1.3 PROFINET communication card (STX509), Ethernet/IP communication card (STX510) and Modbus TCP communication card (STX515)

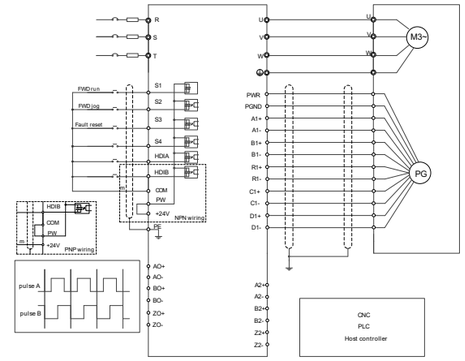
The communication cards use standard RJ45 interface, of which terminal signals are described as follows:

Pin	Name	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4, 5, 7, 8	n/c	Not connected
6	RX-	Receive Data-

7.2 Common PG cards

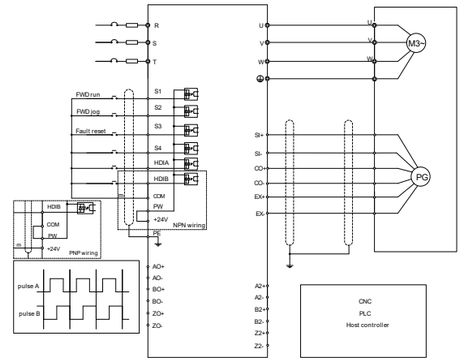
7.2.1 Sin/Cos PG card (SPG502)

External wiring when the PG card works with an encoder with CD signals:



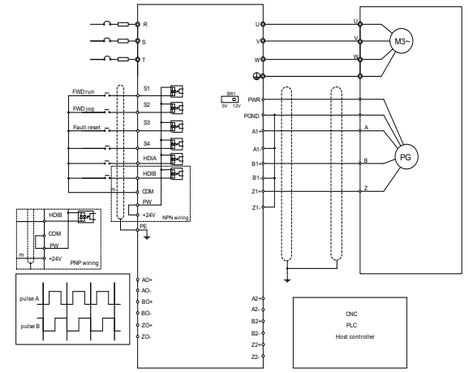
7.2.2 Resolver PG card (SPG504-00)

External wiring when SPG504-00 is used:

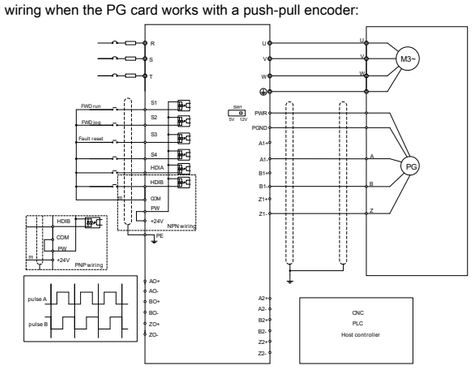


7.2.3 Multifunction incremental PG card (SPG505-12)

External wiring when the PG card works with an open collector encoder:



External wiring when the PG card works with a push-pull encoder:



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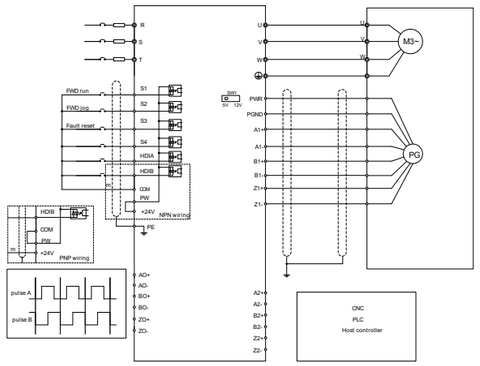
External wiring when the PG card works with a differential encoder:



Appendix A Energy efficiency data

Table A-1 Power loss and IE class

Model	Relative loss (%)								Standby loss (W)	IE class
	(0;25)	(0;50)	(0;100)	(50;25)	(50;50)	(50;100)	(90;50)	(90;100)		
ST600-1R5G/2R2P-3	1.54	1.50	1.67	1.12	1.04	1.45	0.91	1.45	3	IE2
ST600-2R2G/003P-3	2.21	2.58	3.22	2.37	2.73	3.46	2.76	3.34	5	IE2
ST600-004G/5R5P-3	1.13	1.40	2.05	1.14	1.43	2.14	1.41	2.28	6	IE2
ST600-5R5G/7R5P-3	1.09	1.47	2.43	1.12	1.53	2.56	1.52	2.64	11	IE2
ST600-7R5G/011P-3	1.06	1.37	2.06	1.11	1.45	2.45	1.46	2.69	7	IE2
ST600-011G/015P-3	0.61	0.84	1.55	0.61	1.04	1.97	0.99	2.16	9	IE2
ST600-015G/018P-3	0.42	0.52	1.27	0.55	0.73	1.46	0.78	1.66	9	IE2
ST600-018G/022P-3	0.54	0.74	1.22	0.77	1.03	1.70	0.96	1.65	11	IE2
ST600-022G/030P-3	0.47	0.67	1.21	0.67	0.90	1.54	0.87	1.38	11	IE2
ST600-030G/037P-3	0.53	0.71	1.24	0.72	0.90	1.45	0.85	1.50	13	IE2
ST600-037G/045P-3	0.47	0.69	1.39	0.63	0.88	1.60	0.99	1.72	14	IE2
ST600-045G/055P-3	0.49	0.69	1.39	0.78	1.00	1.64	0.97	1.66	21	IE2
ST600-055G/075P-3	0.51	0.69	1.26	0.71	0.89	1.47	0.88	1.40	22	IE2
ST600-075G/090P-3	0.44	0.61	1.12	0.51	0.69	1.29	0.76	1.42	22	IE2
ST600-090G/110P-3	0.42	0.59	1.15	0.47	0.65	1.29	0.90	1.48	25	IE2
ST600-110G/132P-3	0.43	0.63	1.30	0.48	0.75	1.64	0.80	1.78	28	IE2
ST600-132G/160P-3	0.47	0.59	1.06	0.61	0.71	1.28	0.85	1.43	55	IE2
ST600-160G/185P-3	0.59	0.71	1.36	1.22	0.97	1.87	1.00	1.84	55	IE2
ST600-185G/200P-3	0.63	0.76	1.21	1.17	1.12	1.70	1.08	1.61	55	IE2
ST600-200G/220P-3	0.53	0.71	1.42	0.74	0.94	1.81	1.00	1.84	55	IE2
ST600-220G/250P-3	0.33	0.42	0.69	0.85	0.95	1.33	1.10	1.18	80	IE2
ST600-250G/280P-3	0.38	0.59	1.22	0.65	0.92	1.67	0.93	1.74	80	IE2
ST600-280G/315P-3	0.40	0.59	1.10	0.64	0.89	1.58	1.12	1.35	80	IE2
ST600-315G/355P-3	0.56	0.35	0.79	0.94	0.94	1.63	1.36	2.22	80	IE2
ST600-355G/400P-3	0.37	0.47	0.98	0.91	1.11	1.95	1.42	2.44	80	IE2
ST600-400G/450P-3	0.17	0.26	0.42	0.28	0.41	0.74	0.47	0.92	80	IE2
ST600-450G/500P-3	0.31	0.54	0.98	0.46	0.62	1.02	0.67	0.85	80	IE2
ST600-500G-3	0.32	0.55	0.98	0.45	0.61	1.02	0.66	0.83	80	IE2

Table A-2 Rated specifications

Model	Apparent power (kVA)	Rated output power (kW)	Rated output current (A)	Max. working temperature (°C)	Rated input frequency (Hz)	Rated input voltage (V)
ST600-1R5G/2R2P-3	2.4	1.5	3.7	50°C Derate by 1% for every increase of 1°C when the temperature exceeds 40°C.	50Hz/60Hz Allowed range: 47–63Hz	3PH 380V
ST600-2R2G/003P-3	3.2	2.2	5			
ST600-004G/5R5P-3	6.2	4	9.5			
ST600-5R5G/7R5P-3	9.2	5.5	14			
ST600-7R5G/011P-3	12.1	7.5	18.5			
ST600-011G/015P-3	16.4	11	25			
ST600-015G/018P-3	21.0	15	32			
ST600-018G/022P-3	25.0	18.5	38			
ST600-022G/030P-3	29.6	22	45			
ST600-030G/037P-3	39.4	30	60			
ST600-037G/045P-3	49.3	37	75			
ST600-045G/055P-3	60.5	45	92			
ST600-055G/075P-3	75.6	55	115			
ST600-075G/090P-3	98.7	75	150			
ST600-090G/110P-3	118.4	90	180			
ST600-110G/132P-3	141.5	110	215			
ST600-132G/160P-3	171.1	132	260			
ST600-160G/185P-3	200.7	160	305			
ST600-185G/200P-3	223.7	185	340			
ST600-200G/220P-3	250.1	200	380			
ST600-220G/250P-3	279.7	220	425			
ST600-250G/280P-3	315.9	250	480			
ST600-280G/315P-3	348.8	280	530			
ST600-315G/355P-3	394.9	315	600			
ST600-355G/400P-3	427.8	355	650			
ST600-400G/450P-3	473.8	400	720			
ST600-450G/500P-3	539.7	450	820			
ST600-500G-3	566.0	500	860			