英威腾低压通用变频器快速使用指南

本指南简要介绍了英威腾低压通用变频器（包括GD10/GD20/GD30/GD100/GD200A/GD270等系列）的外围接线、端子、键盘、快速运行、常用功能参数设置、常见故障及对策。

扫描二维码，查阅对应系列产品完整版电子说明书。

按打服务热线400-700-9997或访问www.invt.com.cn获取更多信息及资源下载。保修条款详见完整版电子说明书。

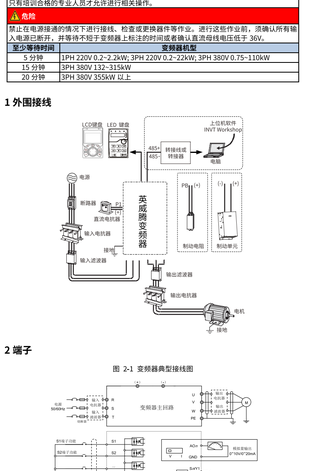
⚠ 警告

本指南仅包含基本的安装调试信息。若不遵守相关文档中的安全说明和安装调试说明，可能导致设备损坏、人身伤害、甚至人民死亡等事故。
只有经调试合格的专业人员才允许进行相关操作。

⚠ 危险

禁止在电源接通的情况下进行接线，检查或更换器件等作业。进行这些作业前，须确认所有输入电源已断开，并等待不短于变频器上标注的时间或者确认直流母线电压低于36V。

1 外围接线



2 端子

图 2-1 变频器典型接线图

表 2-1 变频器端子说明

端子	说明
主回路端子	
R, S, T（或 L, N）	三相（或单相）交流输入端子，与电网连接
U, V, W	三相（或单相）交流输出端子，一般接电机
P1	P1，(+) 外接直流电抗器端子
(+)	(+)，(-) 外接制动单元端子/共直流母线端子
PB	PB，(+) 外接制动电阻端子
⏚	接地端子，每台机器 PE 端子必须可靠接地
控制回路端子	
+10V	本机提供 10V 电源
AI1	模拟量输入，默认为电压输入，可通过跳线帽/键码开关/参数设置为电流输入
GND	+10V 的参考地
AO1	模拟量输出；范围：0-10V 电压或 0-20mA 电流
RO1A	继电器输出：RO1A 常开，RO1B 常闭，RO1C 公共端
RO1B	触点容量：3A/AC 250V，1A/DC 30V
RO1C	
HDO	开关容量：50mA/30V；输出频率范围：0~50kHz
COM	+24V 的参考地
CME	开路集电极输出的公共端，出厂时与 COM 短接
Y1~Y7n	开关容量：50mA/30V；输出频率范围：0~1kHz
485+	485 差分信号通讯端口，标准 485 通讯接口请使用屏蔽双绞线，485 通讯的 120Ω 终端匹配电阻通过跳线开关或跳线选择接入
485-	
PE	接地端子
PW	开关量的外部电源输入端子。NPN 模式下，将 PW 与+24V 短接；PNP 模式下，将 PW 与 COM 短接
+24V	变频器提供用户电源，最大输出电流 200mA
S1~S7n	开关量输入 内部阻抗：3.3kΩ 可接受 12~30V 电压输入 双向输入端子，支持 NPN 和 PNP 接法 最大输入频率：1kHz 可编程数字量输入端子，用户可通过功能码设定端子功能
HDIA	除具有开关量输入功能外，还可作为高频脉冲输入通道 最大输入频率：50kHz 占空比：30%~70%
HDIB	同时具备 HDIA 和 HDIB 支持正交编码器输入，具有测速功能
+24V—H1	安全转矩停止（STO）输入 STO 冗余输入，外接常闭触点，触点断开时 STO 动作，变频器停止输出 安全输入信号线使用屏蔽线，接线长度控制在 25 米以内
+24V—H2	出厂时 H1、H2 均与+24V 短接，使用 STO 功能时需将端子上的短接片拆除

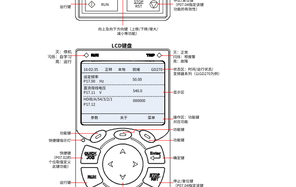
注意：

n 为自然数。

不同系列产品端子可能存在差异，详细端子接线示意图参见对应系列产品完整版电子说明书。

3 键盘

不同系列产品标配键盘可能存在差异；若产品支持，还可根据需要选配 LCD 键盘。


LED键盘
LED键盘显示灯说明
LED显示
单位指示灯
数值指示灯
状态指示灯
RUN
LOCR
TUNE
TRIP
PRG
ESC
DATA
ENTER
QUICK
SHIFT
RUN
STOP
RESET
多功能快速接口
RS485通讯接口
LCD键盘
LCD键盘显示区域
菜单路径
数值/状态
单位
参数
设定值
监视值
故障代码
故障类型
当前频率
50.30
设定频率
50.00
母线电压
540.0
输出电压
380
P27.13 Y
P27.12 Y
参数
属性
菜单
数值
QUICK
SHIFT
RUN
STOP
RESET
ENTER
快捷键
多功能快速接口
RS485通讯接口
外形尺寸：长度/宽度/高度
安装尺寸：孔位/孔径
安装方式：螺钉/卡扣
键盘开孔尺寸
键盘线长度
键盘线缆
键盘线缆接口
键盘线缆接口
键盘线缆接口

INVT Low-Voltage General-Purpose VFD

Quick Start Guide

This guide briefly describes the external wiring, terminals, keypads, quick running, common function parameter settings, and common faults and solutions of INVT low-voltage general-purpose variable-frequency drives (including GD10/GD20/GD30/GD100/GD200A/GD270).

Visit www.invt.com for more information and source download.

Scan the QR code to view the full version of corresponding product e-manual.

⚠ 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 that 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	1PH 220V 0.2~2.2kW; 3PH 220V 0.2~22kW; 3PH 380V 0.75~110kW
15 minutes	3PH 380V 132~315kW
20 minutes	3PH 380V >355kW

1 External wiring

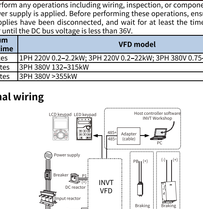


Table 2-1 VFD terminal description

Terminal	Description
Main circuit terminal	
R, S, T (or L, N)	3PH (or 1PH) AC input terminals, connected to the grid
U, V, W	3PH (or 1PH) AC output terminals, connected to the motor signal

Terminal	Description
P1	P1 and (+) connect to external DC reactor terminals.
(+)	(+) and (-) connect to external braking unit terminals or shared DC bus terminals.
(-)	
PB	PB and (+) connect to external braking resistor terminals.
⏚	PE terminal. The PE terminals of each machine must be grounded reliably.
Control circuit terminals	
+10V	Locally provided 10V power supply
AI1n	Analog input. The default input type is voltage, which can be changed through the related jumper cap, DIP switch, or parameter.
GND	Reference ground of +10V
AO1n	Analog output. Range: 0~10V or 0~20mA
RO1nA	Relay output. RO1nA: NO; RO1nB: NC; RO1nC: common
RO1nB	Contact capacity: 3A/AC 250V, 1A/DC 30V
RO1nC	
HDO	Switch capacity: 50mA/30V. Output frequency range: 0~50kHz
COM	Reference ground of +24V
CME	Common terminal of open collector output; short connected to COM by default
Y1~Y7n	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
HDIA	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
HDIB	Programmable digital input terminals, the functions of which can be set through the related parameters Channels for both high-frequency pulse input and digital input Max. input frequency: 50kHz Duty ratio: 30%~70%
+24V—H1	Support for quadrature encoder input when both HDIA and HDIB are available, with the speed measurement function 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	
S1~Sn	

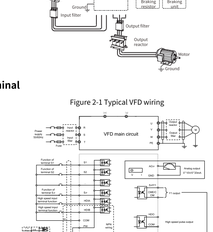
Note:
n is a natural number.
The terminals of different series may be different. For detailed terminal wiring, see the full version of corresponding product e-manual.

3 Keypad

The keypad may vary depending on the product. Some products may support optional LCD keypads.

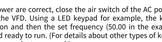
2 Terminal

Figure 2-1 Typical VFD wiring

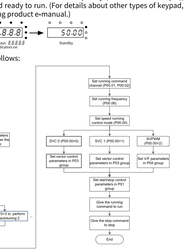


4.2 Operating upon first power-on

After confirming the wiring and power are correct, close the air switch of the AC power at the VFD input side to power on the VFD. Using a LED keypad for example, the keypad displays 8.8.8.8.8. upon power-on and then the set frequency (50.00 in the example), indicating the VFD is initialized and ready to run. (For details about other types of keypad, see the full version of corresponding product e-manual.)



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 depending on the product. For details, see the full version of corresponding product e-manual.

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	Model depended	○
P00.01	Channel of of running commands	0: Keypad 1: Terminal 2: Communication	0	○
P00.03	Max. output frequency	P00.04~400.00Hz	50.00Hz	○
P00.04	Upper limit of output 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	A frequency command	0: Keypad 1: AI1 (Corresponding to the keypad potentiometer) 2: AI2 (Corresponding to the AI terminal) 3: AI3	0	○
P00.07	Setting channel of B frequency command	4: High-speed pulse HDI 5: Simple PLC program 6: Multi-step speed running 7: PID control 8: Modbus communication	2	○
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	○
P00.15	Motor parameter autotuning	0: No operation 1: Rotary autotuning 2: Static autotuning 1 3: Static autotuning 2	0	○
P00.18	Function parameter restore	0: No operation 1: Restore default values 2: Clear fault records 3: Lock all function codes	0	○
P01.00	Start mode	0: Direct start 1: Start after DC braking 2: Start after speed tracking	0	○

Function code	Name	Description	Default	Modify
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%	0.00%	○
P01.12	Coast to stop time for stop	0.00~50.00s	0.00s	○
P01.18	Terminal-based running command protection at power-on	0: The terminal running command is invalid at power-on 1: The terminal running command is 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: Torque control is invalid 1: Keypad (P03.12) 2: AI2 3: AI3 5: Pulse frequency HDI 6: Multi-step torque 7: Modbus communication **Note:** A non-zero value indicates the torque control mode is used.	0	○
P03.12	Keypad-based torque set-point	0.0%~300.0% (Automatic torque boost), 0.1%~10.0%	50.0%	○
P03.13	Torque boost of motor 1	0.0~200.0%	100.0%	○
P04.00	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	○
P04.11	High-frequency oscillation control factor of motor 1	0~100	10	○
P05.01	Function of S1	0: No function	1	○
P05.02	Function of S2	1: Run forward	4	○
P05.03	Function of S3	2: Run reversely	7	○
P05.04	Function of S4	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)	0	○
P05.37	AI2 lower limit	0.00V~P05.39	0.00V	○
P05.39	AI2 upper limit	P05.37~10.00V	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	1	○
P06.03~P06.04	Relay output	0: Running frequency 1: Set frequency 2: Rotation speed (Relative to twice the motor synchronous rotation speed) 4: Output current (Relative to twice the VFD	0 0	○ ○
P06.14~P06.15	Analog output		0 0	○ ○
P06.16	HDO high-speed pulse output		0	○

Function code	Name	Description	Default	Modify
		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)		
P06.17~P06.26	AO output upper/lower limit settings	For details, see the full version of corresponding product e-manual.		○
P07.00	User password	0~65535	0	○
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	○

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
OU11	E1	Inverter unit U-phase protection	• ACC/DEC too fast. IGBT module damaged. • Motor short-circuited by interference. • Drive wires poorly connected.
OU12	E2	Inverter unit V-phase protection	• To ground short circuit occurred. • Sparks occurred inside the equipment. The environment conditions.
OU13	E3	Inverter unit W-phase protection	• Increase ACC/DEC time. • Increase grid input voltage. • Select a VFD with larger power.
OC1	E4	Overcurrent during ACC	• ACC/DEC too fast. • Grid voltage too low.
OC2	E5	Overcurrent during DEC	• VFD power too small. • Load sudden change occurred.
OC3	E6	Overcurrent mode during constant speed running	• 3PH output current imbalance. • Strong external interference sources (contactor switch/over or improper grounding).
OV1	E7	Overvoltage during ACC	• ACC/DEC time too short.
OV2	E8	Overvoltage during DEC	• Abnormal input voltage.
OV3	E9	Overvoltage during constant speed running	• Motor started during rotating. • Load energy regeneration too large. • Dynamic braking disabled.
UV	E10	Bus undervoltage fault	• Grid voltage too low. • Abnormal voltage display. • Abnormal buffer contactor closing.
OL1	E11	Motor overload	• Grid voltage too low. • Incorrect motor rated current. • Motor stalling or load sudden change too great. • ACC too fast. • Motor restarted during rotating. • Grid voltage too low. • Load too heavy. • VFD power too small.
OL2	E12	VFD overload	• R/S/T input phase loss or violent fluctuation. • Input-side screws loosened.
SPI	E13	Input phase loss	• Check for abnormal input power and loose input cables.
SPO	E14	Output phase loss	• Set parameters to screen out the fault. • Check for loose or broken output cables. • Check for sharp load fluctuation and motor 3PH resistance imbalance.
OH2	E16	Inverter module overheat	• Ventilate the air duct or replace the fan. • Keep good ventilation to lower

Fault code display	Fault type	Possible cause	Solution
CE	E18	RS485 communication fault	ambient temperature. • Select a VFD with larger power.
tE	E20	Motor autotuning fault	• Set a proper baud rate. • Check the communication port cable. • Set the communication address correctly. • Replace or change wiring to enhance anti-interference.
dEu	E34	Speed deviation fault	• 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. • Check for overload, increase speed detection detection time, or prolong ACC/DEC time.
STo	E35	Maladjustment fault	• Check motor parameter settings and re-perform motor parameter autotuning. • Check speed loop control parameter settings. • 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.

Appendix A Energy efficiency data

Table A-1 Power losses 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)	
GD10-0P2G-S2-B	2.75	2.78	3.11	2.42	2.46	2.78	1.27	1.90	4
GD10-0P4G-S2-B	2.30	2.31	2.65	2.23	2.25	2.70	1.81	2.47	4
GD10-0P7G-S2-B	0.60	1.17	1.87	1.44	1.03	1.38	1.47	1.32	7
GD10-1P5G-S2-B	0.99	1.05	1.77	0.76	0.96	1.28	0.93	2.01	5
GD10-2R2G-S2-B	1.05	1.35	2.00	1.05	1.35	2.17	1.36	2.49	8
GD10-0R2G-2-B	2.98	3.01	3.33	2.56	2.61	2.92	1.62	1.83	4
GD10-0R4G-2-B	2.41	2.41	2.72	2.09	1.99	2.36	1.57	1.84	6
GD10-0R7G-2-B	1.22	1.18	1.79	1.04	0.99	1.72	0.79	1.78	4
GD10-1R5G-2-B	0.95	1.02	1.69	0.59	0.98	1.42	0.67	1.30	5
GD10-2R2G-2-B	0.94	1.16	1.66	0.83	1.20	1.71	1.18	1.63	8
GD10-0R7G-4-B	2.25	2.08	2.61	1.80	1.52	2.29	0.94	1.68	7
GD10-1R5G-4-B	1.09	1.36	1.97	0.62	0.97	1.62	0.66	1.48	7
GD10-2R2G-4-B	0.95	1.33	1.69	0.72	0.98	1.50	0.66	1.10	8
GD20-0P4G-S2	2.11	2.13	2.56	2.00	1.73	2.21	1.26	2.17	5
GD20-0P7G-S2	1.47	1.70	2.44	1.43	1.19	2.24	0.79	2.42	7
GD20-1R5G-S2	1.23	1.56	2.32	0.97	1.34	2.05	0.99	2.74	8
GD20-2R2G-S2	1.12	1.35	1.94	1.35	1.61	1.83	1.22	4.13	8
GD20-0R4G-2	2.41	2.45	2.94	1.97	2.01	2.26	1.15	1.41	6
GD20-0R7G-2	1.55	1.83	2.65	0.80	1.45	2.36	1.03	2.01	6
GD20-1R5G-2	1.10	1.48	2.22	1.14	1.62	2.69	1.27	2.89	7
GD20-3R2G-2	1.15	1.51	2.11	1.15	1.79	2.56	1.32	2.26	7
GD20-0R7G-4	1.88	2.17	2.69	2.15	2.25	3.09	1.64	2.57	7
GD20-1R5G-4	1.31	1.56	2.10	1.03	1.37	2.09	1.19	2.19	7
GD20-3R2G-4	1.32	1.55	2.36	1.36	1.78	2.37	1.21	2.62	8
GD20-0R4G-L	1.02	1.26	1.73	1.10	1.43	1.83	1.28	2.25	9
GD20-5R5G-4	1.01	1.16	2.05	1.09	1.45	2.41	1.34	2.80	9
GD20-7R5G-4	0.61	1.14	1.52	0.71	0.89	1.29	0.76	1.42	9
GD20-011G-4	0.61	0.84	1.55	0.61	1.04	1.97	0.99	2.16	6
GD20-015G-4	0.42	0.52	1.27	0.55	0.73	1.46	0.78	1.66	7
GD20-018G-4	0.54	0.74	1.22	0.77	1.03	1.70	0.96	1.65	11
GD20-022G-4	0.47	0.67	1.21	0.67	0.90	1.54	0.87	1.38	11
GD20-030G-4	0.53	0.72	0.71	0.71	0.90	0.85	1.45	1.50	13
GD20-037G-4	0.47	0.69	1.39	0.63	0.88	1.66	0.99	1.72	14
GD20-045G-4	0.49	0.69	1.39	0.78	1.00	1.64	0.97	1.66	21
GD20-055G-4	0.51	0.69	1.20	0.71	0.89	1.47	0.88	1.40	22
GD20-055G-4-B	0.51	0.69	1.26	0.71	0.89	1.47	0.88	1.40	22
GD20-075G-4	0.44	0.61	1.12	0.51	0.69	1.29	0.76	1.42	22
GD20-090G-4	0.42	0.59	1.15	0.47	0.65	1.29	0.90	1.48	25
GD20-090G-4-B	0.42	0.59	1.15	0.47	0.65	1.29	0.90	1.48	25
GD20-110G-4	0.43	0.63	1.30	0.48	0.75	1.64	0.80	1.78	28
GD20-110G-4-B	0.43	0.63	1.30	0.48	0.75	1.64	0.80	1.78	28
GD20A-0R7G-4	1.73	1.71	2.39	1.03	0.76	1.55	0.39	1.19	3
GD20A-1R5G-4	1.52	1.49	1.81	1.06	1.00	1.76	0.84	1.86	3
GD20A-2R2G-4	1.21	2.36	2.15	0.81	1.03	1.51	0.87	1.49	5
GD20A-0R4G/5R9P-4	1.17	1.44	1.96	0.99	1.17	1.65	1.17	1.80	6

Model	Relative loss (%)							Standby loss (W)	IE class
	(0,25)	(0,50)	(0,100)	(50,25)	(50,50)	(50,100)	(90,50)	(90,100)	
GD200A-5R5G/7R5P-4	0.91	1.16	1.99	0.74	1.00	1.68	1.01	1.85	6
GD200A-7R5G/011P-4	0.77	1.05	1.86	0.69	0.93	1.56	0.96	1.69	7
GD200A-011G/015P-4	0.69	0.76	1.65	0.59	0.87	1.43	0.79	1.67	9
GD200A-015G/018P-4	0.60	0.72	1.42	0.66	0.69	1.26	0.73	1.40	9
GD200A-018G/022P-4	0.47	0.68	1.34	0.57	0.70	1.25	0.77	1.35	12
GD200A-022G/030P-4	0.53	0.71	0.69	0.52	0.66	1.08	0.66	1.24	12
GD200A-030G/037P-4	0.51	0.82	1.39	0.46	1.25	1.63	1.16	1.56	20
GD200A-037G/045P-4	0.41	0.65	1.03	0.51	0.65	1.12	0.68	1.25	27
GD200A-045G/055P-4	0.39	0.55	0.94	0.51	0.61	0.85	0.82	1.08	27
GD200A-055G/075P-4	0.43	0.67	0.97	0.58	0.77	1.24	0.82	1.22	33
GD200A-075G/090P-4	0.40	0.54	0.97	0.48	0.60	1.09	0.63	1.02	33
GD200A-090G/110P-4	0.42	0.55	0.49	0.49	0.61	1.16	0.65	0.78	33
GD200A-110G/132P-4	0.44	0.71	1.12	0.57	0.99	1.54	1.19	2.04	37
GD200A-132G/160P-4	0.47	0.59	1.06	0.61	0.71	1.28	0.85	1.43	55
GD200A-160G/185P-4	0.39	0.71	1.36	1.22	0.97	1.87	1.00	1.84	55
GD200A-185G/200P-4	0.62	0.76	1.21	1.17	1.12	1.70	1.08	1.61	55
GD200A-200G/220P-4	0.53	0.71	1.41	0.74	0.94	1.81	1.00	1.84	55
GD200A-220G/250P-4	0.33	0.42	0.69	0.85	0.95	1.33	1.10	1.18	80
GD200A-250G/280P-4	0.38	0.59	1.22	0.65	0.92	1.67	0.93	1.74	80
GD200A-280G/315P-4	0.40	0.59	1.10	0.64	0.89	1.58	1.12	1.35	80
GD200A-315G/350P-4	0.35	0.78	0.94	0.44	1.43	1.36	1.22	1.80	80
GD200A-355G/400P-4	0.37	0.47	0.98	0.91	1.13	1.95	1.42	2.44	80
GD200A-400G-4	0.17	0.26	0.42	0.28	0.41	0.74	0.47	0.92	80
GD200A-450G-4	0.31	0.54	0.98	0.46	0.62	1.02	0.67	0.85	80
GD200A-500G-4	0.32	0.55	0.98	0.45	0.61	1.02	0.66	0.83	80
GD200A-630G-4	0.23	0.37	0.66	0.61	0.79	0.82	1.52	1.80	80
GD270-1R5-4	0.78	0.95	1.03	0.86	1.17	1.23	1.35	2.02	13
GD270-2R2-4	0.82	0.76	0.55	1.09	1.11	1.07	1.59	1.76	17
GD270-004-4	0.74	1.20	1.55	1.15	1.28	1.89	1.45	2.29	17
GD270-5R5-4	0.71	0.97	1.32	1.02	1.21	1.83	1.34	2.18	17
GD270-7R5-4	0.68	0.78	1.75	0.76	1.03	1.79	1.22	2.06	20
GD270-011-4(L1)	0.65	0.89	1.62	0.66	1.07	1.38	1.42	2.14	37
GD270-015-4(L1)	0.96	1.30	2.26	0.74	0.90	1.43	0.87	1.49	27
GD270-018-4(L1)	0.72	0.95	1.57	1.20	1.46	2.17	1.47	2.26	30
GD270-022-4(L1)	0.67	0.87	1.04	1.07	1.29	1.27	1.27	2.04	30
GD270-030-4(L1/C3)	0.71	0.98	1.76	1.22	1.89	2.42	2.17	2.83	30
GD270-037-4(L1/C3)	0.67	0.85	1.60	1.09	1.75	2.37	1.91	2.73	30
GD270-045-4(L1/C3)	0.47	0.62	1.14	1.09	1.27	1.92	1.52	2.02	30
GD270-055-4(L1/C3)	0.42	0.69	1.04	0.98	1.19	1.72	1.45	1.88	31
GD270-075-4(L1/C3)	0.52	0.80	1.35	1.06	1.42	2.10	1.67	2.23	32
GD270-090-4(L1/C3)	0.40	0.72	1.29	0.93	1.31	1.98	1.58	2.11	32
GD270-110-4(L1/C3)	0.42	0.69	1.20	0.64	0.98	1.67	1.27	1.72	33
GD270-132-4(L1/C3)	0.50	0.65	1.28	0.97	1.12	1.74	1.22	1.85	35
GD270-160-4(-L)	0.61	1.01	1.52	1.37	1.37	2.02	1.42	2.14	37
GD270-185-4(-L)	0.56	0.95	1.45	1.13	1.19	1.88	1.37	2.07	37
GD270-200-4(-L)	0.48	0.81	1.33	0.99	1.08	1.78	1.28	1.99	38
GD270-220-4(-L)*	0.97	0.95	1.76	1.24	1.58	2.61	1.68	2.69	40
GD270-250-4(-L)*	0.65	0.91	1.86	1.33	1.72	2.79	1.73	2.85	42
GD270-280-4(-L)*	0.68	0.98	1.92	1.27	1.61	2.54	1.62	2.69	48
GD270-315-4(-L)*	0.66	0.94	1.19	1.49	1.45	2.41	1.51	2.31	48
GD270-355-4(-L)*	0.72	1.01	1.87	1.11	1.37	2.30	1.47	2.47	52
GD270-400-4(-L)*	0.75	0.82	1.64	1.14	1.38	2.25	1.43	2.31	55
GD270-450-4(-L)*	0.75	0.89	1.52	1.08	1.27	2.16	1.37	2.23	58
GD270-500-4(-L)*	0.73	0.78	1.40	0.90	1.10	1.90	1.25	2.16	60

Table A-2 Rated specifications

Model	Apparent power (kVA)	Rated output power (kW)	Rated output current (A)	Max. working temperature (°C)	Rated power frequency (Hz)	Rated power voltage (V)
GD10-0R2G-S2-B	0.61	0.2	1.6	50°C Derate by 1% for every increase of 1°C when the temperature exceeds 40°C.	50Hz/60Hz Allowed range: 47~63Hz	1PH 220V
GD10-0R4G-S2-B	0.95	0.4	2.5			
GD10-0R7G-S2-B	1.60	0.75	4.2			
GD10-1R5G-S2-B	2.86	1.5	7.5			
GD10-2R2G-S2-B	3.81	2.2	10			
GD10-0R2G-2-B	0.61	0.2	1.6			3PH 220V
GD10-0R4G-2-B	0.95	0.4	2.5			
GD10-0R7G-2-B	1.60	0.75	4.2			
GD10-1R5G-2-B	2.86	1.5	7.5			
GD10-2R2G-2-B	3.81	2.2	10			
GD10-0R7G-4-B	1.64	0.75	2.5			3PH 380V
GD10-1R5G-4-B	2.76	1.5	4.2			
GD10-2R2G-4-B	3.62	2.2	5.5			
GD20-0R4G-S2	0.9	0.4	2.5	50°C Derate by 1% for every increase of 1°C when the temperature exceeds 40°C.	50Hz/60Hz Allowed range: 47~63Hz	1PH 220V
GD20-0R7G-S2	1.6	0.75	4.2			
GD20-1R5G-S2	2.8	1.5	7.5			
GD20-2R2G-S2	3.8	2.2	10			
GD20-0R4G-2	6.1	4	16			3PH 220V
GD20-5R5G-2	7.6	5.5	20			
GD20-7R5G-2	11.4