

Preface

Overview

Thank you for purchasing INVT Goodrive270 series variable-frequency drive (VFD). If not otherwise specified, the VFD mentioned in this manual refers to Goodrive270 series VFD). This manual is a supplement introduction to the GD270 1.5–132kW built-in filter models. Please refer to the GD270 standard manual for details.

Readers

Personnel with electrical professional knowledge (such as qualified electrical engineers or personnel with equivalent knowledge).

Change history

The manual is subject to change irregularly without prior notice due to product version upgrades or other reasons.

No.	Change description	Version	Release date
1	First release.	V1.0	November 2022

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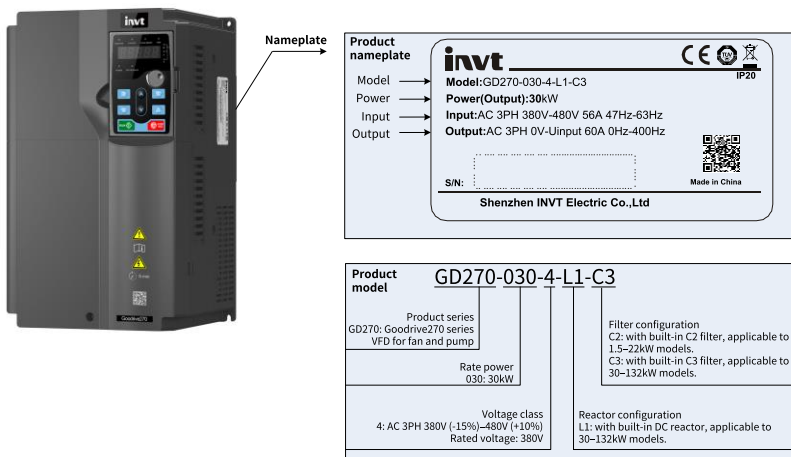
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1 Product overview

1.1 Product nameplate and model

Each VFD is affixed with a nameplate containing the basic product information and, depending on the actual certification, certification marks such as the CE mark.



1.2 Product specifications

Item		Specifications
Input	Input voltage (V)	AC 3PH 380–480V. Rated voltage: 380V
	Allowable voltage transient fluctuation	-15%~+10%
	Input current (A)	See section "1.3" Product ratings .
	Input frequency (Hz)	50Hz or 60Hz; Allowed range: 47–63Hz
	Short-circuit capacity	According to the definition in IEC 61439-1, the maximum allowable short-circuit current at the incoming end is 100 kA. Therefore, the VFD is applicable to scenarios where the transmitted current in the circuit is no larger than 100 kA when the VFD runs at the maximum rated voltage.
Output	Output voltage (V)	0–Input voltage (V)
	Output current (A)	See section "1.3" Product ratings .
	Output power (kW)	See section "1.3" Product ratings .
	Output frequency (Hz)	0–400Hz

Item		Specifications
Control performance	Control mode	Space voltage vector control, and sensorless vector control (SVC)
	Motor	Motor type: Asynchronous induction motor or permanent-magnet synchronous motor Voltage: 0–U ₁ (motor rated voltage), 3PH symmetrical, U _{max} (VFD rated voltage) at the field-weakening point Circuit protection: The motor output short-circuit protection meets the requirements of IEC 61800-5-1. Frequency: 0–400Hz, frequency resolution: 0.01Hz Field-weakening point: 10–400Hz Carrier frequency: 1–15kHz
	Speed ratio	For asynchronous motor (AM): 1:200 (SVC) For synchronous motor (SM): 1:20 (SVC)
	Speed control accuracy	±0.2% (SVC)
	Speed fluctuation	±0.3% (SVC)
	Torque response	<20ms (SVC)
	Torque control accuracy	±10% (SVC)
	Overload capacity	Able to run at 110% of rated current for 1min, and an overload allowed for every 5min.
Peripheral interface	Terminal analog input resolution	No more than 20mV
	Terminal digital input resolution	No more than 2ms
	Analog input	Two inputs. AI1: 0(2)–10V / 0(4)–20mA; AI2: -10 – +10V
	Analog output	Two outputs. AO0/AO1: 0(2)–10V/0(4)–20mA
	Digital input	Five regular inputs. Max. frequency: 1kHz; internal impedance: 3.3kΩ One high-speed input. Max. frequency: 50kHz
	Digital output	One Y terminal open collector output, sharing the terminal with S4. The function can be selected through a jumper.
	Relay output	One programmable relay output. RO1A: NO; RO1B: NC; RO1C: common Contact capacity: 3A/AC250V, 1A/DC30V
	Extended interfaces	Two extended interfaces: SLOT1 and SLOT2 Supporting communication expansion cards, I/O cards and so on

Item		Specifications
Environment requirements and standards	Mounting method	Supports wall-mounting and flange-mounting
	Temperature of running environment	-10–50°C Note: Derating is required when the ambient temperature exceeds 40°C.
	IP rating	IP20
	Pollution level	Level 2
	Cooling method	For 1.5kW: Natural air cooling For 2.2kW and higher: Forced air cooling
	Certification standard	CE/ROHS

1.3 Product ratings

VFD model	Output power (kW)	Input current (A)	Output current (A)	Full load power dissipation (W)
GD270-1R5-4-C2	1.5	5	3.7	42
GD270-2R2-4-C2	2.2	6	5	70
GD270-004-4-C2	4	15	9.5	125
GD270-5R5-4-C2	5.5	20	13	180
GD270-7R5-4-C2	7.5	27	17	220
GD270-011-4-C2	11	35	25	320
GD270-015-4-C2	15	44	32	385
GD270-018-4-C2	18	46	38	460
GD270-022-4-C2	22	54	45	520
GD270-030-4(-L1)-C3	30	75 (56)	60	768(674)
GD270-037-4(-L1)-C3	37	90 (69)	75	960(843)
GD270-045-4(-L1)-C3	45	108 (101)	92	1090(1050)
GD270-055-4(-L1)-C3	55	142 (117)	115	1330(1837)
GD270-075-4(-L1)-C3	75	177 (149)	150	1753(2400)
GD270-090-4(-L1)-C3	90	200 (171)	180	2880(2082)
GD270-110-4(-L1)-C3	110	240 (205)	215	2490 (2114)
GD270-132-4(-L1)-C3	132	278 (235)	250	2780 (2360)

Note: For models with built-in filters, only 30–132kW are available with additional optional built-in DC reactors.

1.4 Product package dimensions and weight

VFD model	Outline dimensions WxHxD (mm)	Package outline dimensions WxHxD (mm)	Standard weight (kg)	Gross weight (kg)
AC 3PH 380V(-15%)–480V(+10%)				
GD270-1R5-4-C2	89*231*193	285*160*260	2.4kg	2.7kg
GD270-2R2-4-C2	89*231*193	285*160*260	2.4kg	2.7kg
GD270-004-4-C2	89*231*193	285*160*260	2.4kg	2.7kg
GD270-5R5-4-C2	89*259*211.5	330*170*285	3kg	3.6kg
GD270-7R5-4-C2	89*259*211.5	330*170*285	3kg	3.6kg
GD270-011-4-C2	145*280*207	370*230*300	4.6kg	5.4kg
GD270-015-4-C2	145*280*207	370*230*300	4.6kg	5.4kg
GD270-018-4-C2	169*320*214	430*270*315	5.9kg	6.8kg
GD270-022-4-C2	169*320*214	430*270*315	5.9kg	6.8kg
GD270-030-4-C3	266*371*208	490*315*315	8kg	10kg
GD270-030-4-L1-C3	266*371*208	490*315*315	11kg	13kg
GD270-037-4-C3	266*371*208	490*315*315	8kg	10kg
GD270-037-4-L1-C3	266*371*208	490*315*315	11kg	13kg
GD270-045-4-C3	316*430*223	580*395*360	14kg	16kg
GD270-045-4-L1-C3	316*430*223	580*395*360	16kg	18kg
GD270-055-4-C3	352*580*258	695*440*410	18kg	21kg
GD270-055-4-L1-C3	352*580*258	695*440*410	24kg	27kg
GD270-075-4-C3	352*580*258	695*440*410	18kg	21kg
GD270-075-4-L1-C3	352*580*258	695*440*410	24kg	27kg
GD270-090-4-C3	352*580*258	695*440*410	18kg	21kg
GD270-090-4-L1-C3	352*580*258	695*440*410	24kg	27kg
GD270-110-4-C3	338*554*338.3	725*495*500	34kg	40kg
GD270-110-4-L1-C3	338*554*338.3	725*495*500	43kg	49kg
GD270-132-4-C3	338*554*338.3	725*495*500	34kg	40kg
GD270-132-4-L1-C3	338*554*338.3	725*495*500	43kg	49kg

2 EMC design

2.1 EMC compatibility design notes

The VFD supports the built-in and external filter solutions to meet IEC/EN 61800-3 Second environment (C3) and First environment (C2) EMC requirements. According to the 4kHz carrier frequency setting, the motor cable length requirements are as follows:

VFD power range	Supported motor cable length (unit: m)			
	Built-in		External	
	Second environment category C3	First environment category C2	Second environment category C3	First environment category C2
1.5~22kW	20	20	/	/
30~132kW	30	/	/	10

Note:

- The 1.5~22kW models are supplied only with the built-in C2 filters to meet both C3 and C2 EMC requirements.
- For details about the C3 and C2 EMC environment categories, see the standard manual.

2.2 EMC filter

Overview

For meeting the IEC/EN 61800-3 First environment (C2) EMC requirements in the power range of 30~132kW, you can choose the GD270 standard models and configure external SCHAFFNER FN3258/FN3359 series filters on them. Table 2-1 lists the filter model selection. For more details about the SCHAFFNER filters, please contact us.

Figure 2-1 SCHAFFNER FN3258 series filters



Figure 2-2 SCHAFFNER FN3359 series filters



Table 2-1 SCHAFFNER filter model selection (ambient temperature lower than 40°C)

Model	Rated power (kW)	Rated input current (A)	Filter model
GD270-030-4	30	75	FN 3258-75-34
GD270-037-4	37	90	FN 3258-100-35
GD270-045-4	45	108	FN 3258-100-35
GD270-055-4	55	142	FN 3258-130-35
GD270-075-4	75	177	FN 3258-180-40
GD270-090-4	90	200	FN 3258-180-40
GD270-110-4	110	240	FN 3359-250-28
GD270-132-4	132	278	FN 3359-320-99
GD270-030-4-L1	30	56	FN 3258-75-34
GD270-037-4-L1	37	69	FN 3258-75-34
GD270-045-4-L1	45	101	FN 3258-100-35
GD270-055-4-L1	55	117	FN 3258-130-35
GD270-075-4-L1	75	149	FN 3258-180-40
GD270-090-4-L1	90	171	FN 3258-180-40
GD270-110-4-L1	110	205	FN 3359-250-28
GD270-132-4-L1	132	235	FN 3359-250-28

Appendix A Product dimensions

A.1 Wall-mounting dimensions

Figure A-1 1.5–7.5kW VFD wall-mounting diagram

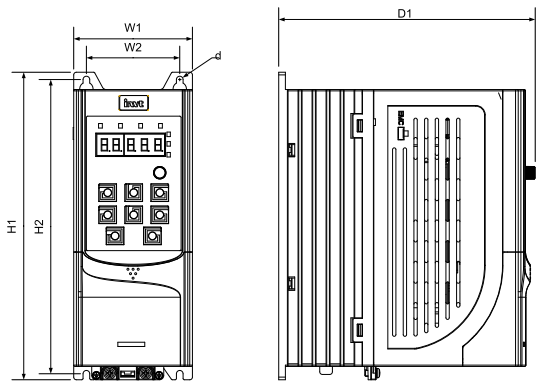


Figure A-2 11–45kW VFD wall-mounting diagram

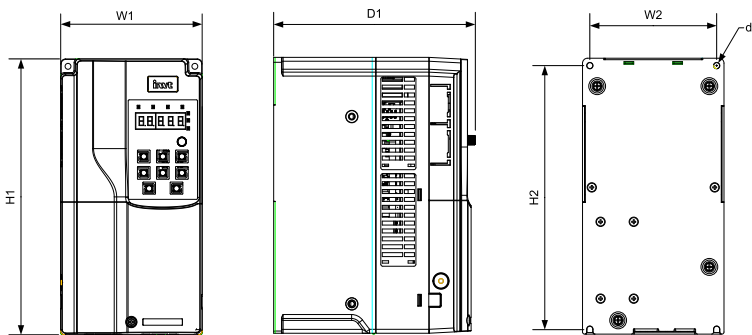


Table A-1 1.5–45kW VFD wall-mounting dimensions (unit: mm)

VFD model	Outline dimensions (mm)			Mounting hole distance (mm)			Hole diameter	Fixing screw
	W1	H1	D1	H2	W2	D2		
1.5–4kW	89	231	193	221	70	/	ø 5	M4
5.5–7.5kW	89	259	211.5	248	70	/	ø 6	M5
11–15kW	145	280	207	268	130	/	ø 6	M5
18.5–22kW	169	320	214	308	154	/	ø 6	M5
30–37kW	200	340.6	214	328.6	185	/	ø 6	M5
45kW	250	400	228	380	230	/	ø 6	M5

Figure A-3 380V 55–90kW VFD wall-mounting diagram

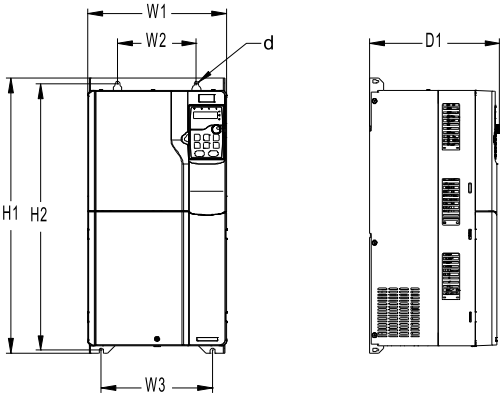


Figure A-4 380V 110–132kW VFD wall-mounting diagram

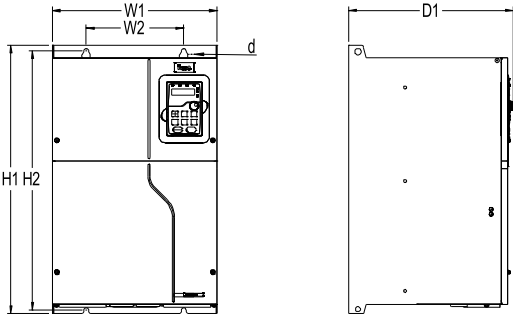


Table A-2 380V 55–132kW VFD wall-mounting dimensions (unit: mm)

VFD model	Outline dimensions (mm)			Mounting hole distance (mm)			Hole diameter	Fixing screw
	W1	H1	D1	H2	W2	W3		
55–90kW	282	560	263.7	542	160	226	ø 9	M8
110–132kW	338	554	338	534	200	/	ø 9.5	M8

A.2 Flange mounting dimensions

Figure A-5 380V 1.5–7.5kW VFD flange mounting diagram

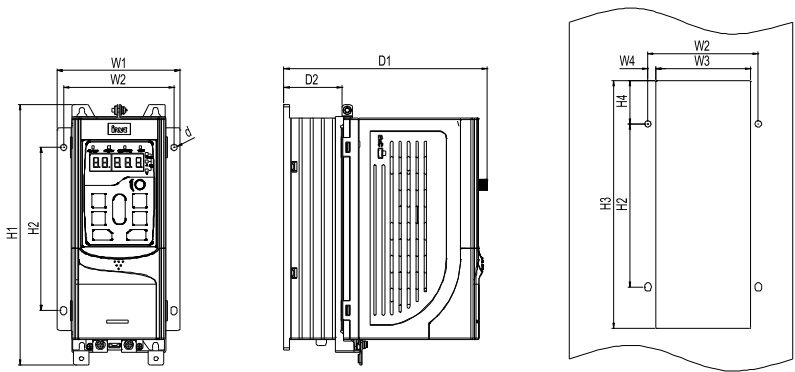


Table A-3 380V 1.5–7.5kW VFD flange mounting dimensions (unit: mm)

VFD model	Outline dimensions (mm)			Mounting hole distance (mm)								Hole diameter	Fixing screw
	W1	H1	D1	H2	H3	H4	W2	W3	W4	D2			
1.5–4kW	117	245	193	153.5	237	42.5	105	92.5	6.5	55		ø 6	M5
5.5–7.5kW	117	272.5	211.5	180	265	43	105	92.5	6.5	75		ø 6	M5

Figure A-6 380V 11–22kW VFD flange mounting diagram

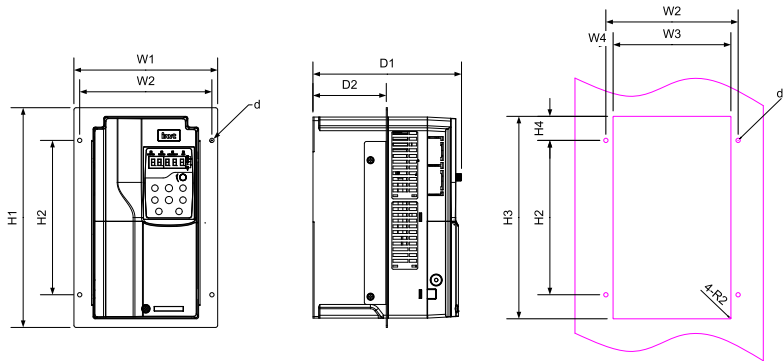


Figure A-7 380V 30–90kW VFD flange mounting diagram

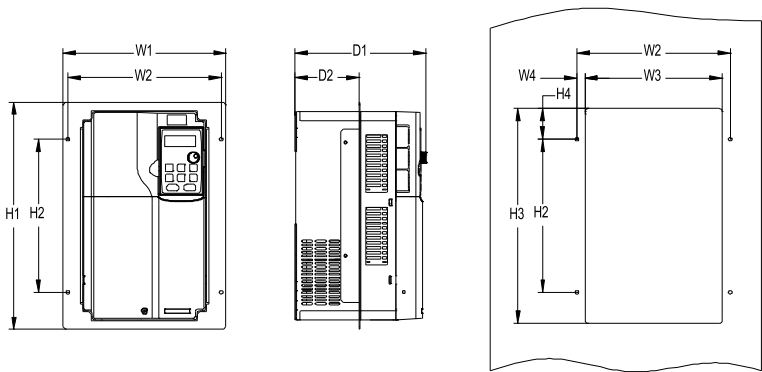


Figure A-8 380V 110–132kW VFD flange mounting diagram

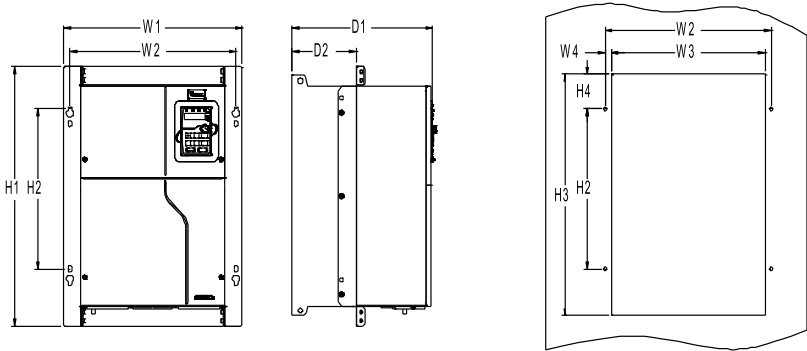


Table A-4 380V 11–132kW VFD flange mounting dimensions (unit: mm)

VFD model	Outline dimensions (mm)			Mounting hole distance (mm)							Hole diameter	Fixing screw
	W1	H1	D1	H2	H3	H4	W2	W3	W4	D2		
11~15kW	200	306	207	215	282	33.5	184	164	10	102	ø 6	M5
18.5~22kW	224	346	214	255	322	33.5	208	189	9.5	108	ø 6	M5
30~37kW	266	371	214	250	350.6	50.3	250	224	13	104	ø 6	M5
45kW	316	430	228	300	410	55	300	274	13	118.3	ø 6	M5
55~90kW	352	580	263.7	400	570	90	332	306	13	133.8	ø 9	M8
110~132kW	418.5	600	338	370	559	80.5	389.5	361	14.2	149.5	ø 10	M8

Appendix B Order number

Model	Order number
GD270-1R5-4-C2	90001-04045
GD270-2R2-4-C2	90001-04046
GD270-004-4-C2	90001-04047
GD270-5R5-4-C2	90001-04048
GD270-7R5-4-C2	90001-04049
GD270-011-4-C2	90001-04050
GD270-015-4-C2	90001-04051
GD270-018-4-C2	90001-04052
GD270-022-4-C2	90001-04053
GD270-030-4(-L1)-C3	90001-04054
GD270-037-4(-L1)-C3	90001-04055
GD270-045-4(-L1)-C3	90001-04056
GD270-055-4(-L1)-C3	90001-04057
GD270-075-4(-L1)-C3	90001-04058
GD270-090-4(-L1)-C3	90001-04059
GD270-110-4(-L1)-C3	90001-04060
GD270-132-4(-L1)-C3	90001-04061

Note: If you need to purchase the -L1 models, please specify the requirements in your orders.