GD100-PV Series

Solar Pump Controller





- **Protection function**
  Pump dry run protection (low load protection)
  Over/low voltage protection
  Over load protection
  Lightning and surge protection
  Over tempereture protection
  Lose phase protection

- **Advanced MPPT algorithms**
  MPPT software up to 99% efficicency

- **Support multiple pumps**
  Support 220V, 1 phase AC pump with and without capacitor

- **Wide working voltage**
  Max. DC input 900V, AC input 380~440V
  Max. DC input 500V, AC input 220~240V

- **Hybrid and Auto-switch function**
  Support AC & PV input together, AC bypass function.

- **GPRS remote control**
  Support 4G,WIFI module, which can remote monitor the controller through mobile phone and web browser.

- **Product for high protection level**
  Support cabinet product for IP54 protection level

- **Support multiple sensor**
  Support controlling the controller through radiation sensors and water level sensor.

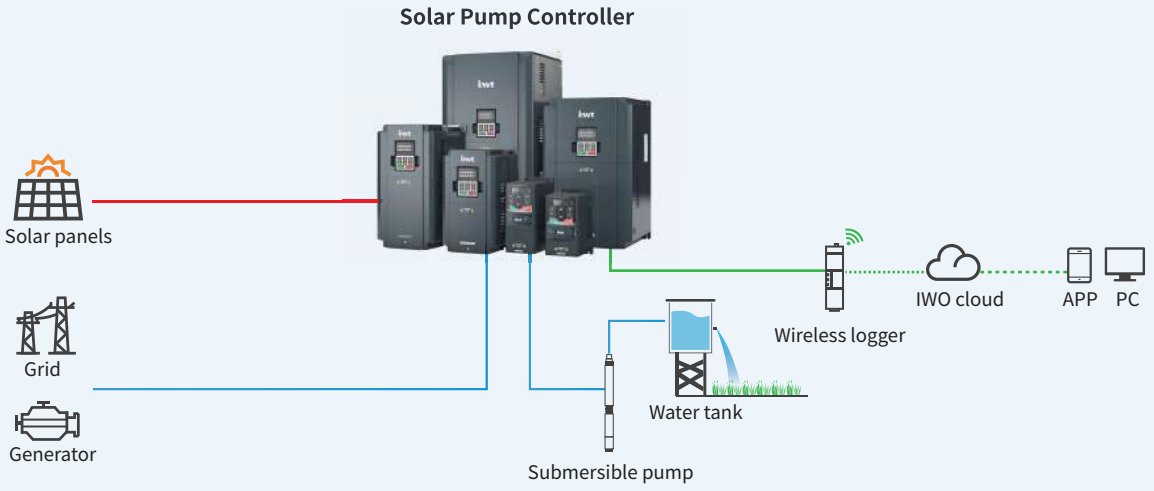
Product Specification

Model	-SS2		-S2		-2		-4	
AC input voltage (V)	220(-15%) ~240(+10%) (1PH)				220(-15%) ~240 (+10%) (3PH)		380(-15%) ~440 (+10%) (3PH)	380(-15%) ~440 (+10%) (3PH)
Max. DC input voltage (V)	440	500	440	500	440	500	800	900
Start-up voltage (V)	200		200		200		300	300
Lowest working voltage (V)	150		150		150		250	250
Recommended DC input voltage range (V)	200~400		200~400		200~400		300~750	300~750
Recommended MPP voltage (V)	330		330		330		550	550
Rated output voltage (V)	220 (1PH)		220 (3PH)		220 (3PH)		380 (3PH)	380 (3PH)
Output frequency range (Hz)	0~400							
MPPT efficiency	99%							
Installation method	Wall mounting/Rail mounting/Flange installation.							
Environment parameters	-10°C–+50°C, When the ambient temperature exceeds 40°C, derate 1% for every increase of 1°C.							
Altitude	Lower than 1000m，When the altitude exceeds 3000m, consult the local INVT dealer or office.							
Cooling manner	Fan cooling							
Protection level	IP20 ; IP54 Cabinet（Options）							

Type Selection

GD100 – 5R5G – 4 5 – PV
① ② ③④ ⑤

No.	Sign	Description	Remarks
①	GD100	Product abbreviation	GD100 is short for Goodrive100.
②	5R5	Power range + Load type	5R5: 5.5kW ; G: Constant torque load.
③	4	Voltage degree	4: AC 3PH 380V (-15%)–440(+10%) 2: AC 3PH 220V (-15%)–240(+10%) S2: AC 1PH 220V (-15%)–240(+10%) SS2: AC 1PH input/output 220V (-15%)–240(+10%)
④	5	Protection level	5: IP54 ; Standard controller is IP20, not displayed.
⑤	PV	Industrial code	PV stands for solar pump.



Applications









Power Ratings

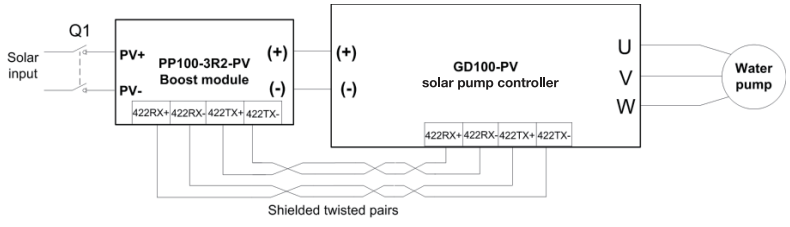
Series	Model	Rated output power		Rated input current (A)	Rated output current (A)
		kW	Hp		
1PH 220 Input 1PH 220V Output	GD100-0R4G-SS2-PV	0.4	0.5	6.5	4.2
	GD100-0R7G-SS2-PV	0.75	1	9.3	7.2
	GD100-1R5G-SS2-PV	1.5	2	15.7	10.2
	GD100-2R2G-SS2-PV	2.2	3	24	14
1PH 220V	GD100-0R4G-S2-PV	0.4	0.5	6.5	2.5
	GD100-0R7G-S2-PV	0.75	1	9.3	4.2
	GD100-1R5G-S2-PV	1.5	2	15.7	7.5
	GD100-2R2G-S2-PV	2.2	3	24	10
3PH 220V	GD100-1R5G-2-PV	1.5	2	7.7	7.5
	GD100-2R2G-2-PV	2.2	3	12	10
	GD100-004G-2-PV	4	5.5	17	16
	GD100-5R5G-2-PV	5.5	7.5	25	20
	GD100-7R5G-2-PV	7.5	10	33	30
3PH 380V	GD100-0R7G-4-PV	0.75	1	3.4	2.5
	GD100-1R5G-4-PV	1.5	2	5	4.2
	GD100-2R2G-4-PV	2.2	3	5.8	5.5
	GD100-004G-4-PV	4	5.5	13.5	9.5
	GD100-5R5G-4-PV	5.5	7.5	19.5	14
	GD100-7R5G-4-PV	7.5	10	25	18.5
	GD100-011G-4-PV	11	15	32	25
	GD100-015G-4-PV	15	20	40	32
	GD100-018G-4-PV	18.5	25	47	38
	GD100-022G-4-PV	22	30	56	45
	GD100-030G-4-PV	30	41	70	60
	GD100-037G-4-PV	37	50	80	75
	GD100-045G-4-PV	45	61	90	92
	GD100-055G-4-PV	55	73	105	115
	GD100-075G-4-PV	75	100	139	150
	GD100-090G-4-PV	90	120	168	180
	GD100-110G-4-PV	110	147	201	215
	GD100-132G-4-PV	132	177	265	260
	GD100-160G-4-PV	160	214	310	305
	GD100-185G-4-PV	185	248	345	340
	GD100-200G-4-PV	200	268	385	380
	GD100-220G-4-PV	220	299	430	425
	GD100-250G-4-PV	250	340	485	480
	GD100-280G-4-PV	280	381	545	530
	GD100-315G-4-PV	315	428	610	600
	GD100-355G-4-PV	355	482	625	650
	GD100-400G-4-PV	400	544	715	720
	GD100-450G-4-PV	450	612	840	820
	GD100-500G-4-PV	500	680	890	860

Boost Module

Recommended configuration for solar pump controllers with the boost module

PP100-3R2-PV + Solar pump controller	Open-circuit voltage degree of solar module			
	Voc=45±1Vdc		Voc=49±1Vdc	
	Module power±5Wp	Modules per string * strings	Module power±5Wp	Modules per string * strings
GD100-0R4G-SS2-PV	300	3*1	540	2*1
GD100-0R7G-SS2-PV	300	4*1	540	3*1
GD100-1R5G-SS2-PV	300	7*1	540	5*1
GD100-0R4G-S2-PV	300	3*1	540	2*1
GD100-0R7G-S2-PV	300	4*1	540	3*1
GD100-1R5G-S2-PV	300	7*1	540	5*1
GD100-0R7G-4-PV	300	4*1	540	3*1
GD100-1R5G-4-PV	300	7*1	540	5*1
GD100-2R2G-4-PV	300	11*1	540	7*1

0.4~2.2kW models can be configured with the boost module, which can improve the utilization of the solar panels.

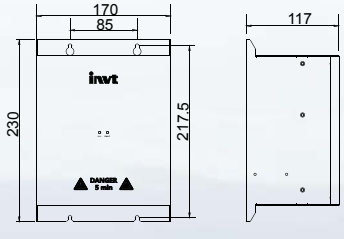


Connection between the boost module and solar pump controller

Boost module specifications

Model	PP100-3R2-PV	PP100-5R5-PV
Input		
Max. input power (W)	3200	5500
Max. DC voltage (V)	600	600
Start-up voltage (V)	80	80
Min. working voltage (V)	70	70
Max. input current (A)	12	15
Output		
Output voltage (V)	350/570 (automatically determined by the controller)	





Installation dimension

The number of solar panels with and without boost module as followed (540W solar panel for example):

Controller	Number of solar panels		
	With boost module	Without boost module	Reduced
220V 0.4kW	2*1	8*1	6
220V 0.75kW	2*1	8*1	6
220V 1.5kW	4*1	8*1	4
380V 0.75kW	2*1	14*1	12
380V 1.5kW	2*1	14*1	12
380V 2.2kW	5*1	14*1	9

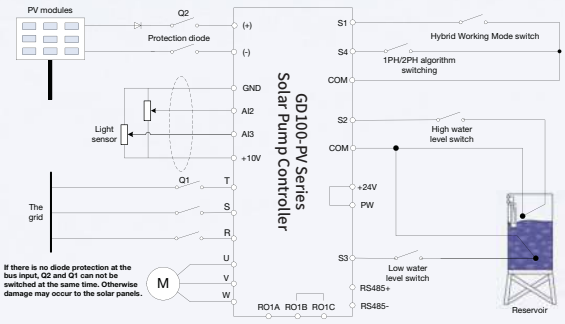
Auto-switching / Hybrid Mode

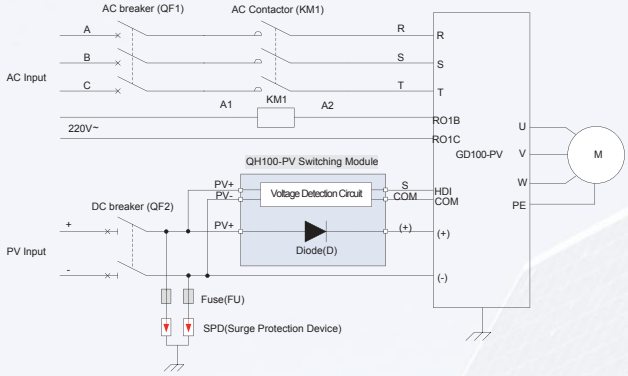
Hybrid mode

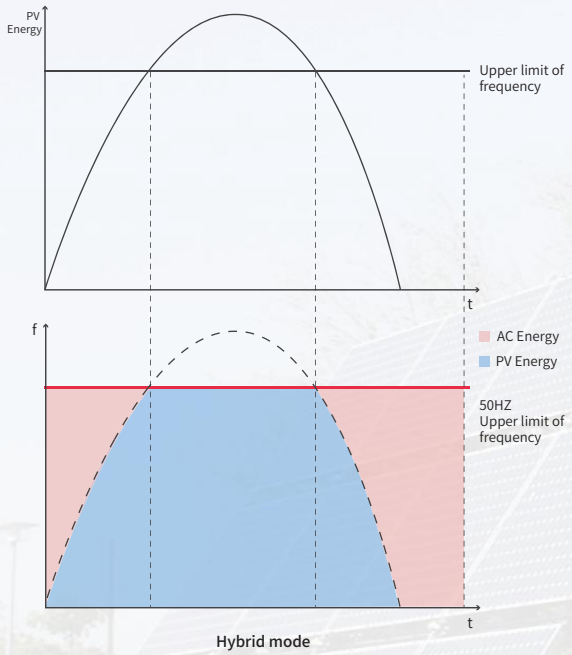
In hybrid mode, GD100-PV will use the energy of both PV modules and grid (or generator) at same time. The stronger the light radiation, the less AC energy is consumed. As the radiation reduction, the consumption of AC energy will increase to maintain the output.

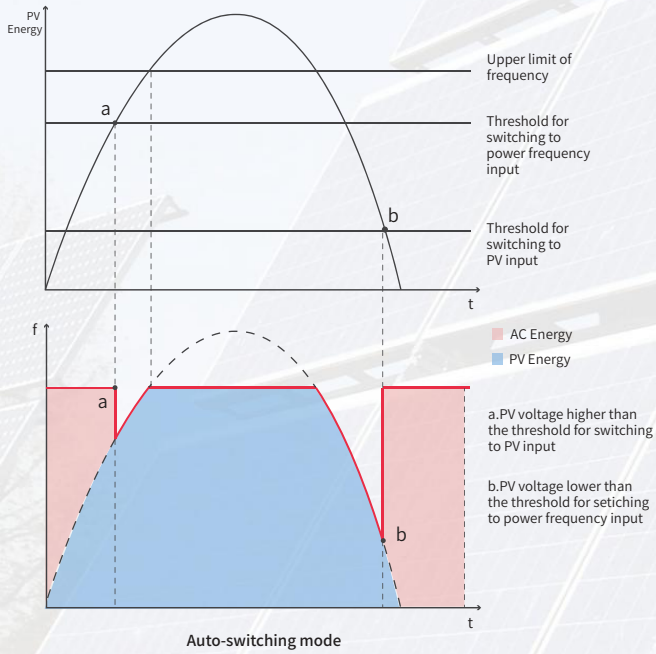
Auto-switching

If don't need to run at full high frequency at all times, you can choose to configure an auto-switch module. It can monitor the PV voltage, and when the voltage is below the set threshold, it can control the contactor to act and connect AC power to meet energy needs. When the voltage on the PV side exceeds the set threshold, the contactor can be controlled to operate and disconnect the AC power to reduce energy consumption.









Online Platform

INVT solar pump remote monitoring platform. Option 4G & WIFI data logger.



4G standard version



WiFi version

Remote upgrade

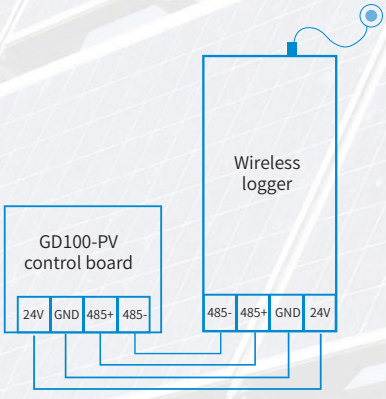
After-sales management

Fault per-alarm

Remote monitoring

Historic data query

Data analysis statistics



Diagram



APP



PC client

• Solution

1. Smart regular inspection and efficient O&M: can realize remote monitoring and analysis of PV water pump faults and exceptions, effectively solving practical problems such as difficult monitoring and control of PV water pumps, inspection difficulty, and low O&M effectiveness. Ultimately, the annual cost of O&M and inspection can be reduced by 30%.

2. Panoramic monitoring: can acqure operational data information such as voltage, current, and power of PV water pumps in real time, comprehensively monitor the operation of PV devices, and make intelligent analysis to achieve maximum operational efficiency of the entire PV water pump system.

3. PV water pump devices can be remotely controlled through computers and mobile phones, and key parameters of the devices can be remotely regulated.

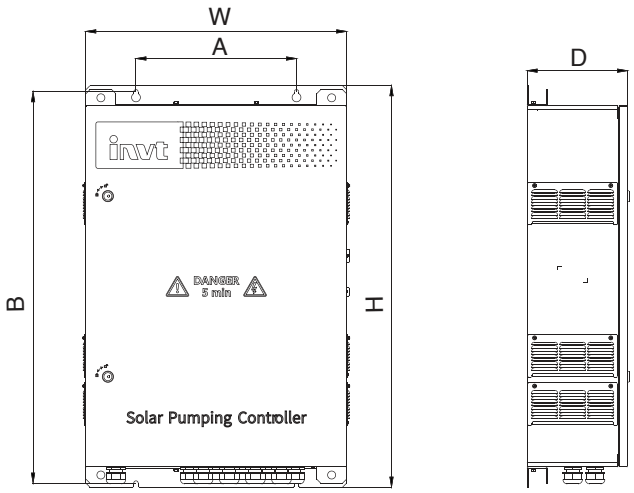
IP54 Cabinet

We have designed an IP54 electrical cabinet scheme for GD100-PV, equipped with some necessary low-voltage appliances, which can achieve boosting function and auto-switch function.



Note:
1.The IP54 cabinet with the rated power equal to or less than 2.2kW are equipped with the boost module, supporting auto switch.
2.The IP54 cabinet support optional 4G and WIFI module.

Model	BOOST	Auto-switch	AC breaker	DC breaker	AC contactor	Surge protection	Fuse	Anti-reverse diode
GD100-0R4G-SS25-PV-AS	√	√	10A	16A/1000V	Don't need	Type II 1000VDC	30A	Don't need
GD100-0R7G-SS25-PV-AS	√	√						
GD100-1R5G-SS25-PV-AS	√	√	25A					
GD100-2R2G-SS25-PV-AS	√	√	40A					
GD100-1R5G-S25-PV-AS	√	√						
GD100-2R2G-S25-PV-AS	√	√						
GD100-004G-25-PV-AS	×	√	63A	50A/1000V	50A			55/1600V
GD100-5R5G-25-PV-AS	×	√						
GD100-7R5G-25-PV-AS	×	√						
GD100-1R5G-45-PV-AS	√	√	10A	16A/1000V	Don't need			Don't need
GD100-2R2G-45-PV-AS	√	√						
GD100-004G-45-PV-AS	×	√	63A	50A/1000V	50A			55/1600V
GD100-5R5G-45-PV-AS	×	√						
GD100-7R5G-45-PV-AS	×	√						
GD100-011G-45-PV-AS	×	√						
GD100-015G-45-PV-AS	×	√						
GD100-018G-45-PV-AS	×	√			63A			110/1600V
GD100-022G-45-PV-AS	×	√	100A	125A/1000V	80A			
GD100-030G-45-PV-AS	×	√			95A			
GD100-037G-45-PV-AS	×	√	125A		120A			
GD100-045G-45-PV-AS	×	√						160/1600V
GD100-055G-45-PV-AS	×	√	250A	250A/1000V	120A			
GD100-075G-45-PV-AS	×	√						
GD100-090G-45-PV-AS	×	√						
GD100-110G-45-PV-AS	×	√	315A	315A/1000V	315A			



Wall mounting for the IP54 models

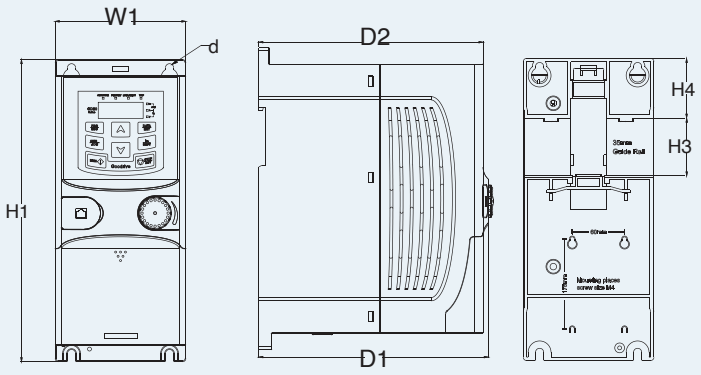
(unit: mm)

Model	W	H	D	A	B
GD100-0R4G-SS25-PV-AS	550	700	200	400	675
GD100-0R7G-SS25-PV-AS					
GD100-1R5G-SS25-PV-AS					
GD100-2R2G-SS25-PV-AS					
GD100-1R5G-S25-PV-AS					
GD100-2R2G-S25-PV-AS					
GD100-1R5G-45-PV-AS					
GD100-2R2G-45-PV-AS					
GD100-004G-25-PV-AS	550	900	225	400	875
GD100-5R5G-25-PV-AS					
GD100-7R5G-25-PV-AS					
GD100-004G-45-PV-AS					
GD100-5R5G-45-PV-AS					
GD100-7R5G-45-PV-AS					
GD100-011G-45-PV-AS					
GD100-015G-45-PV-AS					
GD100-018G-45-PV-AS	650	1000	250	400	975
GD100-022G-45-PV-AS					
GD100-030G-45-PV-AS					
GD100-037G-45-PV-AS					
GD100-045G-45-PV-AS	580	1400	520	/	/
GD100-055G-45-PV-AS					
GD100-075G-45-PV-AS					
GD100-090G-45-PV-AS	840	1720	650		
GD100-110G-45-PV-AS					

Recommended Solar Array Configuration

Recommended configuration in standard condition

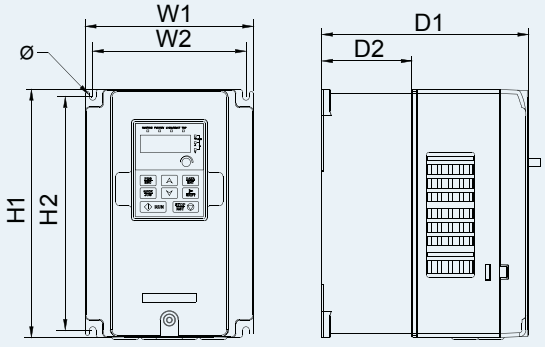
Model	Open-circuit voltage degree of solar module			
	Voc=45±1Vdc		Voc=49±1Vdc	
	Panel Power (W)	Configuration (Per string*strings)	Panel Power (W)	Configuration (Per string*strings)
GD100-0R4G-SS2-PV	300	9*1	540	8*1
GD100-0R7G-SS2-PV	300	9*1	540	8*1
GD100-1R5G-SS2-PV	300	9*1	540	8*1
GD100-2R2G-SS2-PV	300	9*1	540	8*1
GD100-0R4G-S2-PV	300	9*1	540	8*1
GD100-0R7G-S2-PV	300	9*1	540	8*1
GD100-1R5G-S2-PV	300	9*1	540	8*1
GD100 2R2G S2 PV	300	9*1	540	8*1
GD100-1R5G-2-PV	300	9*1	540	8*1
GD100-2R2G-2-PV	300	9*1	540	8*1
GD100-004G-2-PV	300	9*2	540	9*1
GD100-5R5G-2-PV	300	9*3	540	8*2
GD100-7R5G-2-PV	300	9*4	540	9*2
GD100-0R7G-4-PV	300	15*1	540	14*1
GD100-1R5G-4-PV	300	15*1	540	14*1
GD100-2R2G-4-PV	300	15*1	540	14*1
GD100-004G-4-PV	300	16*1	540	14*1
GD100-5R5G-4-PV	300	15*2	540	14*1
GD100-7R5G-4-PV	300	15*2	540	16*1
GD100-011G-4-PV	300	15*3	540	14*2
GD100-015G-4-PV	300	15*4	540	16*2
GD100-018G-4-PV	300	15*5	540	14*3
GD100-022G-4-PV	300	15*6	540	14*4
GD100-030G-4-PV	300	15*8	540	15*5
GD100-037G-4-PV	300	15*9	540	15*6
GD100-045G-4-PV	300	15*11	540	16*7
GD100 055G 4 PV	300	15*14	540	15*9
GD100-075G-4-PV	300	15*19	540	14*13
GD100-090G-4-PV	300	15*22	540	15*14
GD100-110G-4-PV	300	15*27	540	15*18
GD100-132G-4-PV	300	15*38	540	15*21
GD100-160G-4-PV	300	15*46	540	15*26
GD100-185G-4-PV	300	15*53	540	15*30
GD100-200G-4-PV	300	15*57	540	15*32
GD100-220G-4-PV	300	15*63	540	15*36
GD100-250G-4-PV	300	15*72	540	15*40
GD100-280G-4-PV	300	15*80	540	15*45
GD100-315G-4-PV	300	15*91	540	15*50
GD100-355G-4-PV	300	15*102	540	15*57
GD100-400G-4-PV	300	15*155	540	15*64
GD100-450G-4-PV	300	15*130	540	15*72
GD100-500G-4-PV	300	15*144	540	15*80



Rail mounting for the models below 2.2kW

(unit: mm)

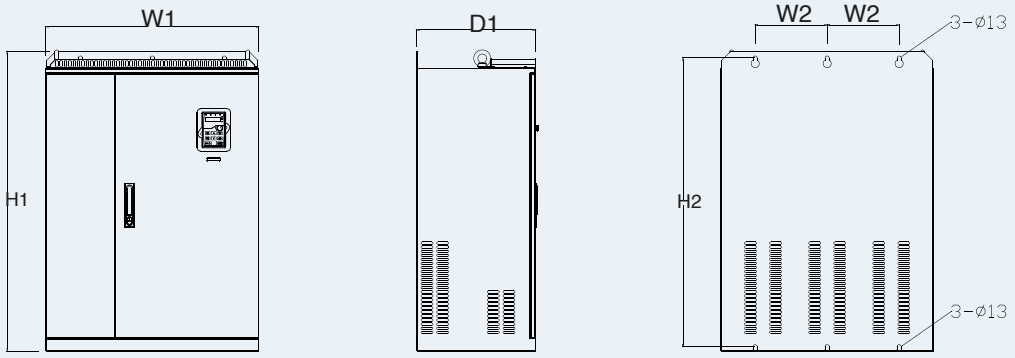
Voltage level	VFD model	W1	H1	H3	H4	D1	D2	Installation hole diameter (d)
1PH 220V	0.4-0.75kW	80.0	160.0	35.4	36.6	123.5	120.3	Ø 5
1PH 220V in 1PH 220V out	0.4kW	80.0	160.0	35.4	36.6	123.5	120.3	Ø 5
1PH 220V	1.5-2.2kW	80.0	185.0	35.4	36.6	140.5	137.3	Ø 5
1PH 220V in 1PH 220V out	0.75-2.2kW	80.0	185.0	35.4	36.6	140.5	137.3	Ø 5
3PH 380V	0.75-2.2kW	80.0	185.0	35.4	36.6	140.5	137.3	Ø 5



Wall mounting for the 4~200kW models

(unit: mm)

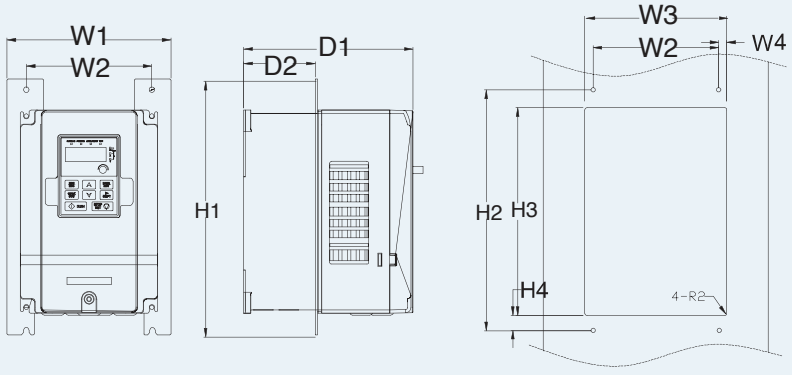
Voltage level	VFD model	W1	W2	H1	H2	D1	D2	Installation hole diameter (d)
3PH 220V	1.5-2.2kW	146.0	131.0	256.0	243.5	167.0	84.5	Ø 6
3PH 380V	4-5.5kW	146.0	131.0	256.0	243.5	167.0	84.5	Ø 6
	7.5-15kW	170.0	151.0	320.0	303.5	196.3	113.0	Ø 6
3PH 220V	4-7.5kW	170.0	151.0	320.0	303.5	196.3	113.0	Ø 6
3PH 380V	18.5-22kW	200.0	185.0	340.6	328.6	184.3	104.5	Ø 6
	30-37kW	250.0	230.0	400.0	380.0	202.0	123.5	Ø 6
	45-75kW	282.0	160.0	560.0	542.4	238.0	138.0	Ø 9
	90-110kW	338.0	200.0	554.0	534.0	326.2	/	Ø 9.5
	132-200kW	500.0	360.0	870.0	850.0	360.0	/	Ø 11



Flange mounting for the 4-200kW models

(unit: mm)

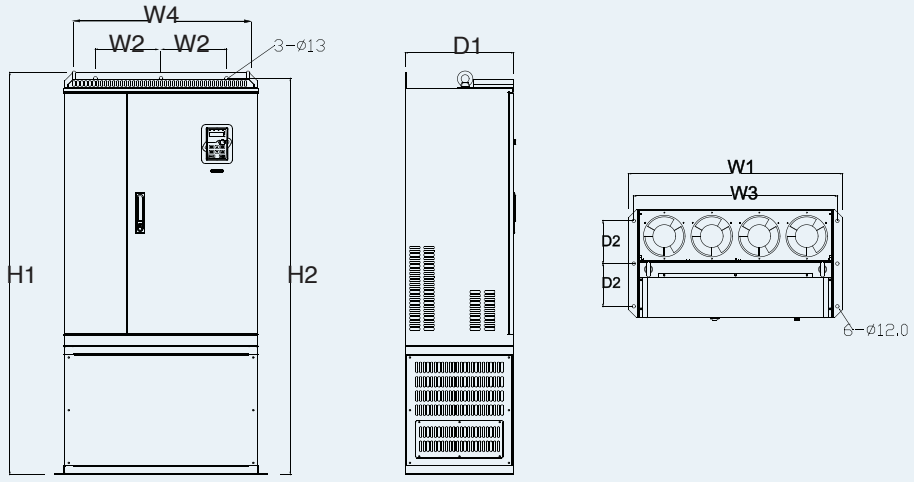
Voltage level	VFD model	W1	W2	H1	H2	D1	Installation hole diameter (d)
3PH 380V	220-315kW	680	230	960	926	387.9	Ø 13



Flange mounting for the 4-200kW models

(unit: mm)

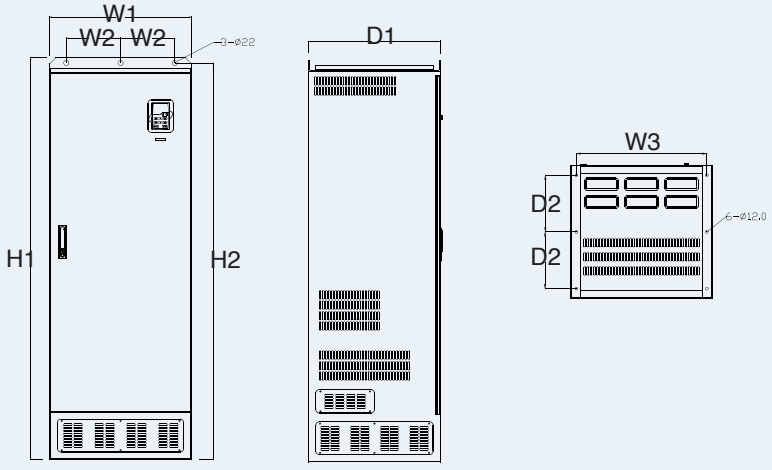
Voltage level	VFD model	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	Installation hole diameter (d)
3PH 380V	4-5.5kW	170.2	131	150	9.5	292	276	260	6	167	84.5	Ø 6
	7.5-15kW	191.2	151	174	11.5	370	351	324	12	196.3	113	Ø 6
3PH 220V	1.5-2.2kW	170.2	131	150	9.5	292	276	260	6	167	84.5	Ø 6
	4-7.5kW	191.2	151	174	11.5	370	351	324	12	196.3	113	Ø 6
3PH 380V	18.5-22kW	266	250	224	13	371	250	350.6	20.3	184.6	104	Ø 6
	30-37kW	316	300	274	13	430	300	410	55	202	118.3	Ø 6
	45-75kW	352	332	306	13	580	400	570	80	238	133.8	Ø 9
	90-110kW	418.5	361	389.5	14.2	600	559	370	108.5	329.5	149.5	Ø 9.5
	132-200kW	500	360	480	60	870	850	796	37	358	178.5	Ø 11



Floor mounting for the 220-315kW models

(unit: mm)

Voltage level	VFD model	W1	W2	W3	W4	H1	H2	D1	D2	Installation hole diameter (d)
3PH 380V	220-315kW	750	230	714	680	1410	1390	380	150	Ø 6



Floor mounting for the 355-500kW models

(unit: mm)

Voltage level	VFD model	W1	W2	W3	W4	H1	H2	D1	D2	Installation hole diameter (d)
3PH 380V	355-500kW	620	230	573	/	1700	1678	560	240	Ø 22/12

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