

# Goodrive100-PV

## Solar Pumping Controller

*Your Trusted Industry Automation Solution Provider*



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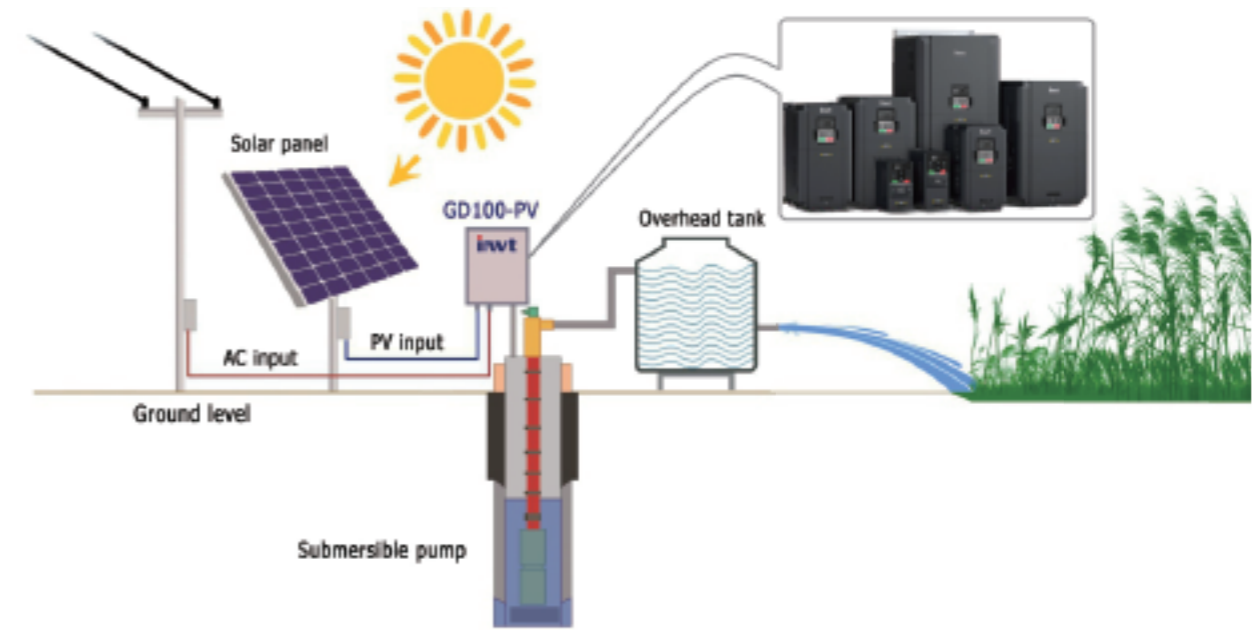
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|-------------------------------|--|---------------------------------------|----------------------------|-----------------------------------|
| <b>Industrial Automation:</b> | • Variable-Frequency Drive                   | • Servo & Motion Control              | • Motor & Electric Spindle | • PLC                             |
|                               | • HMI  | • Intelligent Elevator Control System | • Traction Drive           |                                   |
| <b>Electric Power:</b>        | • SVG  | • Solar Pump Controller               | • UPS                      | • Online Energy Management System |
|                               | • New Energy Vehicle Electric Control System |                                       |                            |                                   |

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PV pump application system

## Product Introduction



Broadest voltage and power range

Support for driving single-phase 220V and three-phase 220V/380V pumps, the power from 0.4kW to 200kW.

Easy to use

The solar pump controllers automatically start or sleep only after being connected to solar panel without any parameter setting.

Multiple protective measures

Including PV over-voltage protection, PV polarity reverse warning, auto derating against over-temperature etc, which can extend product's life.

Advanced MPPT algorithms

Ensure the solar power tracking efficiency reaches 99%.

Work in low voltage

Models of 2.2kW or less can be configured with the boost module, which can make the pump work in low voltage and reduce the cost by decreasing the number of solar panel.

Auto switch between solar and grid input

Implement auto switch between solar input and grid input, achieved 24-hour unattended work.

Remote monitor

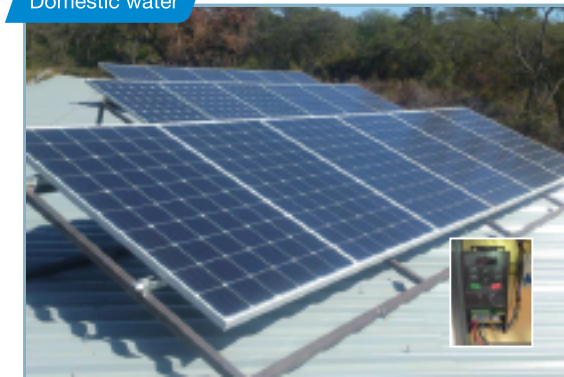
Support the GPRS module, which can remote monitor the controller by using the APP

Product for high protection level

Support cabinet product for IP54 protection level.

## Product Applications

Domestic water



Municipal water



Agriculture irrigation



Pasture animal husbandry



Desert Oasis Irrigation



Regional living water



## Type Designation Key

GD100 – 5R5G – 4 5 – PV  
 ①            ②            ③ ④        ⑤

Field identification	Sign	Detailed description of the sign	Detailed content
Product abbreviation	①	Product abbreviation	GD100 is short for Goodrive100.
Rated power	②	Power range + Load type	5R5G—5.5kW G—Constant torque load
Voltage degree	③	Voltage degree	4: AC 3PH 380V (-15%)~440V (+10%) 2: AC 3PH 220V (-15%)~240V (+10%) S2: AC 1PH 220V (-15%)~240V (+10%) SS2: AC 1PH input/output 220V (-15%)~240V (+10%)
Protection level	④	Protection level	5—IP54 Standard controller is IP20, not displayed.
Industrial code	⑤	Industrial code	PV stands for PV pump.

## Product Specifications

### Product function parameters

Model	-SS2	-S2	-2	-4
AC input voltage (V)	220(-15%) ~240(+10%) (1PH)		220(-15%) ~240 (+10%) (3PH)	380(-15%) ~440 (+10%) (3PH)
Max. DC input voltage (V)	440	440	440	800
Start-up voltage (V)	200	200	200	300
Lowest working voltage (V)	150	150	150	250
Recommended DC input voltage range (V)	200~400	200~400	200~400	300~750
Recommended MPP voltage (V)	330	330	330	550
Rated output voltage (V)	220 (1PH)	220 (3PH)	220 (3PH)	380 (3PH)
Output frequency range (Hz)	0~400			
MPPT	99%			
Installation manner	Wall mounting/Rail mounting/Flange mounting			
Environment temperature	-10°C~+50°C, If above 40°C, derate 2% for every additional 1°C.			
Altitude	Below 1000m, If above 1000m, derate 1% for every additional 100m.			
Cooling manner	Fan cooling			
Protection level	IP20; IP54 (Cabinet)			

Product rated specification parameters

Series	Model	Rated output power (kW)	Rated input current (A)	Rated output current (A)
-SS2 (0.4-2.2 kW)	GD100-0R4G-SS2-PV	0.4	6.5	4.2
	GD100-0R7G-SS2-PV	0.75	9.3	7.2
	GD100-1R5G-SS2-PV	1.5	15.7	10.2
	GD100-2R2G-SS2-PV	2.2	24	14
-S2 Single-phase, 220V input (0.4-2.2 kW)	GD100-0R4G-S2-PV	0.4	6.5	2.5
	GD100-0R7G-S2-PV	0.75	9.3	4.2
	GD100-1R5G-S2-PV	1.5	15.7	7.5
	GD100-2R2G-S2-PV	2.2	24	10
-2 Three-phase, 220V (4-7.5kW)	GD100-004G-2-PV	4	17	16
	GD100-5R5G-2-PV	5.5	25	20
	GD100-7R5G-2-PV	7.5	33	30
-4 Three-phase, 380V (0.75-200kW)	GD100-0R7G-4-PV	0.75	3.4	2.5
	GD100-1R5G-4-PV	1.5	5.0	4.2
	GD100-2R2G-4-PV	2.2	5.8	5.5
	GD100-004G-4-PV	4.0	13.5	9.5
	GD100-5R5G-4-PV	5.5	19.5	14
	GD100-7R5G-4-PV	7.5	25	18.5
	GD100-011G-4-PV	11	32	25
	GD100-015G-4-PV	15	40	32
	GD100-018G-4-PV	18.5	47	38
	GD100-022G-4-PV	22	51	45
	GD100-030G-4-PV	30	70	60
	GD100-037G-4-PV	37	80	75
	GD100-045G-4-PV	45	98	92
	GD100-055G-4-PV	55	128	115
	GD100-075G-4-PV	75	139	150
	GD100-090G-4-PV	90	168	180
	GD100-110G-4-PV	110	201	215
	GD100-132G-4-PV	132	265	260
	GD100-160G-4-PV	160	310	305
	GD100-185G-4-PV	185	345	340
GD100-200G-4-PV	200	385	380	

Note : When demanding for the solar pump controllers above 200kW , contact INVT to customize.

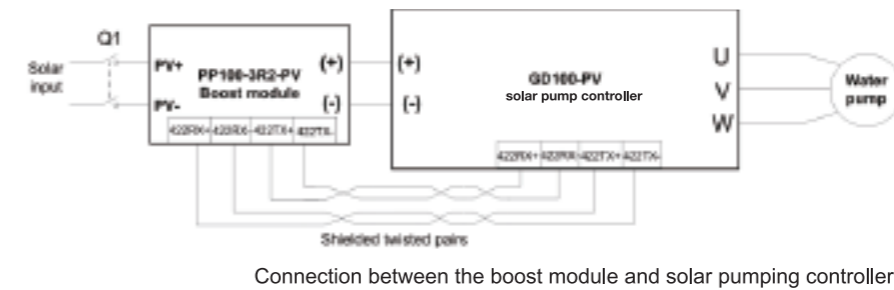
# Options

Recommended configuration for solar pumping controllers with the boost module

PP100-3R2-PV Solar pumping controller	Max. DC input current (A)	Open-circuit voltage degree of solar module			
		37±1V		45±1V	
		Module power±5Wp	Modules per string * strings	Module power±5Wp	Modules per string * strings
GD100-0R4G-SS2-PV	12	250	4*1	300	3*1
GD100-0R7G-SS2-PV	12	250	5*1	300	4*1
GD100-1R5G-SS2-PV	12	250	8*1	300	7*1
GD100-0R4G-S2-PV	12	250	4*1	300	3*1
GD100-0R7G-S2-PV	12	250	5*1	300	4*1
GD100-1R5G-S2-PV	12	250	8*1	300	7*1
GD100-0R7G-4-PV	12	250	5*1	300	4*1
GD100-1R5G-4-PV	12	250	8*1	300	7*1
GD100-2R2G-4-PV	12	250	13*1	300	11*1

## Boost module

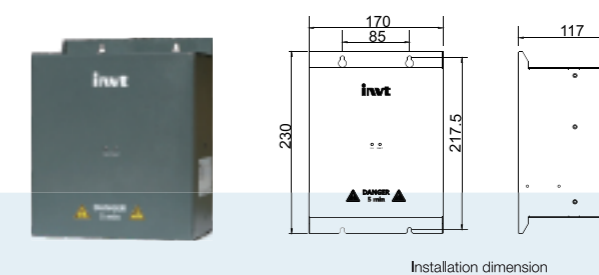
0.4-2.2kW models can be configured with the boost module, which can improve the utilization of the solar component.



Connection between the boost module and solar pumping controller

### Boost module specifications

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



Installation dimension

## Solution for Auto Switch

### GPRS module and monitoring APP

GD100-PV series support the installation of the GPRS module to implement remote monitoring. The controller operation state can be monitored on the APP in the mobile phone or web page in real time.

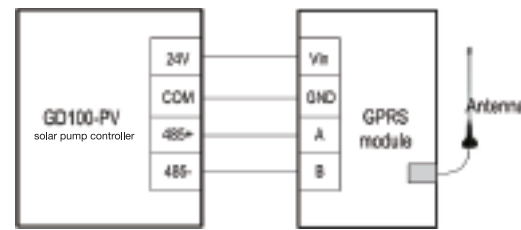
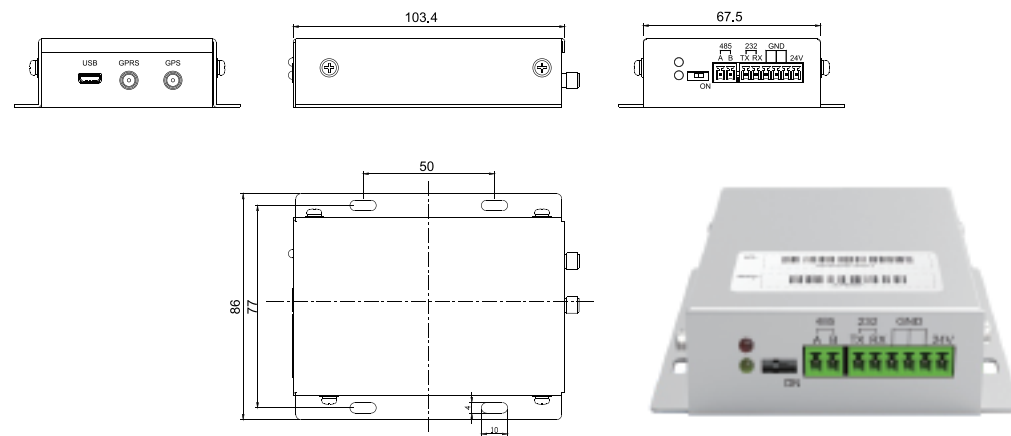


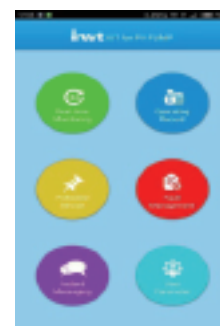
Diagram of connecting the GPRS module to the controller



GPRS module installation dimensions



Computer monitoring interface



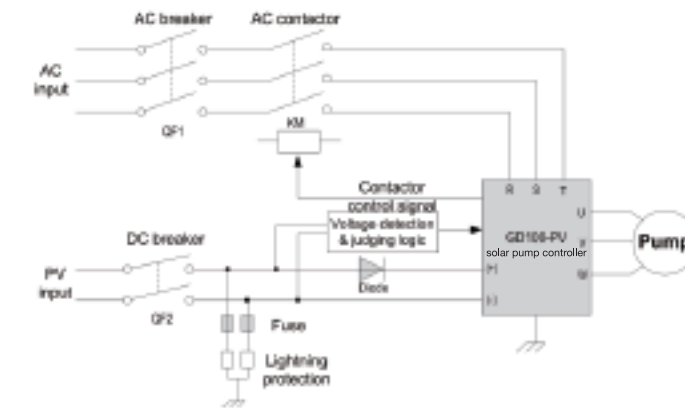
Mobile APP interface



The web page of IOT monitoring system for GD100-PV is: [iot.invt.com:12000](http://iot.invt.com:12000), and you can download the android APP by sweep the QR-Code.

### Solution Introduction

Generally, controllers do not allow simultaneous connection of PV and grid input. If such simultaneous connection is required, external configuration must be made to switch the control circuit. One solution for auto switch is recommended:



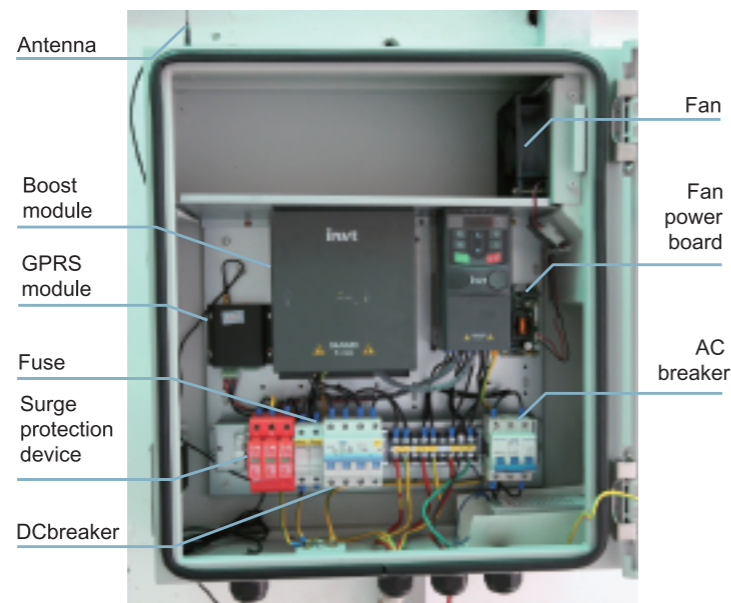
### Model selection reference for low-voltage apparatus

Model	AC breaker (A)	DC breaker (A)	AC contactor (A)	Surge protection	Fuse	Diode	
GD100-0R4G-SS2-PV-AS	16	16A/500V	16	Type II 1000VDC	30A	Not required since equipped the boost module	
GD100-0R7G-SS2-PV-AS	25		25				
GD100-1R5G-SS2-PV-AS	40		32				
GD100-2R2G-SS2-PV-AS	40		32				
GD100-0R4G-S2-PV-AS	16		10				
GD100-0R7G-S2-PV-AS	16		16				
GD100-1R5G-S2-PV-AS	25	16A/1000V	25			55A/ 1600V	
GD100-2R2G-S2-PV-AS	40		32				
GD100-0R4G-4-PV-AS	10		63A/1000V				10
GD100-1R5G-4-PV-AS	10						10
GD100-2R2G-4-PV-AS	16						16
GD100-004G-4-PV-AS	25						16
GD100-5R5G-4-PV-AS	25	25					
GD100-004G-2-PV-AS	25	80A/1000V		16	110A/ 1600V		
GD100-7R5G-4-PV-AS	40		25				
GD100-5R5G-2-PV-AS	40		25				
GD100-011G-4-PV-AS	63		32				
GD100-7R5G-2-PV-AS	63		32				
GD100-015G-4-PV-AS	63		50				
GD100-018G-4-PV-AS	100	125A/1000V	63				
GD100-022G-4-PV-AS	100		80				
GD100-030G-4-PV-AS	125		95				
GD100-037G-4-PV-AS	160		120				

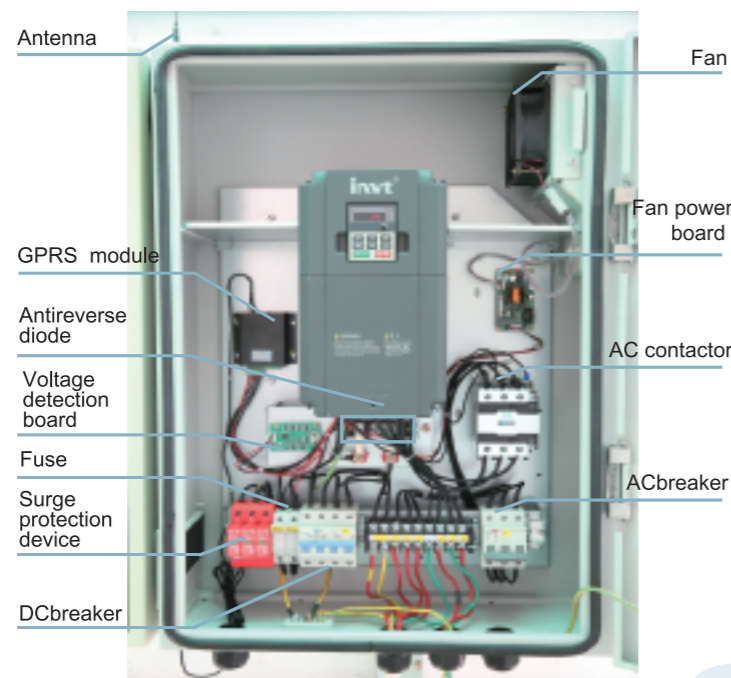
Above 37KW of IP54 model please refer operation manual page 57-58

Solar Pumping Controller of IP54

For the application of auto switch between PV and grid input, INVT provides two types of controllers for IP54 protection level: the controller with or without the auto switch function.



Internal structure of GD100-2R2G-S25-PV-AS



Internal structure of GD100-015G-45-PV-AS

Note:

1. The solar pump controllers of IP54 without the auto switch function do not have the suffix -AS.
2. The solar pump controllers of IP54 with the rated power equal to or less than 2.2kW are equipped with the boost module, supporting auto switch.

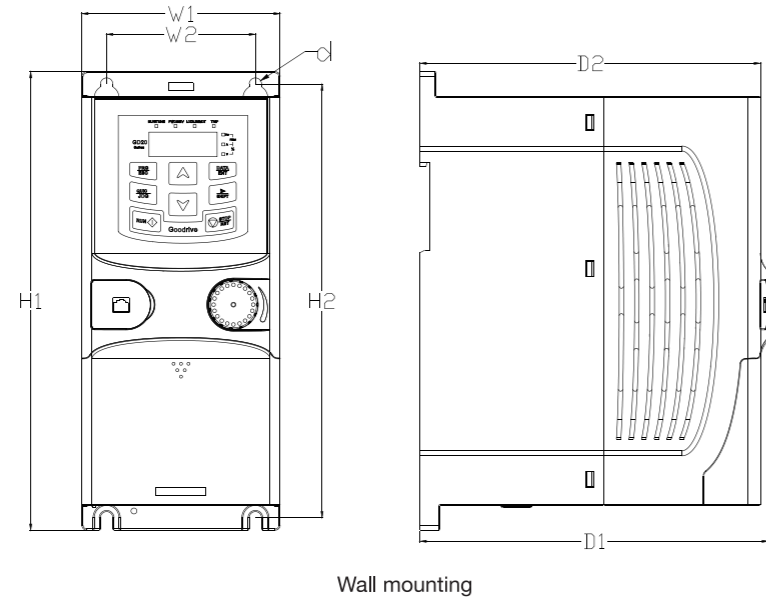
## Recommended Solar Array Configuration

Recommended configuration in standad condition

Solar pumping controller model	Open-circuit voltage degree of solar module			
	37±1V		45±1V	
	Module power±5Wp	Modules per string * strings	Module power±5Wp	Modules per string * strings
GD100-0R4G-SS2-PV	250	11*1	300	9*1
GD100-0R7G-SS2-PV	250	11*1	300	9*1
GD100-1R5G-SS2-PV	250	11*1	300	9*1
GD100-2R2G-SS2-PV	250	11*1	300	9*1
GD100-0R4G-S2-PV	250	11*1	300	9*1
GD100-0R7G-S2-PV	250	11*1	300	9*1
GD100-1R5G-S2-PV	250	11*1	300	9*1
GD100-2R2G-S2-PV	250	11*1	300	9*1
GD100-004G-2-PV	250	11*2	300	9*2
GD100-5R5G-2-PV	250	11*3	300	9*3
GD100-7R5G-2-PV	250	11*4	300	9*4
GD100-0R7G-4-PV	250	18*1	300	15*1
GD100-1R5G-4-PV	250	18*1	300	15*1
GD100-2R2G-4-PV	250	18*1	300	15*1
GD100-004G-4-PV	250	20*1	300	16*1
GD100-5R5G-4-PV	250	18*2	300	15*2
GD100-7R5G-4-PV	250	18*2	300	15*2
GD100-011G-4-PV	250	18*3	300	15*3
GD100-015G-4-PV	250	18*4	300	15*4
GD100-018G-4-PV	250	18*5	300	15*5
GD100-022G-4-PV	250	18*6	300	15*6
GD100-030G-4-PV	250	18*8	300	15*8
GD100-037G-4-PV	250	18*9	300	15*9
GD100-045G-4-PV	250	18*11	300	15*11
GD100-055G-4-PV	250	18*14	300	15*14
GD100-075G-4-PV	250	18*19	300	15*19
GD100-090G-4-PV	250	18*22	300	15*22
GD100-110G-4-PV	250	18*27	300	15*27
GD100-132G-4-PV	250	18*38	300	15*38
GD100-160G-4-PV	250	18*46	300	15*46
GD100-185G-4-PV	250	18*53	300	15*53
GD100-200G-4-PV	250	18*57	300	15*57

# Installation Dimensions

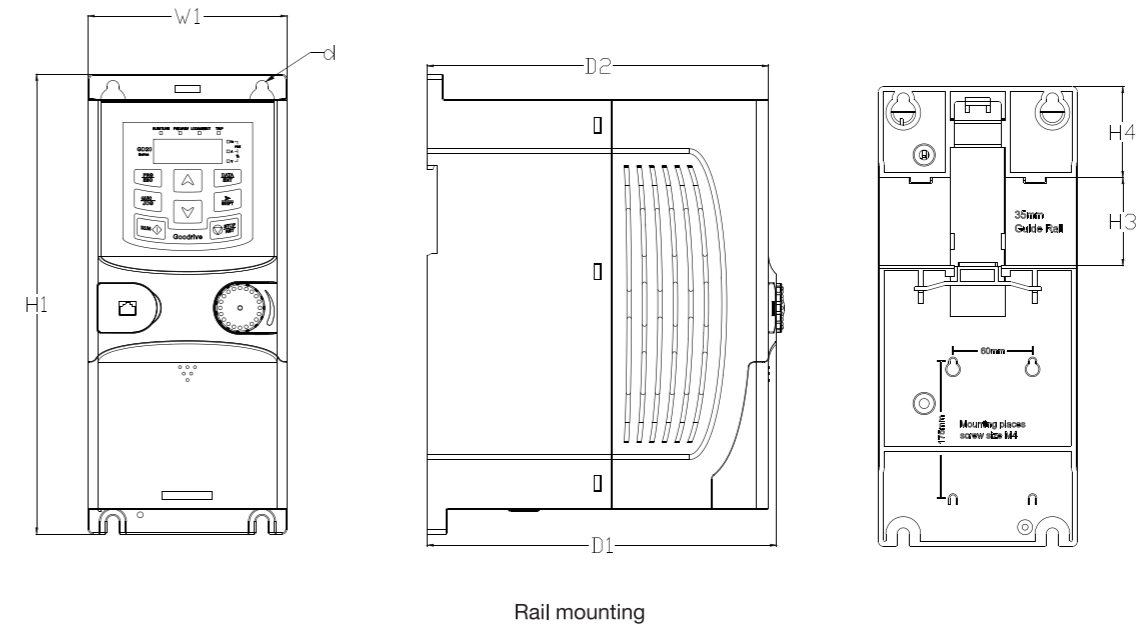
0.4-2.2kW models support wall mounting and rail mounting:



Wall mounting

Dimensions in wall mounting (unit: mm)

Model	W1	W2	H1	H2	D1	D2	Installation hole (d)
GD100-0R4G-S2-PV	80.0	60.0	160.0	150.0	123.5	120.3	5
GD100-0R7G-S2-PV	80.0	60.0	160.0	150.0	123.5	120.3	5
GD100-0R4G-SS2-PV	80.0	60.0	160.0	150.0	123.5	120.3	5
GD100-1R5G-S2-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-2R2G-S2-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-0R7G-SS2-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-1R5G-SS2-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-2R2G-SS2-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-0R7G-4-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-1R5G-4-PV	80.0	60.0	185.0	175.0	140.5	137.3	5
GD100-2R2G-4-PV	80.0	60.0	185.0	175.0	140.5	137.3	5



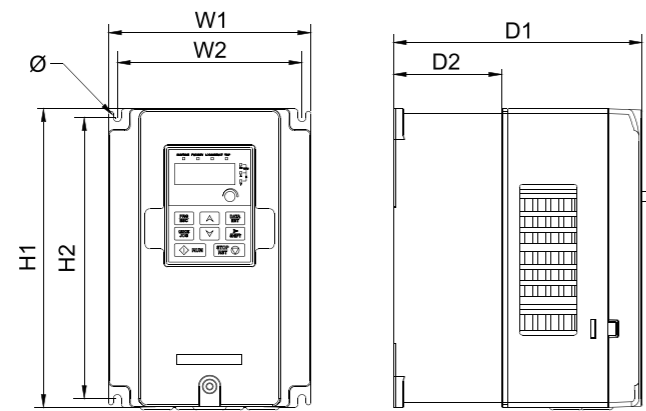
Rail mounting

Dimensions in Rail mounting (unit: mm)

Model	W1	H1	H3	H4	D1	D2	Installation hole (d)
GD100-0R4G-S2-PV	80.0	160.0	35.4	36.6	123.5	120.3	5
GD100-0R7G-S2-PV	80.0	160.0	35.4	36.6	123.5	120.3	5
GD100-0R4G-SS2-PV	80.0	160.0	35.4	36.6	123.5	120.3	5
GD100-1R5G-S2-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-2R2G-S2-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-0R7G-SS2-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-1R5G-SS2-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-2R2G-SS2-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-0R7G-4-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-1R5G-4-PV	80.0	185.0	35.4	36.6	140.5	137.3	5
GD100-2R2G-4-PV	80.0	185.0	35.4	36.6	140.5	137.3	5



4-37kW models support wall mounting and flange mounting:

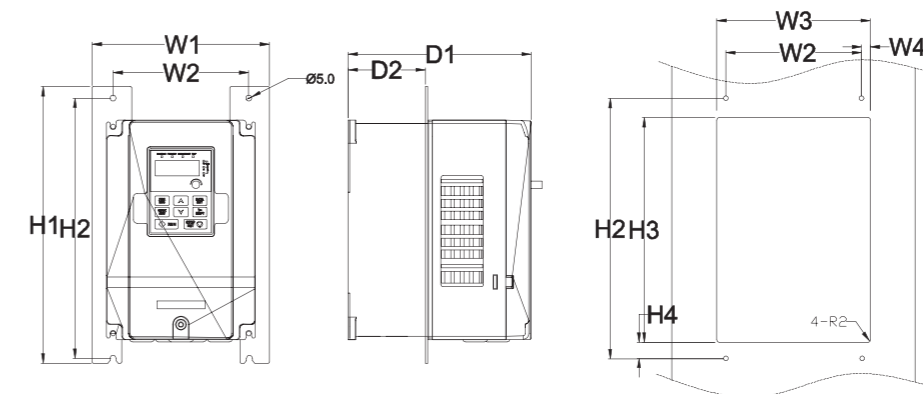


Wall mounting

Dimensions in wall mounting (unit: mm)

Model	W1	H1	H3	H4	D1	D2	Installation hole (d)
GD100-004G-4-PV	146.0	131.0	256.0	243.5	167.0	84.5	6
GD100-5R5G-4-PV	146.0	131.0	256.0	243.5	167.0	84.5	6
GD100-7R5G-4-PV	170.0	151.0	320.0	303.5	196.3	113.0	6
GD100-011G-4-PV	170.0	151.0	320.0	303.5	196.3	113.0	6
GD100-015G-4-PV	170.0	151.0	320.0	303.5	196.3	113.0	6
GD100-004G-2-PV	170.0	151.0	320.0	303.5	196.3	113.0	6
GD100-5R5G-2-PV	170.0	151.0	320.0	303.5	196.3	113.0	6
GD100-7R5G-2-PV	170.0	151.0	320.0	303.5	196.3	113.0	6
GD100-018G-4-PV	200.0	185.0	340.6	328.6	184.3	104.5	6
GD100-022G-4-PV	200.0	185.0	340.6	328.6	184.3	104.5	6
GD100-030G-4-PV	250.0	230.0	400.0	380.0	202.0	123.5	6
GD100-037G-4-PV	250.0	230.0	400.0	380.0	202.0	123.5	6

Dimensions in wall mounting for 45-200kW please refer operation manual page 63-64.



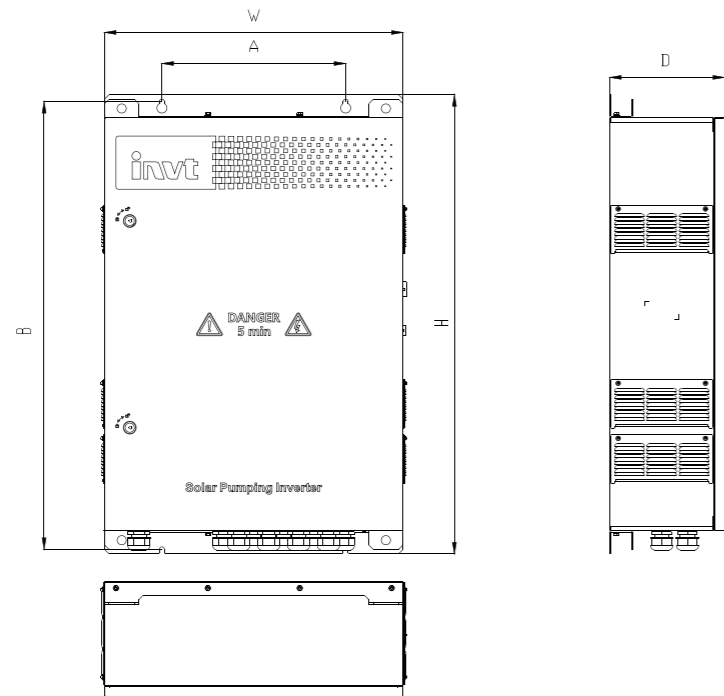
Flange installation

Dimensions in flange installation (unit: mm)

Model	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	Installation hole (d)	Nut specs
GD100-004G-4-PV	170.2	131	150	9.5	292	276	260	6	167	84.5	6	M5
GD100-5R5G-4-PV	170.2	131	150	9.5	292	276	260	6	167	84.5	6	M5
GD100-7R5G-4-PV	191.2	151	174	11.5	370	351	324	12	196.3	113	6	M5
GD100-011G-4-PV	191.2	151	174	11.5	370	351	324	12	196.3	113	6	M5
GD100-015G-4-PV	191.2	151	174	11.5	370	351	324	12	196.3	113	6	M5
GD100-004G-2-PV	191.2	151	174	11.5	370	351	324	12	196.3	113	6	M5
GD100-5R5G-2-PV	191.2	151	174	11.5	370	351	324	12	196.3	113	6	M5
GD100-7R5G-2-PV	191.2	151	174	11.5	370	351	324	12	196.3	113	6	M5
GD100-018G-4-PV	266	250	224	13	371	250	350.6	20.3	184.6	104	6	M5
GD100-022G-4-PV	266	250	224	13	371	250	350.6	20.3	184.6	104	6	M5
GD100-030G-4-PV	316	300	274	13	430	300	410	55	202	118.3	6	M5
GD100-037G-4-PV	316	300	274	13	430	300	410	55	202	118.3	6	M5

Note: If use flange installation, you must configure flange installation boards.  
Dimensions in flange installation for 45-200kW please refer operation manual page 64-65.

Models of IP54 support wall mounting

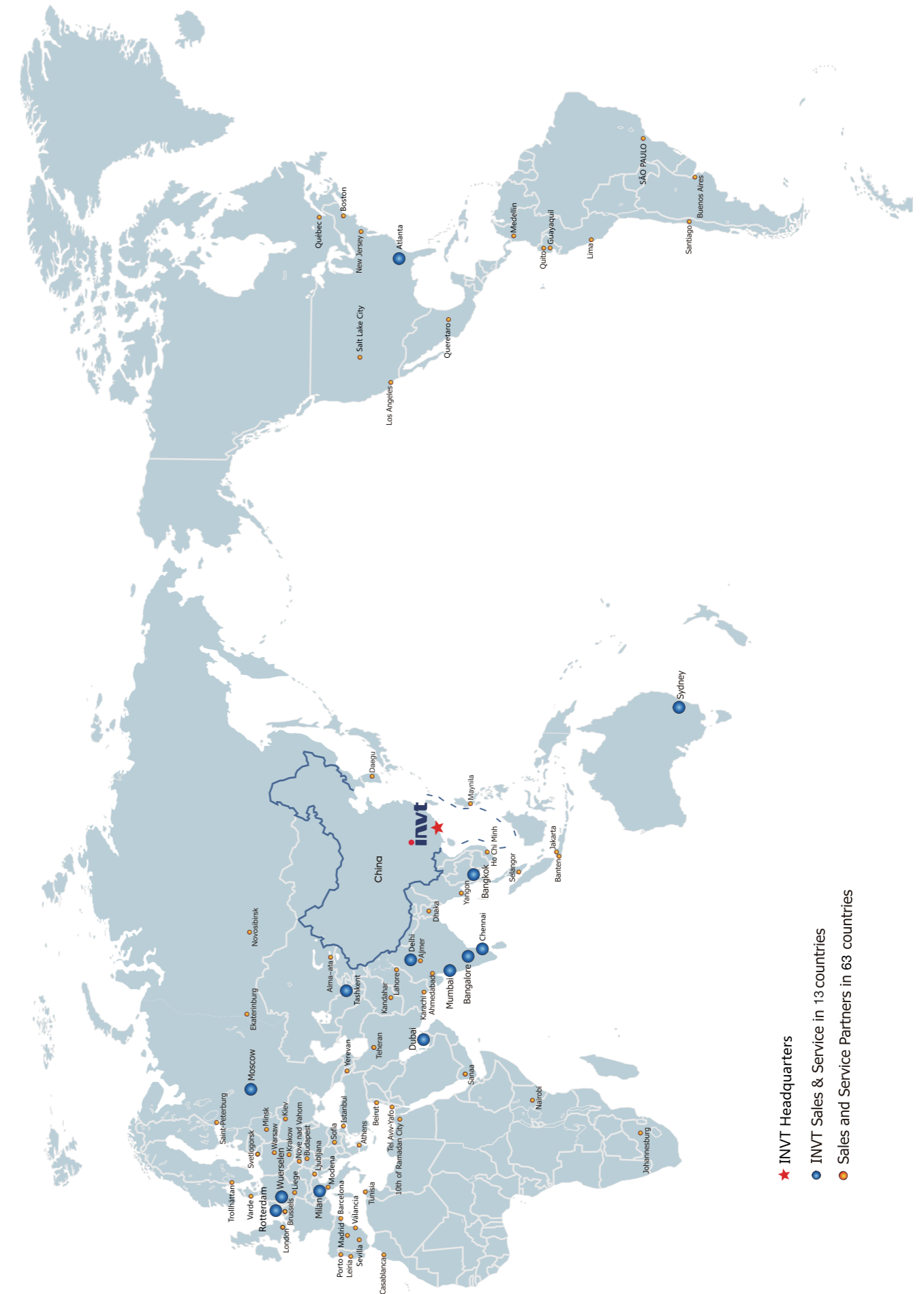


IP54 controller dimensional drawing

IP54 controller dimensions (unit: mm)

Power(kW)	Model	W	H	D	A	B
0.4	GD100-0R4G-S25-PV-AS	550	700	200	400	675
	GD100-0R4G-SS25-PV-AS					
0.75	GD100-0R7G-45-PV-AS					
	GD100-0R7G-S25-PV-AS					
1.5	GD100-0R7G-SS25-PV-AS					
	GD100-1R5G-45-PV-AS					
2.2	GD100-1R5G-S25-PV-AS					
	GD100-1R5G-SS25-PV-AS					
4	GD100-2R2G-45-PV-AS					
	GD100-2R2G-S25-PV-AS					
5.5	GD100-2R2G-SS25-PV-AS					
	GD100-004G-45-PV-AS					
7.5	GD100-004G-25-PV-AS					
	GD100-5R5G-45-PV-AS					
11	GD100-5R5G-25-PV-AS					
	GD100-7R5G-45-PV-AS					
15	GD100-7R5G-25-PV-AS					
	GD100-011G-45-PV-AS					
18.5	GD100-015G-45-PV-AS					
	GD100-018G-45-PV-AS					
22	GD100-022G-45-PV-AS					
	GD100-030G-45-PV-AS					
30	GD100-037G-45-PV-AS					
	GD100-037G-45-PV-AS					

If you need capacity above 37kW of IP54 model please contact INVT.



- ★ INVT Headquarters
- INVT Sales & Service in 13 countries
- Sales and Service Partners in 63 countries