

# solar pump solutions

## GD100-PV

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Product Introduction

01

Product Applications

02

Product Specifications

03

Options

04



## Product Introduction



### Feature >>



Effective protection function, including PV over-voltage protection, over-current protection, auto derating against over-temperature, etc.



Advanced MPPT algorithms: Solar maximum power point tracking efficiency reaches 99%.



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



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



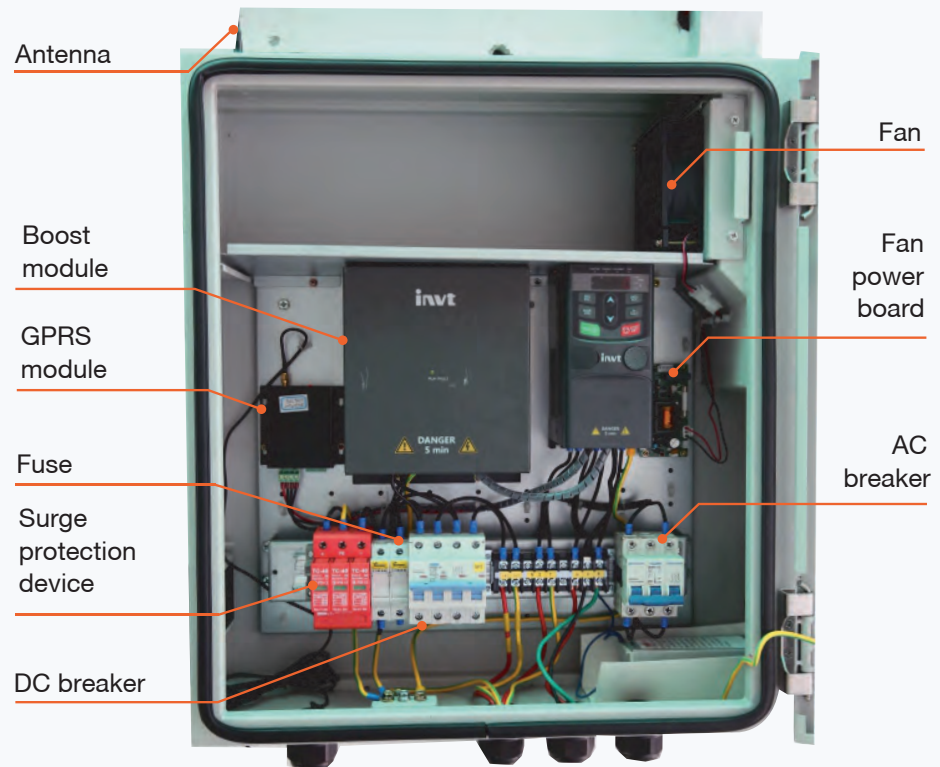
Model( $\leq 2.2\text{kW}$ ) can be configured with the boost module, which can make the pump work in low voltage and reduce the cost by decreasing the numbers of solar panel.



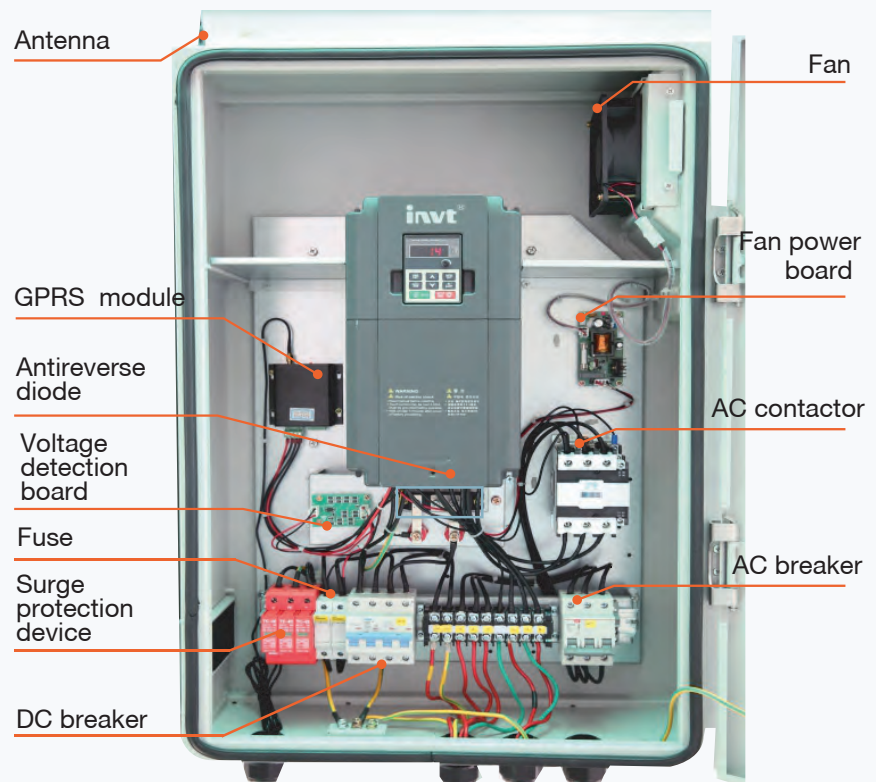
Optional cabinet product for IP54 protection level



## Solar Pumping Controller of IP54



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



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

## Product Applications

**Abstract:** With the development of the photovoltaic industry, the working efficiency of PV panel becomes better, benefited from the development of the electronic and internet, INVT invests in R & D resources for developing a new solution, making installation simple and reliable. The new product learns experience from last generation product, and the feedback from end-users all over the world. This article will introduce GD100-PV series solar water pump inverter.

**Keywords:** GD100-PV, Photovoltaic, MPPT, PV water pump

**Introduction** >> Received the feedback information from the solar market and end-users, we get the following suggestion:

- ◆ **Reduce the PV panel quantity.**  
Because the general solar inverter need high DC input voltage.
- ◆ **Support single phase pump.**  
For the civil water pump, many motors are single-phase, but the solar inverter in the market don't support single phase, only support 3-phase.
- ◆ **Support AC/PV channels input together.**  
In the night, there isn't PV input energy, the pump will stop. Some project needs to keep the pump working always.
- ◆ **Easy commissioning**  
The last generation product, need to modify some parameters to be suitable for different pump, new inverter can work automatically.
- ◆ **Support remote control**  
People can use mobile APP or website to monitor the running status, and control the system start or stop.  
In order to meet the requirement from end-users, and solve the disadvantages of solar inverter in the market, INVT developed a new product GD100-PV. It solves all the problems the users mentioned.



## Photovoltaic >>

Photovoltaic (PV) is the name of a method of converting solar energy into direct current electricity using semiconducting materials that exhibit the photovoltaic effect. A photovoltaic system employs solar panels composed of a number of solar cells to supply usable solar power. The process is both physical and chemical in nature, as the first step involves the photoelectric effect from which a second electrochemical process take place involving crystallized atoms being ionized in a series, generating an electric current.

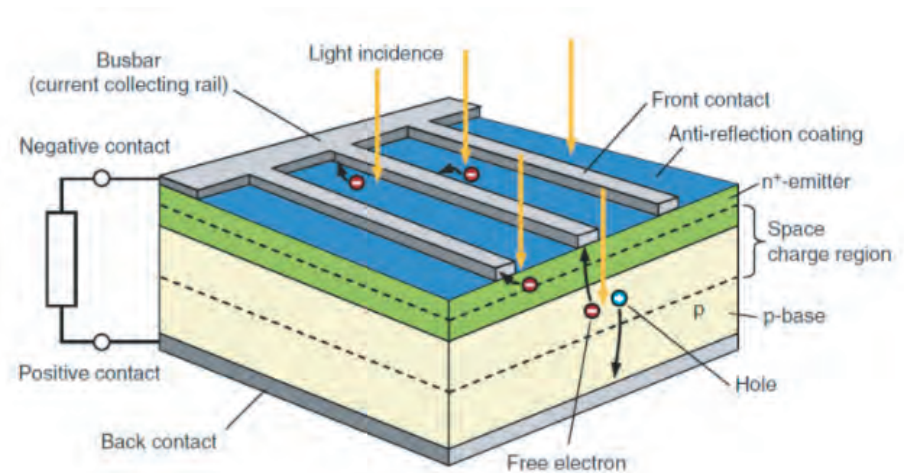


Figure 1: Principle of photovoltaic

## Two Solutions of GD100-PV >>

There are two solutions for different power rating pump, for the pump less than 2.2kW, the solution is as the figure 2, for the bigger power rating pump, the solution is as the figure 3.

For little power rating pump  $\leq 2.2\text{kW}$ , when we configure the solar panels, the PV power is enough, but the PV output voltage is not enough, so it needs to buy more solar panel to increase the PV voltage.

GD100-PV supply the boost module, support low PV voltage input and high DC voltage output, can reduce the PV quantity.

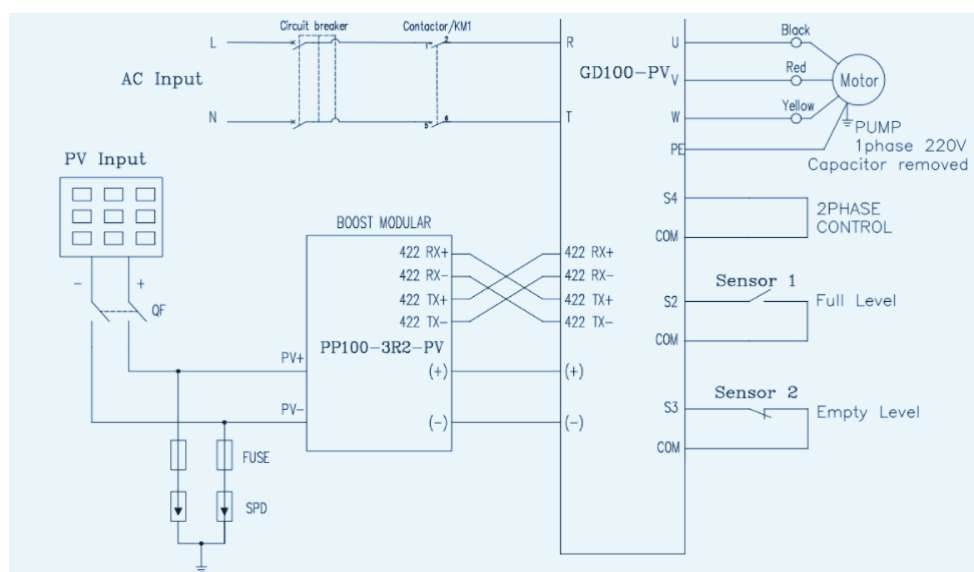


Figure 2: Boost module + GD100-PV

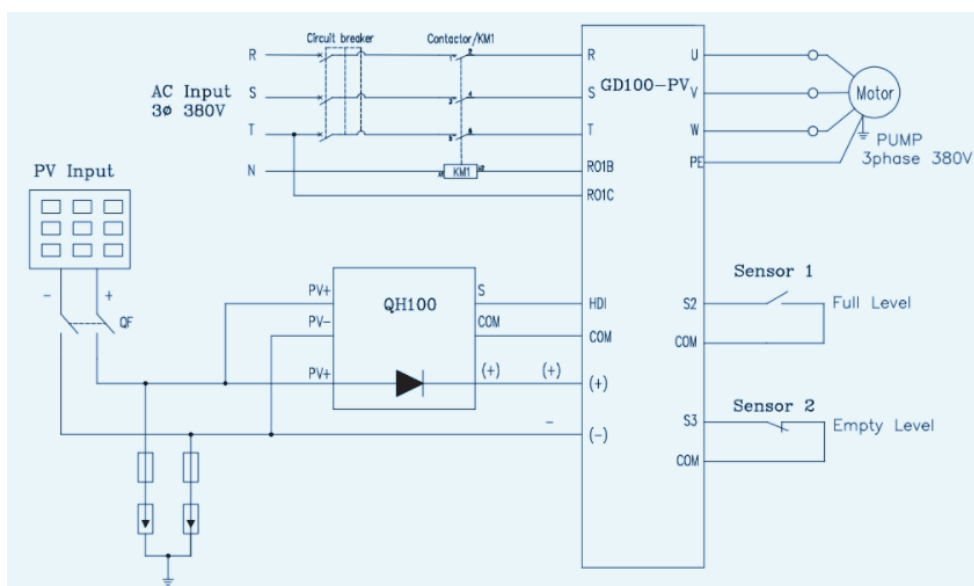


Figure 3: Auto-switch module + GD100-PV



The auto-switch modular can detect the PV output voltage, and send the signal to GD100-PV, inverter will control the contactor to turn on/off the AC input.

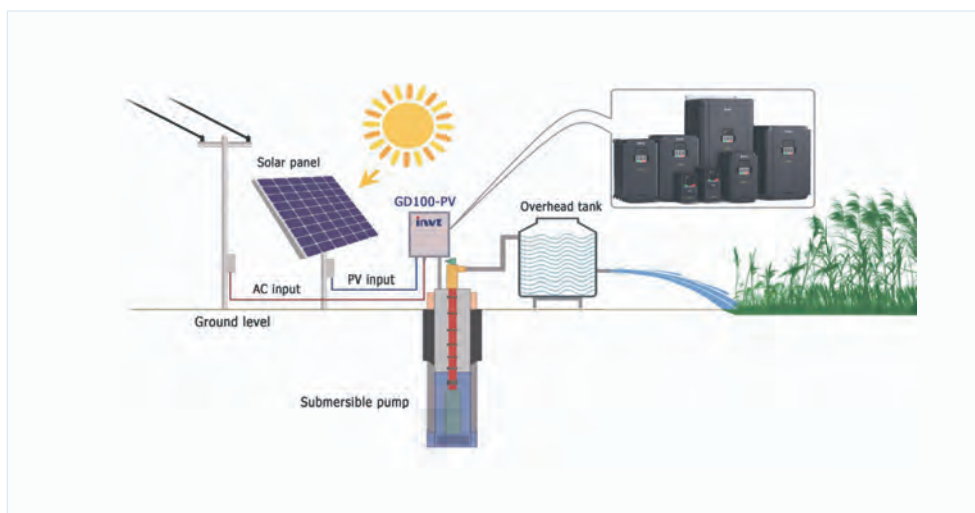


Figure 4: Water pumping system

## Conclusion >>

Because the GD100-PV integrates so many features, such as reduce the PV input voltage, switch power input channel between DC and AC, high IP class IP54, and so on, the end users don't need to maintain the solar inverter any more after setting the parameters in the first time.

After sunset the light will be weak, GD100-PV can detect the PV voltage is less than the setting point, it will change the power input channel from PV to AC grid automatically. If only PV channel input, GD100-PV will hibernate in the weak sun light and wake up automatically in the morning.

## Application in site >>



### Bangkok, Thailand

- Pump: 2.2kW / 1 phase 220V / 50Hz / 10.3A / 2750rpm
- Inverter: GD100-2R2G-SS25-PV-AS
- Solar panel: POLY 300W/PC 9 PCS (9 in series)
- AC power: single-phase 220V AC, 50Hz.







## Pakistan

- Pump: 1.5kW /1phase 220V / 50Hz / 6.5A / 2975rpm
- Inverter: GD100-1R5G-SS2-PV
- Solar panel: Mono 270W/PC 8 PCS



## Dubai

- Pump: 4KW/380V/9.5A
- Inverter: GD100-5R5G-4-PV
- Solar Panel: 18\*300W/pcs
- Save 60% cost for the farmer



## Morocco

- Pump: 37kW/380V/74A & 4KW/380V/9.5A
- Inverter: GD100-037G-4-PV & GD100-004G-4-PV
- Panel: 180\*300W/pcs
- Used for 1 year Save 60% cost



## 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)
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 & Altitude	-10°C~+50°C, If above 40°C, derate 2% for every additional 1°C. Below 1000m, If above 1000m, derate 1% for every additional 100m.			
Cooling manner	Fan cooling			
Protection level	IP20; IP54 (Cabinet)			

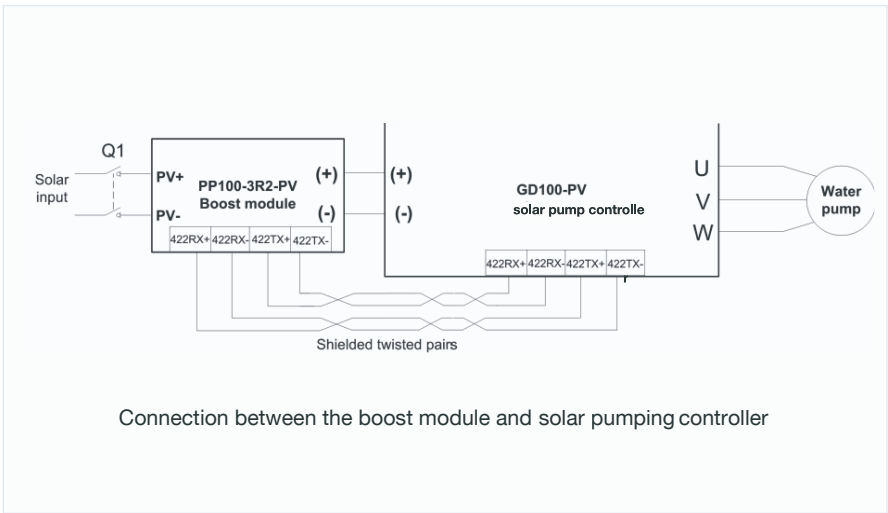
## Options

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 >>

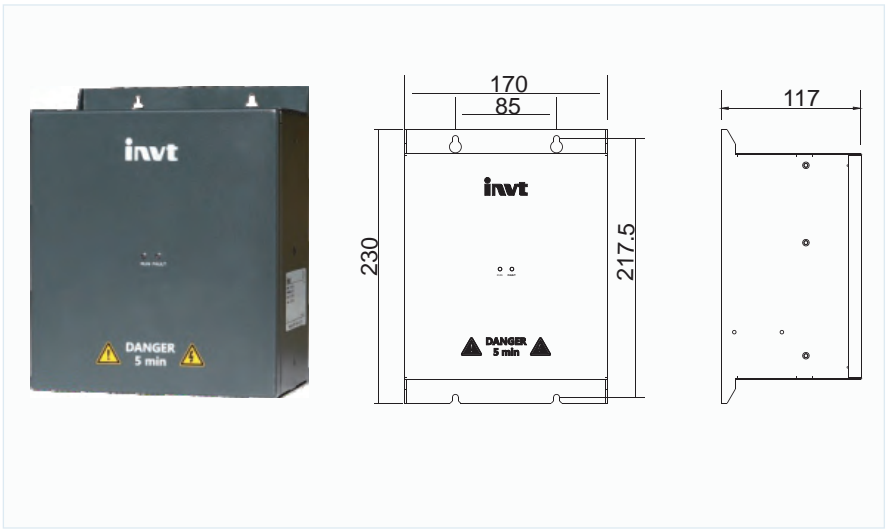
0.4-2.2kW models can be configured with the boost module, which can improve the utilization of the solar component.



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 >>





## 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.

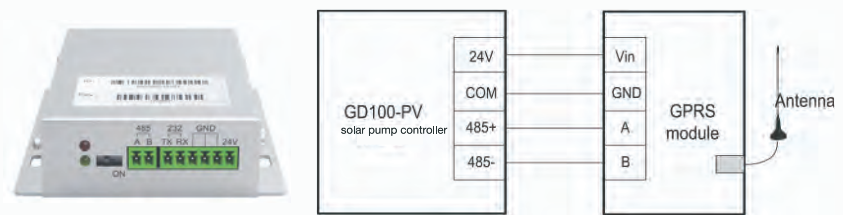
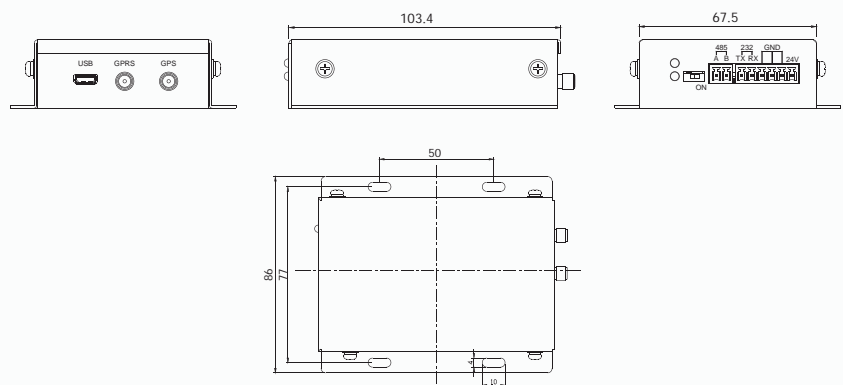
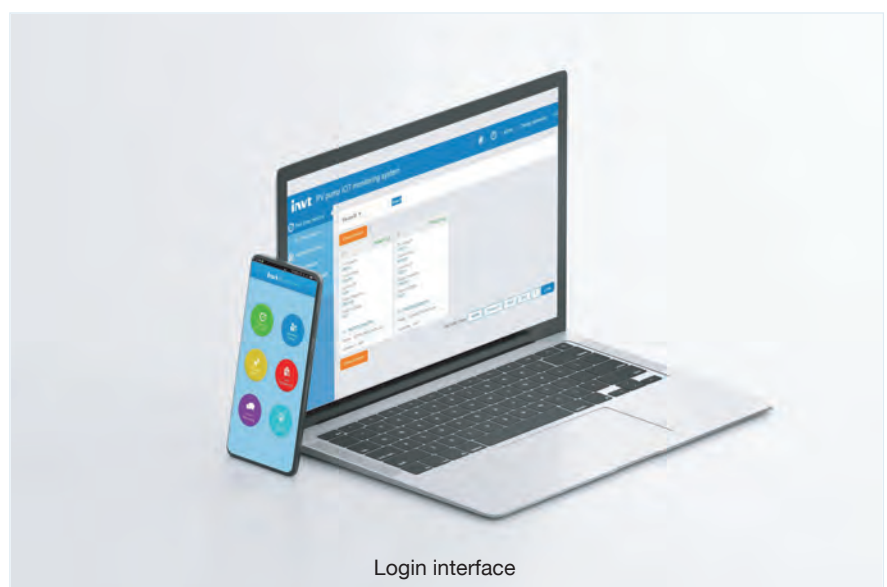


Diagram of connecting the GPRS module to the controller



GPRS module installation dimensions



Login interface



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