



# Go Solar. Go Green.

— SOLAR PUMPING SYSTEMS —

# C O N T E N T S

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# AC Solar Pumping Systems



ANY AC SUBMERSIBLE OR SURFACE PUMPS (upto 110KW)

# AC Solar Pump Controller (inverter to Operate AC Pumps)



VFD CUM INVERTER

C.R.I. AC Solar Pump Controller is used to convert DC Power generated from the PV Modules to 3Phase AC Power that drives any AC 3Phase Submersible or Surface Pumps.

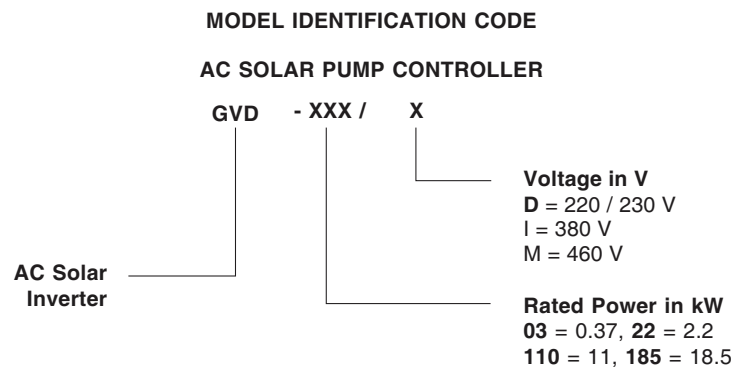
It consists of an efficient, programmed drive which acts as an inverter to change the DC power generated from the solar modules to AC power and operates the pump. In addition it gives complete protection to the pump connected to the system & controls its functions. The MPPT (max. power point tracking) function of the controller improves the overall system efficiency.

### FEATURES

- Both DC & 3Ph AC input - with manual / Auto change over switch
- Can run both 50Hz & 60Hz pumps
- Maximum power point tracking (MPPT) function to improve the system efficiency
- Self diagnostic & protection
- Auto start / stop based on solar light intensity
- Water level sensors for storage tank
- Protects from dry run, high / low voltage, over / under load operations, phase failures, etc.
- Indicators for faulty operations
- Output filter
- Battery Charging & backup provision (upto 2.2kW - Optional)

### APPLICATIONS

These solar pump controllers are used to operate regular AC pumps using solar power in • Residential • Irrigation • Live stock farms • Public water supply • Small farms • De-watering • Industries • Golf course, etc.,



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**SPECIFICATIONS**

|                      |   |
|----------------------|---|
| Power range          | 0.37 - 7.5 kW - 220V output controller<br>1.1 - 18.5 kW - 380V output controller          |
| Versions             | 3Ph - 220V / 230V in both 50 & 60Hz<br>3Ph - 380V in both 50 & 60Hz<br>3Ph - 460V in 60Hz |
| Input variants       | DC input from PV Modules &<br>3Ph - AC input from Generator / Grid                        |
| Degree of Protection | IP 42   |
| Ambient Temperature  | -10 to +40°C  |

**CONTROLLER INPUT REQUIREMENTS**

For 220 / 230 V Pumps - 50 / 60Hz

| Controller Specification |                   |                |                    |                              |     | Recommended PV Module Specification |      |      |          |         |            | PV Module Output |           |                |
|--------------------------|-------------------|----------------|--------------------|------------------------------|-----|-------------------------------------|------|------|----------|---------|------------|------------------|-----------|----------------|
| Model                    | Rated Power in kW | Rated Amps (A) | Input DC Power (W) | Input DC Voltage range (Vmp) | Voc | Pmax (W)                            | Vmp  | Voc  | Imax (A) | Isc (A) | Panel Qty. | No. of Array     | Power (W) | Voltage (V DC) |
| GVD - 03D                | 0.37              | 3.5            | 810                | 270 - 370                    | 400 | 90                                  | 35.2 | 44   | 2.56     | 2.74    | 9          | 1                | 810       | 316.8          |
| GVD - 05D                | 0.55              | 4.7            | 810                | 270 - 370                    | 400 | 90                                  | 35.2 | 44   | 2.56     | 2.74    | 9          | 1                | 810       | 316.8          |
| GVD - 07D                | 0.75              | 6.7            | 1190               | 270 - 370                    | 400 | 70                                  | 18   | 22.5 | 3.89     | 4.16    | 17         | 1                | 1190      | 302.9          |
| GVD - 11D                | 1.1               | 7.5            | 1620               | 270 - 370                    | 400 | 90                                  | 35.2 | 44   | 2.56     | 2.74    | 18         | 2                | 1620      | 316.8          |
| GVD - 15D                | 1.5               | 9.8            | 2430               | 270 - 370                    | 400 | 90                                  | 35.2 | 44   | 2.56     | 2.74    | 27         | 3                | 2430      | 316.8          |
| GVD - 22D                | 2.2               | 13.3           | 3060               | 270 - 370                    | 400 | 170                                 | 35.2 | 44   | 4.83     | 5.17    | 18         | 2                | 3060      | 316.8          |
| GVD - 30D                | 3                 | 17.6           | 4590               | 270 - 370                    | 400 | 170                                 | 35.2 | 44   | 4.83     | 5.17    | 27         | 3                | 4590      | 316.8          |
| GVD - 40D                | 4                 | 24.4           | 5310               | 270 - 370                    | 400 | 295                                 | 36.4 | 45   | 8.10     | 8.87    | 18         | 2                | 5310      | 327.6          |
| GVD - 55D                | 5.5               | 31             | 7560               | 270 - 370                    | 400 | 280                                 | 35.8 | 44.4 | 7.82     | 8.37    | 27         | 3                | 7560      | 322.2          |
| GVD - 75D                | 7.5               | 46.2           | 10080              | 270 - 370                    | 400 | 280                                 | 35.8 | 44.4 | 7.82     | 8.37    | 36         | 4                | 10080     | 322.2          |

\* Optional AC Input Voltage = 3Ph, 200 - 240V ±10%

For 380 V Pumps - 50 / 60Hz

| Controller Specification |                   |               |                    |                              |     | Recommended PV Module Specification |      |      |          |         |            | PV Module Output |           |                |
|--------------------------|-------------------|---------------|--------------------|------------------------------|-----|-------------------------------------|------|------|----------|---------|------------|------------------|-----------|----------------|
| Model                    | Rated Power in kW | Rated Amps(A) | Input DC Power (W) | Input DC Voltage range (Vmp) | Voc | Pmax (W)                            | Vmp  | Voc  | Imax (A) | Isc (A) | Panel Qty. | No. of Array     | Power (W) | Voltage (V DC) |
| GVD - 11I                | 1.1               | 4.1           | 1620               | 500-650                      | 800 | 90                                  | 35.2 | 44   | 2.56     | 2.74    | 18         | 1                | 1620      | 633.6          |
| GVD - 15I                | 1.5               | 5.6           | 2380               | 500-650                      | 800 | 70                                  | 18   | 22.5 | 3.89     | 4.16    | 34         | 1                | 2380      | 598.4          |
| GVD - 22I                | 2.2               | 7.3           | 3300               | 500-650                      | 800 | 110                                 | 18   | 22.5 | 6.11     | 6.54    | 30         | 1                | 3300      | 540            |
| GVD - 30I                | 3                 | 8.8           | 4420               | 500-650                      | 800 | 130                                 | 18   | 22.3 | 7.22     | 8.12    | 34         | 1                | 4420      | 612            |
| GVD - 40I                | 4                 | 12.5          | 5440               | 500-650                      | 800 | 170                                 | 35.2 | 44   | 4.83     | 5.17    | 32         | 2                | 5440      | 563.2          |
| GVD - 55I                | 5.5               | 15.6          | 7480               | 500-650                      | 800 | 110                                 | 18   | 22.5 | 6.11     | 6.54    | 68         | 2                | 7480      | 612            |
| GVD - 75I                | 7.5               | 23.1          | 10080              | 500-650                      | 800 | 280                                 | 35.8 | 44.4 | 7.82     | 8.37    | 36         | 2                | 10080     | 644.4          |
| GVD - 110I               | 11                | 31            | 15120              | 500-650                      | 800 | 280                                 | 35.8 | 44.4 | 7.82     | 8.37    | 54         | 3                | 15120     | 644.4          |
| GVD - 150I               | 15                | 38            | 20160              | 500-650                      | 800 | 280                                 | 35.8 | 44.4 | 7.82     | 8.37    | 72         | 4                | 20160     | 644.4          |
| GVD - 185I               | 18.5              | 44            | 25200              | 500-650                      | 800 | 280                                 | 35.8 | 44.4 | 7.82     | 8.37    | 90         | 5                | 25200     | 644.4          |

\* Optional AC Input Voltage = 3Ph, 380 - 480V ±10%

The above recommended PV module specifications can be changed on availability at installation place, provided the total operating DC input power & voltage (Pmax, Vmp, Voc) are nearest to the above given values.

**PV module selection details for higher rating inverter (above 18.5 kW) can be provided on request.**

**60Hz for 460V 3Ph solar controllers can also be supplied on request.**

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## Terminal Connection Diagram

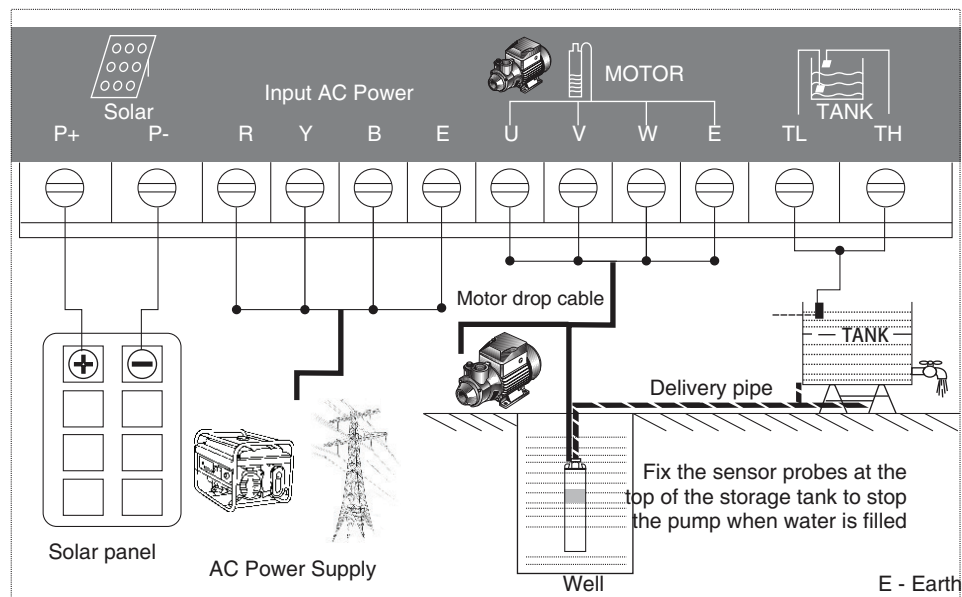


FIG 2

- Connect the required DC Power from the PV Modules to the DC Input terminals (P+, P-).
- To operate the pump when low / No sun light, connect 3Ph AC supply from generator or AC grid to the AC input terminals (R,Y,B & E).
- Select the desired input power (DC / AC) using the rotary manual selector switch. (Not applicable for auto changeover models)
- Connect the 3Ph motor cable leads to the AC output terminals (U, V, W & E).
- Connect the float switch cable to the tank level control terminals (TL, TH) to control the water level in the storage tank.
- In case of dry run, the system will trips off automatically and restart after every one hour interval.
- In case of any faulty operation Indications, reset the system with Reset button or by switching OFF & ON.
- For installation above 75mts, an output filter (choke) need to be provided.