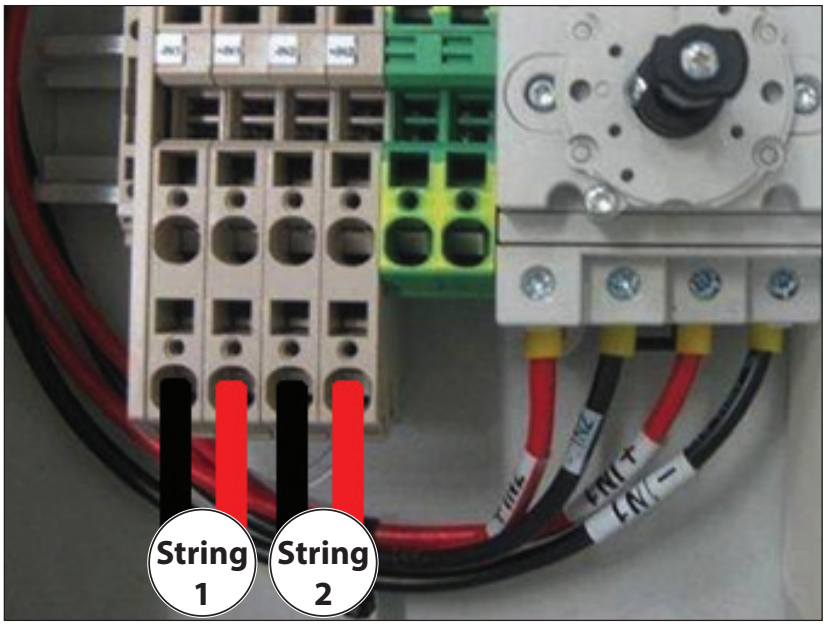
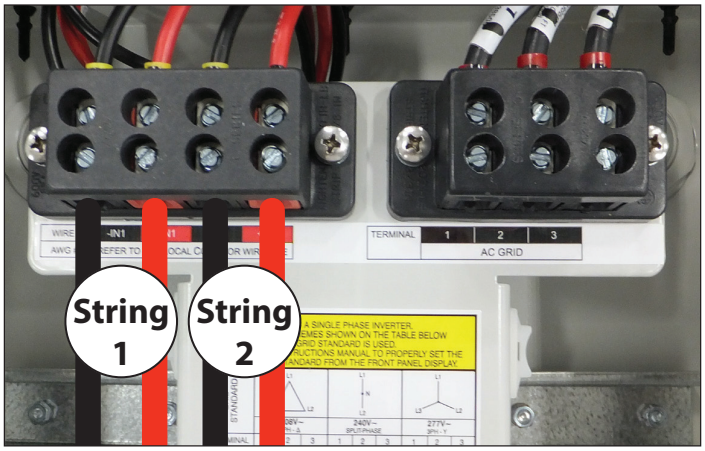
DC array connections

WARNING! The DC disconnect switch disconnects ONLY the DC current from the photovoltaic panels when the switch is open in the OFF position. It DOES NOT disconnect the AC connection to the grid. To disconnect the inverter from the AC grid, an external, customer supplied AC switch must be used.

- To prevent electrocution hazards, all the connection operations must be carried out with the DC disconnect switch turned to the OFF position and locked out.
- When connecting the DC conductors verify polarity prior to terminating. Failure to perform these checks may cause arcing and potential fire.
- The array equipment grounding must be installed per the requirements of the NEC and is the responsibility of the installer.

Connect array to String 1 and String 2 input positions shown below, running separate wires for POS and NEG for each array. The inverter can be configured with an independent MPPT (maximum power point tracking) for each DC input channel or with the two input DC channels connected in parallel (operating with one MPPT) as described on the following pages.





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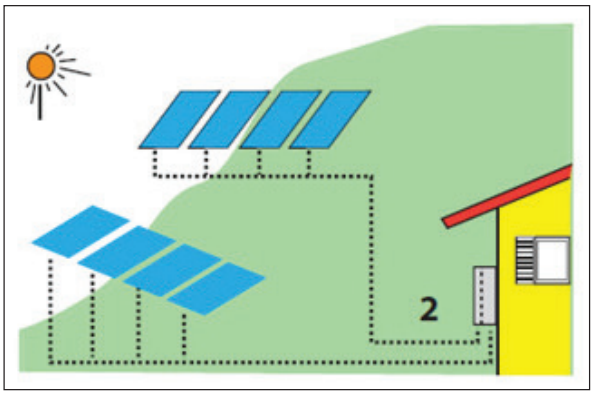
Independent or parallel configuration of inputs

The inverters have dual inputs with independent maximum power point tracking (MPPT) control. When operated in the dual input mode, the inverter can optimize two independent arrays. Each of the inputs is dedicated to a separate array with independent maximum power point tracking (MPPT) control. This means that the two arrays can be installed with different positions and orientation. Each array is controlled by an independent MPPT control circuit.

The two trackers can also be configured in parallel to handle power and/or current levels higher than those a single tracker can handle.

Dual MPPT configuration – independent mode

The dual MPPT structure allows the management of two photovoltaic arrays that are independent of each other (one for each input channel). In the independent mode, the arrays can differ from each other in installation conditions, type and number of photovoltaic modules connected in series.

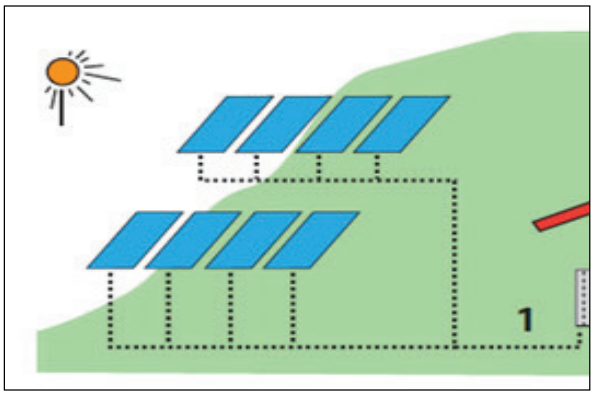


Single MPPT configuration – parallel mode

In the parallel mode, the two channels are connected in parallel and strings of photovoltaic modules having the same type and number of modules in series can be connected in parallel to the single channel. All strings must be identical and oriented to the same sun azimuth.

It is necessary to parallel the two inputs when:

- the current from the photovoltaic array exceeds 22Adc,
- or the array power exceeds the limit for the single channel (see Appendix section 7,
- or when there is a consistent unbalance of power between two arrays.



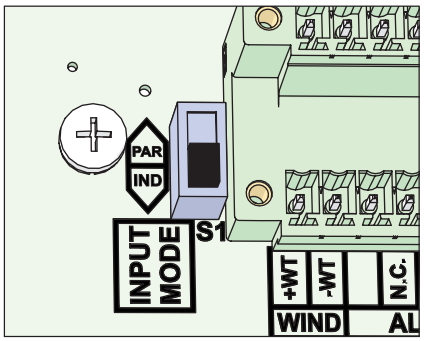
The inverter is set in independent mode at the factory by default. The following sections describe how to connect the inverter in parallel mode.

In order to operate in the parallel mode from a common array, it is necessary to electrically connect the input channels in parallel using the jumper cables provided with this inverter.
In addition, the input mode switch **S1** located on the inverter connection board must also be set to the parallel mode as described below.

Setting the input mode switch S1

The input mode switch **S1** located on the inverter connection board is used to select the input configuration. The default position of the S1 switch is set in the IND mode (DOWN position).

In this mode up to four strings can be connected (two per input) without need of external combiner fusing



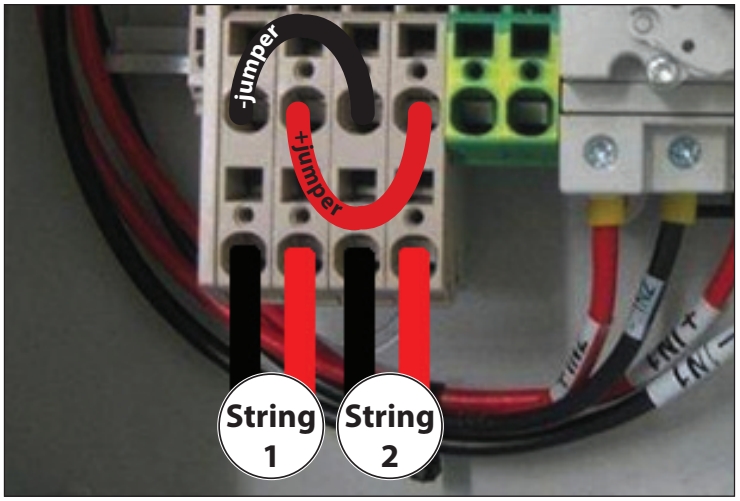
To operate the inverter in the parallel MPPT mode place S1 switch UP in the PAR position.

Note that only two strings can be directly connected to the inverter in this mode. If more than two strings are required, all strings must be combined in an external fused combiner box, or the IND mode must be used.

Use the following instructions to electrically connect the input channels in parallel.

Parallel mode front switch wiring box –S versions only without AFD

In the switchbox, parallel the two MPPT inputs of terminal [–IN1 and –IN2] and [+IN1 and +IN2] as shown below using the two #10 AWG jumper wires provided (1 black and 1 red cable) to connect the input.



NOTE! When Arc Fault Detection (AFD) is installed, the paralleling must be done inside the inverter as shown on the following page..

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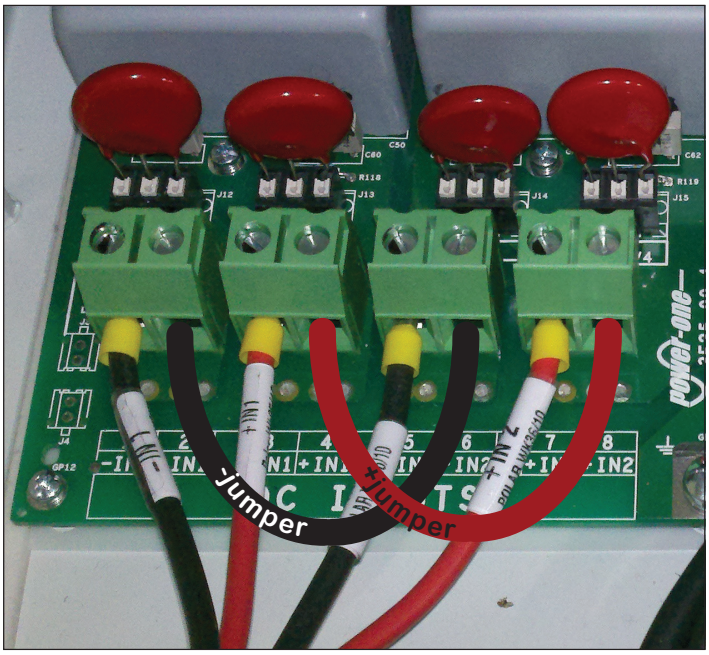
Parallel mode bottom switch wiring box and -S version with AFD

In the inverter box, parallel the two MPPT inputs of terminal [–IN1 and –IN2] and [+IN1 and +IN2] as shown below, using the two #10 AWG jumper wires provided (one black and one red cable) to connect the input.



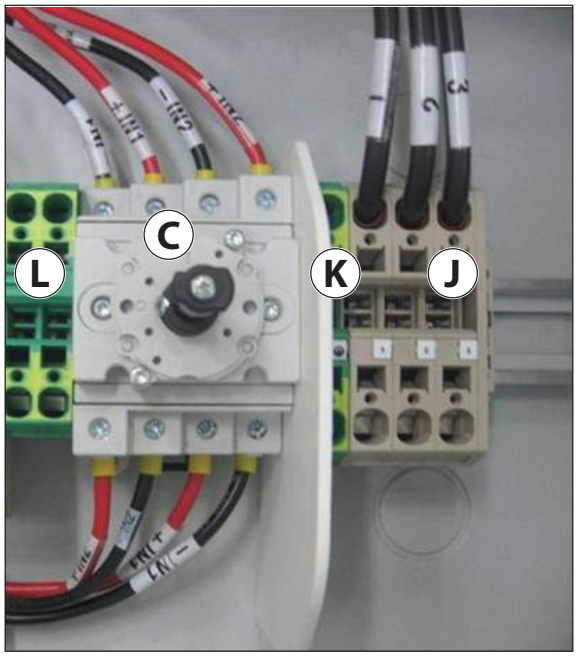
AC grid connection

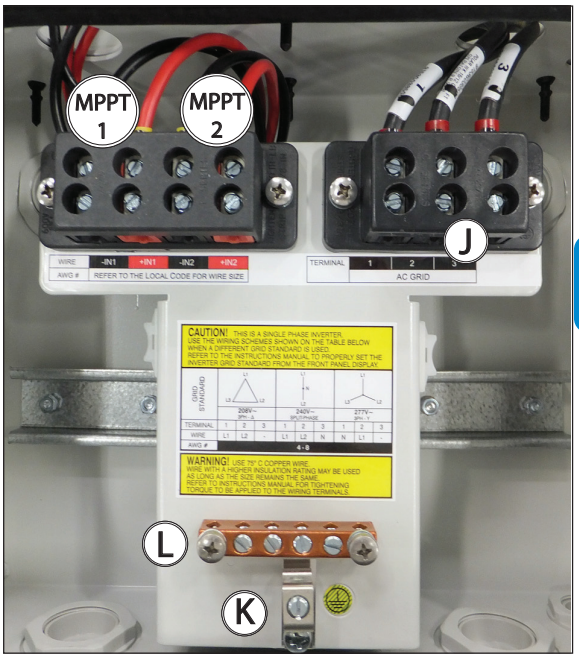
AC output overcurrent protection is not provided with the inverter; it is the responsibility of the end user to provide overcurrent protection for the AC output circuit.

The default AC grid connection, 240VRMS/3W/Split-Phase, requires the neutral terminal to be connected to the grid neutral conductor for proper operation.

Before connecting the inverter to the grid, the grid type must be selected if it differs from the default 240V-SPLIT PHASE setting. See Operations, section 4 > Set Vgrid, for instructions to change the default.

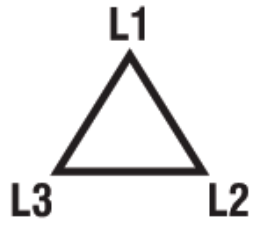
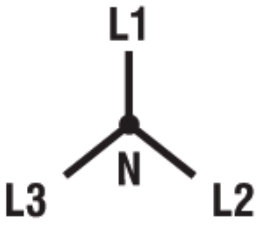
- AC grid wiring is connected through the inverter switchbox.
- Run an approved raceway between inverter and external AC disconnect switch.
- Make conduit entry through openings (B or E) shown in table 3-1.
- Connect AC wiring to switch box terminal block (J) and the main AC ground cable to switchbox terminal block (K).





The grid standard table below shows AC wiring connections according to the AC grid type.

- Connect wiring to the numbered terminals as shown in the table .
- Size conductors per NEC Article 310; use only 75°C or 90°C. copper wire.
- Terminal block accommodates conductor type shown and wire size range per table 3 2.
- If several inverters are installed to a three-phase AC GRID, always distribute the inverters between the phases in order to reduce power imbalance between the phases.
- Always refer to the local standards.

GRID STANDARD									
	208V~ 3PH - Δ			240V~ SPLIT-PHASE			277V~ 3PH - Y		
TERMINAL	1	2	3	1	2	3	1	2	3
WIRE	L1	L2	-	L1	L2	N	N	L1	-

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