

Checklist prior to start-up			✓
AC	AC input circuit breaker	32A double pole per inverter	
	AC output circuit breaker	20A double pole per inverter	
	3 core copper wire	Cable size to be specified by electrician, Recommend minimum 10mm ² for 2 inverters, 16mm ² for 3 inverters	
	Inverter AC supply	From main supply, before earth leakage	
	Inverter AC output	Supplies the earth leakage in the DB board	
	Neutral / Earth wires on AC output	Needs to be bonded, before the earth leakage device	
	AC surge arrester / AVS / AVR (for generators)	Recommended.	
Battery	Lead acid battery	2 Inverters : 16x 200AH, recommend 20x 200AH 3 Inverters : Not recommended, use lithium batteries	
	Lithium battery	2 Inverters : Battery/s must be able to supply 208A continuously 3 Inverters : Battery/s must be able to supply 312A continuously If more than one battery, connect battery no 1 positive to the inverter and last battery negative to inverter.	
	Battery cable	35mm ² copper cable from each battery connected to copper busbar. 35mm ² copper cable from copper busbar to each inverter.	
	DC battery circuit breaker / fuse	125A per inverter	
	Battery balancer	Connected to each 12V battery to ensure balance between batteries. Not applicable if 48V Lithium battery is used.	
Solar	Solar panels in series	Open circuit voltage (Voc) < 145V. Check with multi-meter on a sunny day 60V < Max. power voltage (Vmp) < 120V. Calculate this value: Vmp x # of panels in series	
	Solar panels	Total panel power < 4400W _p	
	Fuse / DC circuit breaker	15A per parallel string	
	DC surge arrester	Recommended	
	Solar cable	Recommend 6mm ² cable, max 3 strings per cable	
	Solar panel array grounding	All solar panels frames are connected to copper wire and is grounded properly	
	Aux. fittings	MC4 connectors single/parallel, PV solar panel mounting rails, anti-theft clips, roof brackets, etc.	
Communication Cables	Current sharing cables (twisted Red/Black)	Ensure that the cables are properly connected to the green connector. Ensure a proper connection between the inverters. See inverter user manual for instructions on connection positions	
	Data communication cables (grey)	Take care when inserting the cables, the pins on the male plug easily bents. See inverter user manual for instructions on connection positions	
	General notes:		
Do not make live connections. Switch off AC supply when connecting AC wires. Disconnect Solar panels when connecting solar wires. Switch off battery circuit breakers when connecting battery wires.			
Prior to switching on circuit breakers / fuses / inverter, double and triple check that the wires are in the correct places and positions. Having 2 wires switched will cause damage to the inverter. It takes a few moments to double check all connections.			
When your electrician issues a CoC, please ensure that the inverter is disconnected from AC wires when a "Megger" or any other high voltage testing device is used.			
Start-up			
Ensure all circuit breakers / fuses are switched off. This includes AC supply, AC output, battery and solar panels.			
Switch on the battery circuit breaker / fuse.			
Switch on the inverter by means of "stand-by" button below / on the side the inverter.			
Enter the settings menu and set the correct settings for the inverter. This will affect how the inverter will behave (ie UPS / hybrid / offgrid) and will determine how long the batteries will last. The inverter user manual has a detailed description of each setting and it's purpose. Ask the battery supplier of charge settings for the batteries (charge / float / cut-off voltage / charge current).			
Ensure that the parallel settings on the inverter is set. Read the Parallel User manual for the inverter. Some inverters need to be placed in stand-by mode to change parallel settings.			
After all settings was changed to the desired values, switch off the inverter by means of the "Stand-by" switch and battery circuit breaker. Repeat for the remainder of the inverters.			
The system is now ready to be used. Power the system up by starting with batteries, inverter, AC in, AC out and finally solar panels.			
If a TSP lithium battery is used, TSP Solar Bot can be used to activate battery communication using a Raspberry Pi and the online monitoring platform.			