

| <b>Checklist prior to start-up</b>  |  |  | ✓ |
|---|--|--|---|
| AC  | AC input circuit breaker                       | 32A double pole <b>per inverter</b>  |   |
|   | AC output circuit breaker                      | 20A double pole <b>per inverter</b>  |   |
|   | 3 core copper wire                             | Cable size to be specified by electrician, Recommend minimum 10mm <sup>2</sup> for 2 inverters, 16mm <sup>2</sup> 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<br>3 Inverters : Not recommended, use lithium batteries   |   |
|   | Lithium battery                                | 2 Inverters : Battery/s must be able to supply 208A continuously<br>3 Inverters : Battery/s must be able to supply 312A continuously<br>If more than one battery, connect battery no 1 positive to the inverter and last battery negative to inverter. |   |
|   | Battery cable                                  | 35mm <sup>2</sup> copper cable from each battery connected to copper busbar.<br>35mm <sup>2</sup> 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) < 450V. Check with multi-meter on a sunny day<br>120V < Max. power voltage (Vmp) < 430V. Calculate this value: Vmp x # of panels in series  |   |
|   | Solar strings                                  | Max 2 strings / Max 20A from panels to inverter. Do not share panels between inverters.  |   |
|   | Solar panels                                   | Total panel power < 5500W <sub>p</sub>   |   |
|   | Fuse / DC circuit breaker                      | 15A per parallel string  |   |
|   | DC surge arrester                              | Recommended  |   |
|   | Solar cable                                    | Recommend 6mm <sup>2</sup> cable, max 3 strings per cable  |   |
|   | Solar panel array grounding                    | All solar panels frames are connected to copper wire and is grounded properly  |   |
| Communication Cables  | Aux. fittings                                  | MC4 connectors single/parallel, PV solar panel mounting rails, anti-theft clips, roof brackets, etc.   |   |
|   | Current sharing cables (twisted Red/Black)     | Ensure that the cables are properly connected to the green connector.<br>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 bends. See inverter user manual for instructions on connection positions   |   |
| <b>General notes:</b>   |  |  |   |
| 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.   |  |  |   |
| <b>Start-up</b>   |  |  |   |
| 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.  |  |  |   |
| <b>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.</b> 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.  |  |  |   |