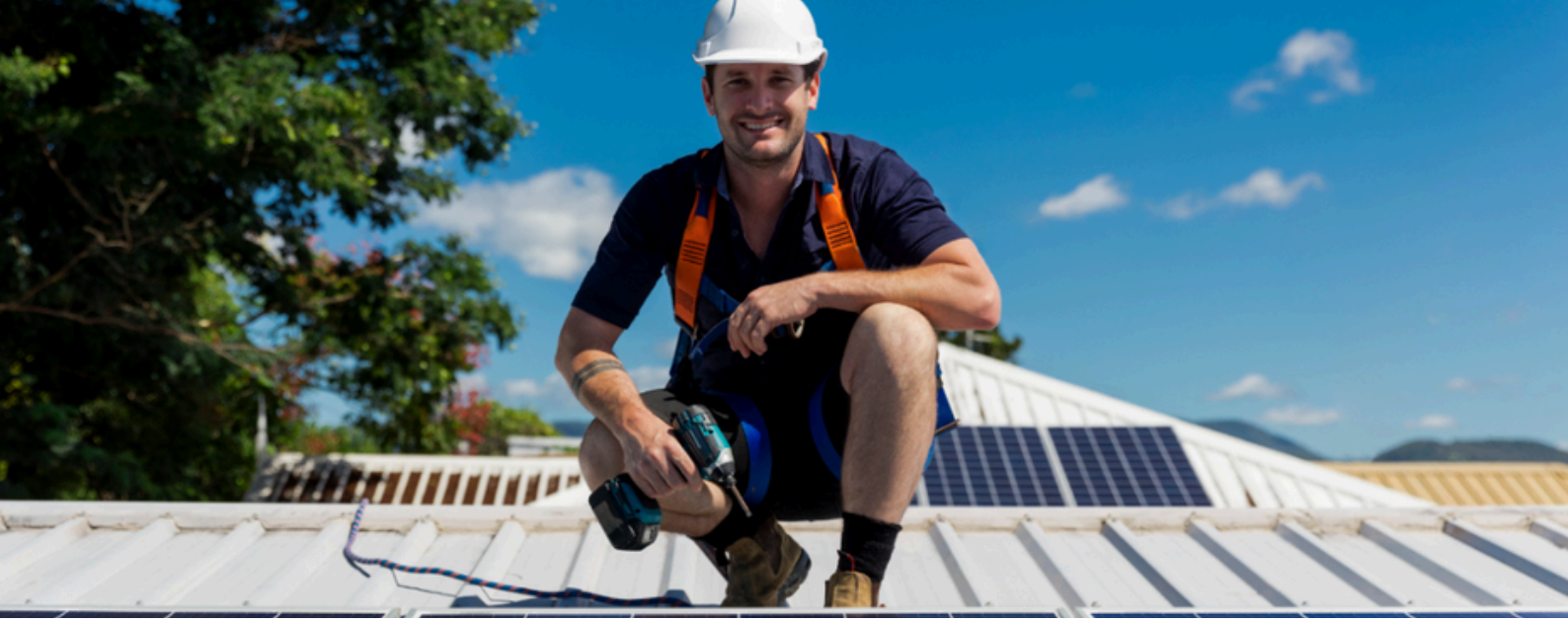


Rooftop Solar

Installation and commissioning: a troubleshooting guide

Exploring the steps solar installers can take to successfully register and test rooftop solar systems to comply with emergency backstop requirements.

For more information visit www.powercor.com.au, email newenergyservices@powercor.com.au, or call 1800 772 940

This guide provides detailed explanations of the steps solar installers can take to successfully register and test new rooftop solar systems. Installing the right hardware and configuring it correctly allows customers to get the most from solar installations.

Registration and verification

Have you completed a Solar Pre-approval (SPA)?

Prior to installation - and before starting the registration process - ensure a SPA is completed, 'approved' and in the 'valid' state, and there is internet available on site.

Registration is a two-step process. Firstly, to connect to our network, a communication device (e.g: inverter, gateway, aggregator) must be registered with the manufacturer. Registration is undertaken through the relevant manufacturers' app.

During registration, the manufacturer generates a 40-character Long Form Device Identifier (LFDI). This ensures that the connection is private, protected, and secure.

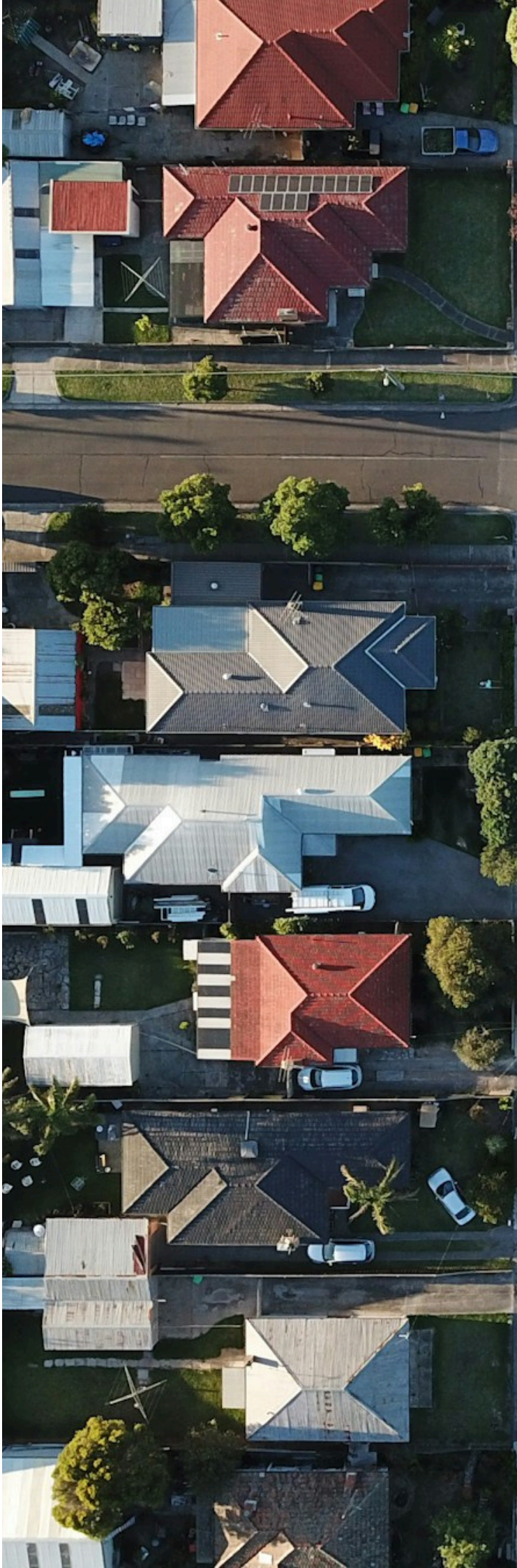
Are you having trouble generating a Long Form Device Identifier (LFDI)?

Please contact the manufacturer for assistance.

Once the LFDI is generated, the next step is to verify the LFDI in eConnect, via your solar alteration request. To complete this step, the SPA must be completed, 'approved' and in the 'valid' state.

Are you having trouble verifying the Long Form Device Identifier (LFDI)?

Have you raised a SPA? Is it 'approved' and in the 'valid' state? If the SPA is 'approved' and in a 'valid' state, please contact the manufacturer to assist you.

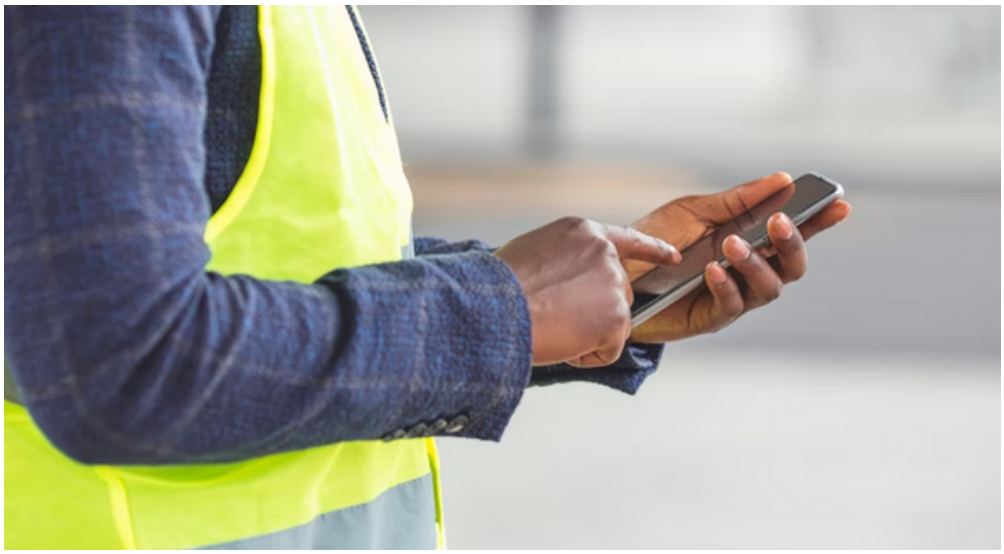


Preparation

Please complete the following five preparation steps before beginning the DER communication capability test. Following these steps will help to achieve a successful test outcome:

Step 1	Check that an export limiting meter has been installed.	An export limiting meter is required for ALL installations to ensure that exports can be remotely reduced as per the emergency backstop requirements.
Step 2	Ensure the CT clamps associated with the export meter are wired correctly.	Export and/or generation may flow in the wrong direction if they are wired incorrectly.
Step 3	Check the inverter's firmware is up to date.	Firmware is the software programming installed directly into the hardware during manufacturing.
Step 4	Install the required hardware correctly.	Check the inverter(s), export meter and communication device have been correctly installed, set up and connected to the customer's internet and our utility server. Internet connectivity is needed to run the test.
Step 5	Ensure the system can generate at least 1000W during the test.	There must be sufficient generation to verify the system has been correctly installed. The solar system needs to be 'export ready' so we can test commands to reduce or turn off solar generation and exports. The ideal time to perform the test is in the middle of the day.

Preparation steps must be completed correctly or the capability test will fail. If a test fails, you may need to return to the site to fix the issue.



Testing

We recommend waiting approximately five minutes after the device has been successfully registered before starting the DER Communication Capability Test.

The DER Communication Capability Test shows if the newly-installed rooftop solar system can receive and comply with our signals to reduce generation or turn off exports.

This involves four tests to verify your site is emergency backstop compliant. One test is completed at a time. The to-do list is updated in our portal with a pass or fail result each time a test is completed.

It's preferrable for the DER Capability Test to be triggered while someone is on site so that any installation errors can be addressed. Tests can be triggered later remotely if conditions on site aren't favourable (e.g. not enough sunlight), provided you have successfully completed preparation steps one to four.

Test 1 - Connectivity: May take up to 10 minutes to complete (typically less than five minutes)

Test 1 confirms the device is registered and communicating correctly by posting power measurements. This test also updates the post and poll rates to ensure the capability tests can be completed faster.

Test 1 requires the device to report power measurements to our system.

If this test fails:

- Using the manufacturer portal, confirm the DER is: registered correctly; online, communicating and reporting power measurements. The received readings are displayed in the portal for each step.
  - Is the inverter connected to the internet? Is there sufficient internet signal strength?
  - Is the inverter collecting measurement data? Can you see the measurements on the manufacturer portal?
- Check the inverter had the correct settings applied, and firmware is up to date.
- Contact the manufacturer support team to confirm they can see the inverter connected to their system, and that the inverter is collecting the correct measurement data.

Test 2 - Default Export: May take up to five minutes to complete (typically one to two minutes)

Test 2 confirms the site adheres to the set default export limit (0kW) if the connection to the internet is lost.

If this test fails, there might be a problem with the measurements from the export meter or the configuration of the inverter. **The test will only pass if there is no export to the grid.**

You may see the site is still generating if there is load on site. This should only be for self-consumption; the system should not be exporting.

- Check that the inverter has the correct settings applied and firmware updated. Sometimes the wrong settings or firmware will stop the inverter from following the controls we have sent.
- Check that the export meter and CT clamps are correctly installed and wired with the correct polarity. The test will always fail if the export meter is interpreting load as export.
- Contact the manufacturer support team to help identify why the site is exporting.

Test 3 - Controls: May take up to six minutes (typically two to three minutes)

Test 3 confirms the inverter responds to a control by either turning the generation down if the site load is large (Test 3a) or relaxing the export limit if the site load is small (Test 3b).

Two different tests could be run, depending on the loads at the site. The test type is automatically determined by our system after measuring the export and generation at the site.

- **Test 3a)** The test will turn generation down if the site has a large load and generation is fully consumed by customer load.
- **Test 3b)** The test will relax the export limit if the site has a small load, which will allow the site to briefly increase the generation and export (above the default).

Both tests result in a rapid change in the amount of generation produced on-site. Both tests require enough sunlight to produce >1000W of generation.

If Test 3 fails, double check the CT clamps are wired with the correct polarity, and that the system is configured in accordance with the manufacturer instructions and with the latest firmware and then try to run the capability test again. If you have already tried a second time and the test still fails, contact the manufacturer support team for assistance to identify why the site did not make the expected change to generation or exports during the test.

Test 4 - Final Configuration: May take up to 60 seconds (typically less than 20 seconds)

The final configuration: Configuration settings are set, and the post and poll rate is restored to 300 seconds.

The final test resets the poll rate of the inverter to 300s. If this step fails, call Powercor/CitiPower on 1800 772 940.

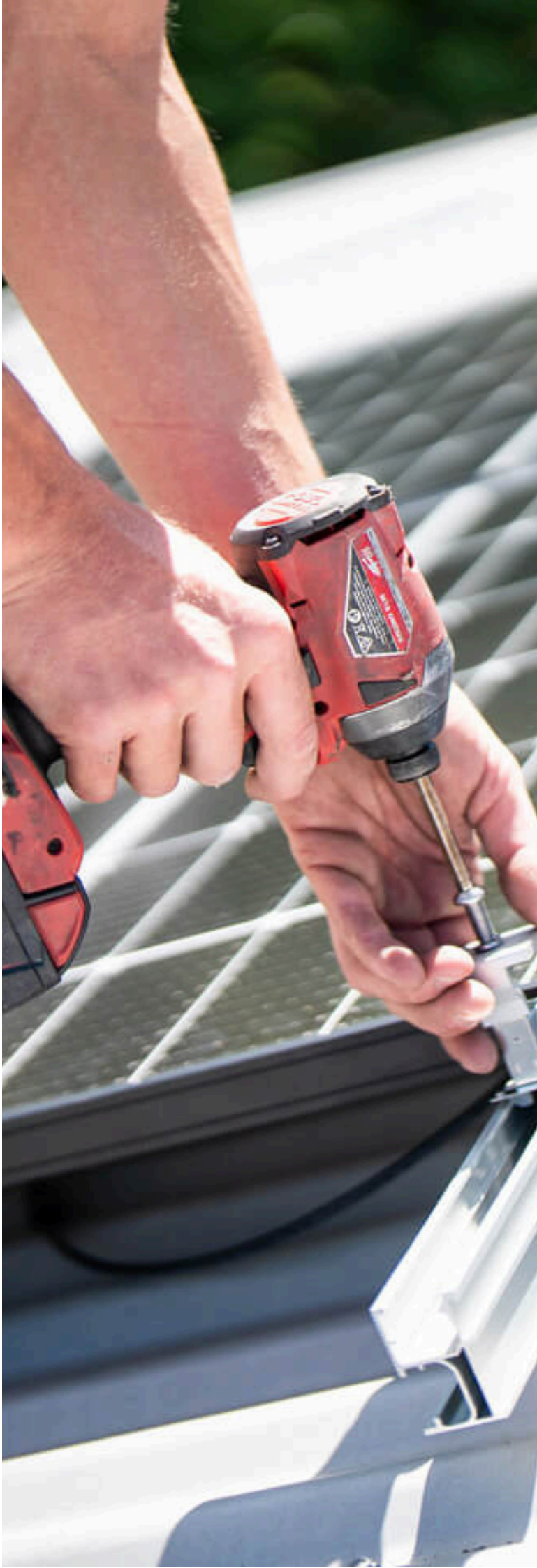
Finalising

After successfully completing the DER capability test, you need to arrange for a Licensed Electrical Inspector (LEI) to visit the site and submit the required documents to Powercor/CitiPower.

The DER will be registered and confirmed after the solar alteration request has been completed and paperwork validated by Powercor/CitiPower (this may take up to 10 business days). Only then will the approved export limit be activated and sent continuously to the device.

Any questions about the application should be directed to:
Powercor/CitiPower
1800 772 940
newenergyservices@powercor.com.au

Note: Once the capability test has been passed (unless the emergency backstop has been enacted), we will never limit a site's ability to use its generation to power the onsite loads. This applies even if a site briefly loses internet connectivity.



Failure messages: summary

Test	Failure message	Issue/check	Contact
Any	An error occurred. Please try again.	This may be caused by a connectivity issue. If you receive this issue multiple times, **please report the issue to CitiPower**.	CitiPower/ Powercor
Any	Communication issue. Check device settings or restart device and try again.	• The inverter is not sending power measurements. • Check the inverter and site export meter are collecting and reporting the power measurements (via the manufacturer portal).	Manufacturer
Any	No response from device. Check device settings or restart device and try again.	**Call the manufacturer** and ask whether they can see that a control was sent from the DNSP utility server to this site and the device has responded.	Manufacturer
Any	Control execution error. Check device and site settings or restart device and try again.	**Call the manufacturer** and ask if they can see that a control was sent from the DNSP utility server to this site and the device has responded.	Manufacturer
Test 2	Still exporting but export must be 0W. Check site, export meter and device settings or restart device and try again.	• The site still appears to be exporting. • Check the export meter is set up correctly and the correct settings and firmware are applied. If there is still an issue, please **call the manufacturer** and ask for help to identify why the site is exporting.	Manufacturer
Test 3a	Generation detected but generation must be 0W. Check site, export meter and device settings or restart device and try again.	• The inverter did not respond to the control in the expected time. • If this fails, **call the manufacturer** and ask for help to identify why the site was not able to provide the expected response with generation or exports during this test.	Manufacturer
Test 3a	Generation control error. Check site, export meter and device settings or restart device and try again.	• The inverter did not respond to the control in the expected time. • If this fails, **call the manufacturer** and ask for help to identify why the site was not able to provide the expected response with generation or exports during this test.	Manufacturer
Test 3b	Export limit error. Check site, export meter and device settings or restart device and try again.	• The inverter did not respond to the control in the expected time. • If this fails, then **call the manufacturer** and ask for help to identify why the site was not able to provide the expected response with generation or exports during this test.	Manufacturer

Tests 1 and 4 could receive the ‘ANY’ failure message