Smart Connect Solar – A Review, and Clarification of Technical Requirements

Relating to Energy Management, and the rollout of Smart Connect Solar across Horizon Power's regional microgrids

November 2024

HORIZON POWER

Acknowledgement of Country

Ngala kaaditj Whadjuk Noongar moort keyen kaadak nidja boodja.

~

We would like to acknowledge the Traditional Custodians of this land, the Whadjuk people. We recognise and appreciate a continued connection through stories, traditions and living cultures and commit to building a brighter future together.

Smart Connect Solar Review & Lessons Learnt

HORIZON POWER

Smart Connect Solar

Rollout complete on 13/8/24

<u>Status as of 21/11/24</u>

805 applications for 7.1MW of additional solar!

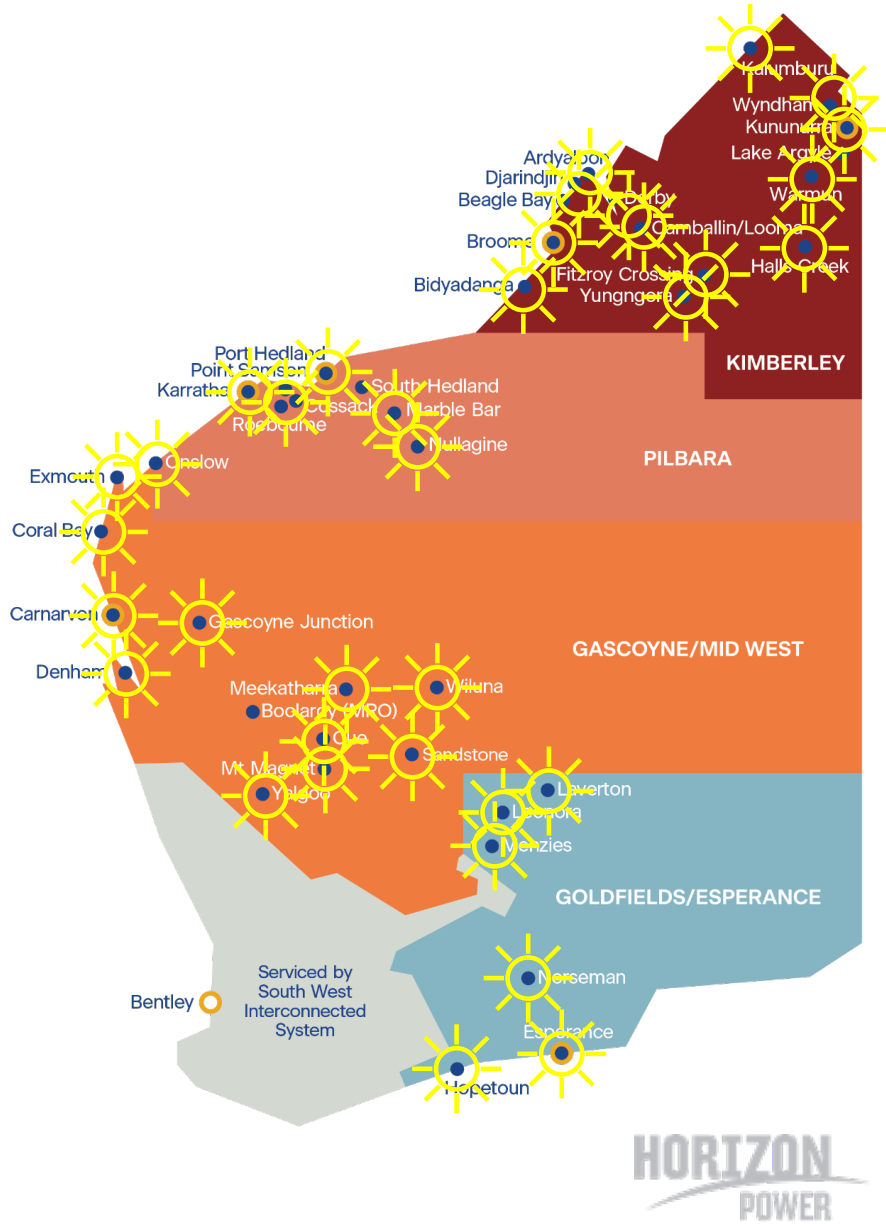
Smart Connect Solar Rollout

- Smart Connect Solar has now been rolled out in all of Horizon Power's regional microgrids

As of Nov 21st

805 new applications → Equating to 7.1MW capacity

454 New Online SGDs → Produced 4.3 GWh



The DER Management Platform

- **Monitors in near-real time**:
  - The power system;
  - Customer solar (via the SGD); and
  - Weather conditions (via Weatherzone).
- **Uses analytics to forecast**:
  - Power system conditions;
  - Weather conditions; and
  - Customer solar performance.
- **Proactively dispatches customer solar to protect against**:
  - Generator Minimum Load issues; and
  - Step load / operational reserve issues.
- **Monitors connectivity** and utilises SGD **to implement failsafe controls** upon communications (and / or systems) failures to maintain power system security; and
- **Captures valuable data** which supports everything from planning and modelling to technical compliance and performance monitoring.

The DER Management Platform

~**708 DER connections** online in DERMS

~**7.5 MW of PV** managed by DERMS

Over **600,000 data points** in DERMS

Over **5000 calculations per second**

Average Energy Management well within Energy Management Target

Lessons Learnt

Installers:

- Some inverters installed not on approved inverter list
- SGD Enclosure – Some incorrectly insulated cables
- SGD Enclosure – Some non-power rated network cables

⚠ *Note SGD Enclosures will be accessed by non-electrical workers*

- Labelling often incorrect and documents not provided to customer
- Some systems taking too long to install
- Correct inverter settings not always being applied
- Correct NMI and address must be entered in SwitchDin app.
- Some issues with Applications (see over)

Horizon Power:

- DERMS optimisations to minimise energy management
- Some power system issues (eg reactive power – Warmun)
- No available LV EG systems currently connectable to a single SGD
- Issues with conflict between DERMS vs Local Export Limit control
- New systems are registered overnight (we're trying to make this faster!)

Lessons Learnt

Issues with submitted applications:

- Missing technical schedules
- Three phase inverters on single phase supplies
- Single phase inverters (>3kW) on three phase supplies
- Cable schedules – cables for single phase installation used for three phase installations
- Circuit/System diagram show different inverter to the one specified in the application
- Duplicate applications made within one or two weeks of each other (could be due to change of installers) – it is helpful if the installer advises if application is withdrawn.
- Connecting a system (NOC) before an offer to connect is made
- SGD delivery addresses – ensure these are correct
- SGD collection by installers (we have had a lot of return SGD and then had to resend)

Technical Requirements Clarifications

What are the updates?

Clarifications to the Technical Requirements

- The updated Technical Requirements will take effect **immediately**.
- The new Technical requirements cover updates to the **Energy Management installation** requirements:
    - Inclusion of photos of SGD enclosure
    - Requirement for >300V rated network cables
    - Clarification of upper connect and reconnect frequency
    - Clarification regarding Horizon Power ability to remotely update inverter settings.
    - Removal of ability to connect single-inverter LV EG systems direct to SGD (must be via proponents control interface)

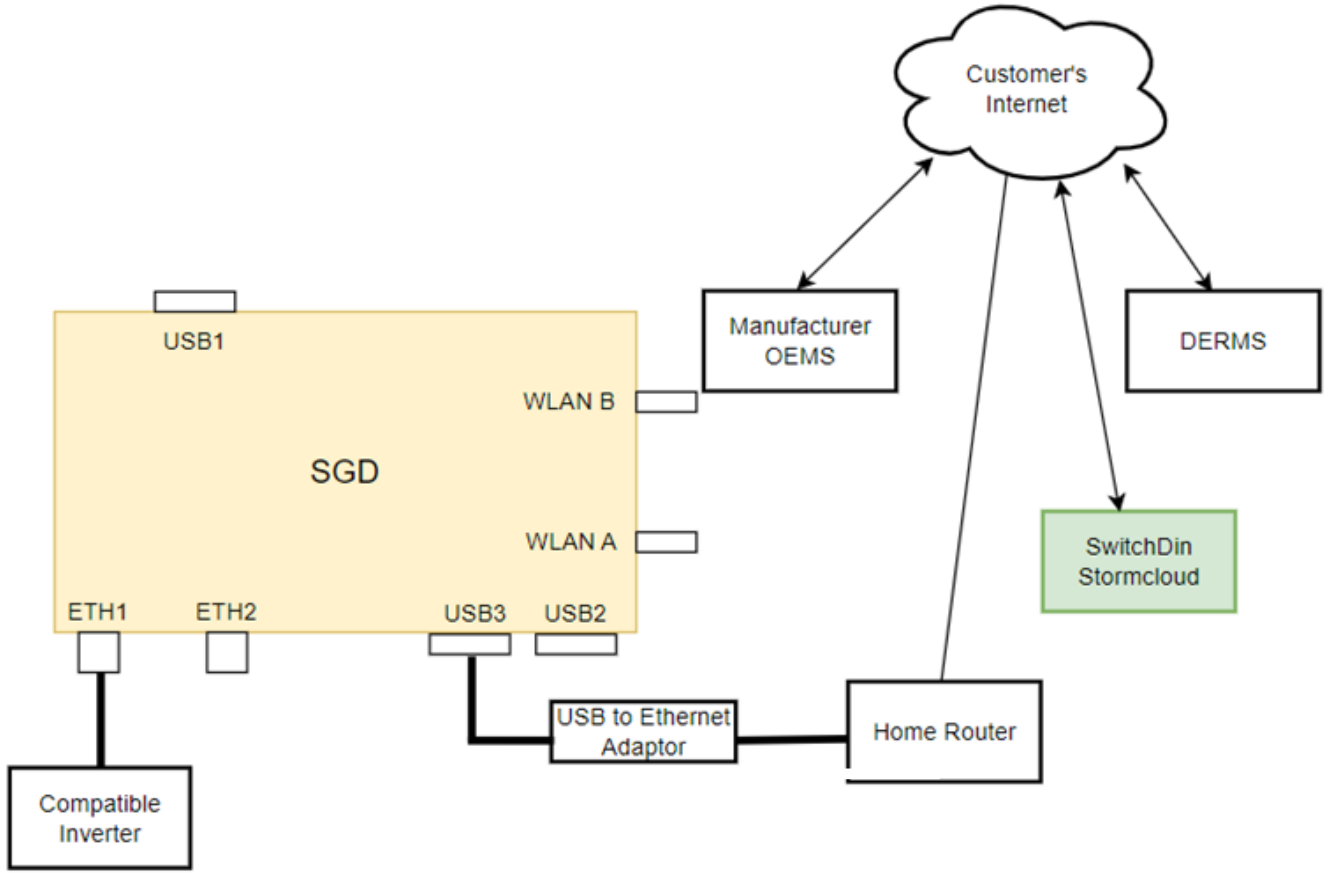
SGD Enclosure Updates

- Requirement to use 300V RMS network cable
- Isolator for SGD Enclosure
- Elimination of live contact points

⚠ *Note SGD Enclosures will be accessed by non-electrical workers*

SGD Connection

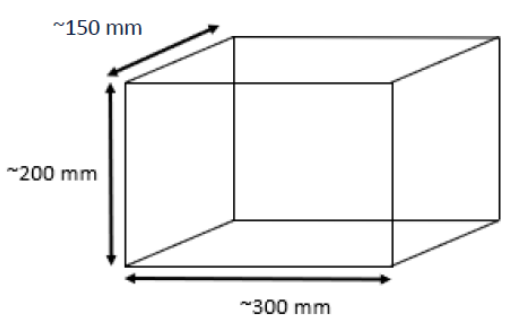
Basic EG SGD Network Connections



Secure Gateway Device (SGD)

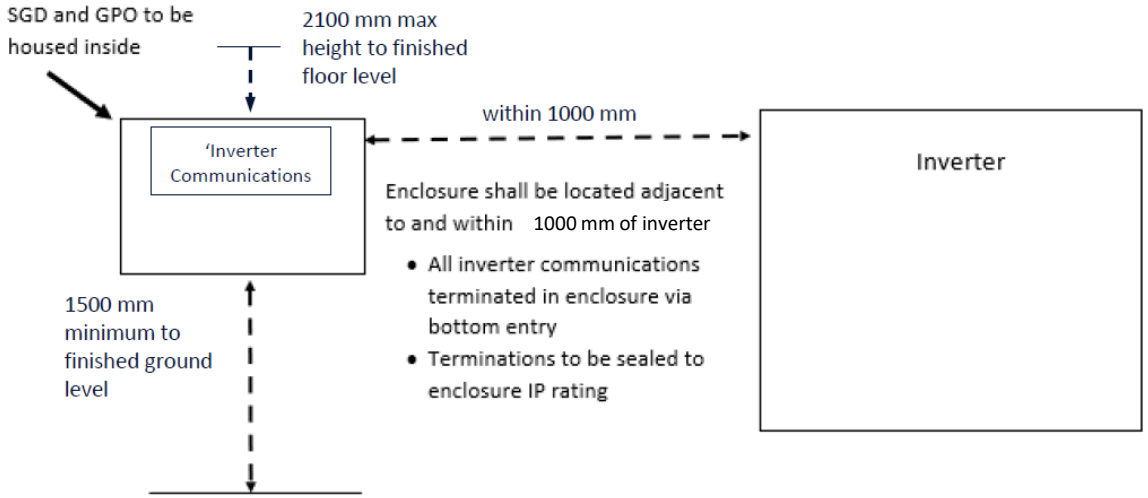
Basic EG Systems – SGD Enclosure Requirements

- Approx. dimensions of (W) 300 mm x (H) 200 mm x (D) 150 mm or larger, sufficient to house the SGD, GPO and powerpack supply to the SGD
- Allow for one or more DIN rails for connection of the SGD, and GPO
- IP and UV rated to suit local conditions
- Located within 1000mm of inverter, at minimum and maximum heights, and out of direct sunlight
- Easily accessible, with a 750 mm x 750 mm ground level clearance around the SGD enclosure
- Screw sealed or hinged lockable
- Labelled ‘Inverter Communications’



Enclosure requirements

- Non-transparent
- Approximate dimensions 300 mm (W) x (200 mm (H) x 150 mm (D) sufficient to house SGD, SGD powerpack and GPO with 30 mm spacing on all sides of internal equipment
- IP rated appropriate for local conditions to prevent water / dust ingress
- Suitably UV rated
- Screw sealed or hinge lockable
- Labelled ‘Inverter Communications’



PU

EG Technical Requirements – Australia Region ‘C’ Settings

- Select and confirm Australia Region C Inverter settings at commissioning.

- Update the upper connect and reconnect frequency to 50.5Hz in Horizon Power systems (see AS4777.2:2020 section 4.7 for further information).

Basic EG Technical Requirements

Phase Balance Requirements

- Maximum phase imbalance 3 kVA per phase.

Basic EG Technical Requirements

Maximum System Capacity

Supply Arrangement (WASIR Connection Service Type)	Basic EG System Type (Inverter Phasing)	Maximum Aggregate System Capacity	
Single-Phase Supply	Single-Phase Inverter	IES without ESS	≤10 kVA
		IES with DC Coupled ESS	
		IES with AC Coupled ESS	IES ≤10 kVA ESS ≤10 kVA
Three Phase Supply	**Single-Phase Inverter; or Multiple Single-Phase Inverters**	**IES without ESS**	**≤3 kVA per phase**
		IES with DC Coupled ESS	**≤10 kVA in aggregate** **≤5 kVA per phase**
		IES with AC Coupled ESS	**IES ≤9 kVA in aggregate** **ESS ≤10 kVA in aggregate** **IES ≤3 kVA per phase** **ESS ≤5 kVA per phase**
	Three Phase Inverter	IES without ESS	≤10 kVA per phase
		IES with DC Coupled ESS	
		IES with AC Coupled ESS	≤50 kVA in aggregate IES ≤ 10 kVA per phase ESS ≤ 10 kVA per phase

IES = Inverter Energy System *ESS = Energy Storage System*

Accreditation

- Accreditation for Inverters remains with the **Clean Energy Council**

- Accreditation for Installers is now with **Solar Accreditation Australia (SAA)**
  - Installers must be registered with Solar Accreditation Australia
  - Installers must complete specific Smart Connect Solar Training through SAA or the SwitchDin Academy

PU

For More Information

For more information – eg Approved Inverters, Technical Requirements, FAQs, Accreditation see our website:

Connect solar and battery - Info for installers | Horizon Power

www.horizonpower.com.au/contractors-installers/connect-solar-battery-ev/

Questions