

SolarEdge Solution Connection and Configuration Guide for Australia

Here is information on connecting the SolarEdge Home Battery ("the battery") and LG RESU Prime batteries to a SolarEdge inverter and connecting the inverter directly or via the DC Combiner. Also, we explain the wiring steps for the SolarEdge Backup Interface and how to configure the solution using SetApp after the commissioning.

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Revision History

Version 4.0 – December 2022

- Update of Polarity Check.

Version 3.0 – July 2022

- Update of pre-startup Battery Polarity Check.
- CT Extension information
- 3Ph Metering Voltage reference connections
- Multiple Inverter Metering requirements
- Additional x2 SLD's 24-25.

Version 2.0 – June 2022

- Update of Figure 20: Genesis SE10000H-BPV maximum oversizing example.
- Additional x6 SLDs 18-23.
- CT setting clarification for Backup Interface
- EN line update for SolarEdge Home Battery when connected HD Wave/Genesis

Version 1.0 – May 2022

- First release of this document

Connecting Battery Communication and DC

For setting up communication between the battery and the inverter, SolarEdge strongly recommends using the SolarEdge Home Network.

If for some reason the SolarEdge Home Network cannot be used, you can set up communication using an RS485 port, as explained in this section.

If x3 batteries are to be installed on a single inverter the DC Combiner must be used. Use the following cable types:

- DC - 6mm - 10mm CSA 600V insulated depending on route length.
- Communication - CAT6



WARNING!

Read carefully all handling and safety instructions in the installation guides that come with the battery and the inverter.



WARNING!

The inverter cover must be opened only after switching the inverter ON/OFF/P switch located at the bottom of the inverter to OFF. This disables the DC voltage inside the inverter. Wait five minutes before opening the cover.



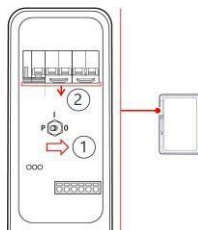
WARNING!

Ensure that the correct battery polarity is always observed. Turning on the battery with reverse polarity may permanently damage the battery.



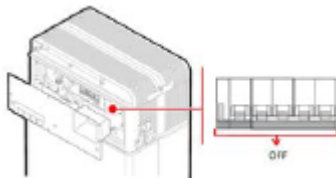
WARNING!

Before connecting the battery to the inverter, ensure the battery power is off.



SolarEdge Home Battery

1. Toggle off the battery ON/OFF/P switch.
2. Turn off the battery circuit breaker.



LG RESU Prime Battery

1. Turn off the battery circuit breaker.

Single Phase Home Hub Inverter

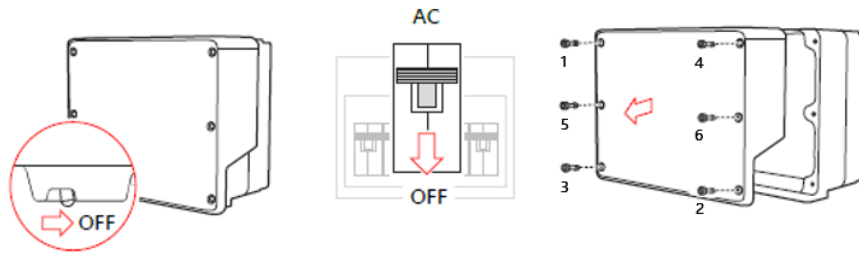


WARNING!

Read carefully all handling and safety instructions in the installation guides that come with the SolarEdge Home Network card and the inverter.

→ To connect communication via SolarEdge Home Network:

1. Remove the inverter cover.
2. Switch off the inverter ON/OFF/P switch and wait 5 minutes for the internal capacitors to discharge.
3. Switch off the AC circuit breaker on the main distribution panel.
4. Open the Allen screws of the inverter cover and carefully pull the cover horizontally before lowering it.
5. Open the inverter cover as shown below.



6. Connect the SolarEdge Home Network plug-into the socket on communication board.
7. Connect the antenna, pass antenna cable through communication gland.
8. Clip antenna (supplied) to heatsink fin.
9. Tie antenna cable to communication board bracket with plastic tie (supplied).
10. Replace the inverter cover and Connection Unit cover (DCD). Tighten screws to 8.4Nm.
11. Restart inverter and verify device in SetApp, select **Status > Communication > Home Network OK**.



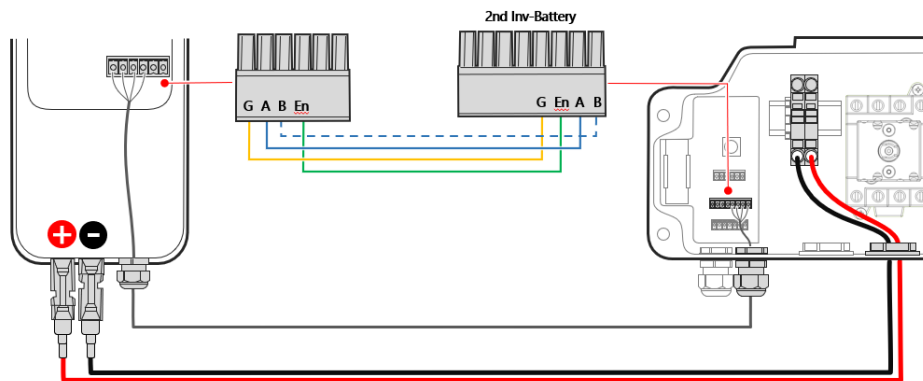
→ **To connect communication between the inverter and SolarEdge Home Battery via RS485:**

1. Connect the communication cable to the battery's RS485 connector as shown below.
2. Open Communication Gland 2 at the bottom of the inverter's Connection Unit.
3. Feed the other end of the communication cable through one of the gland openings
4. Remove the connector from the port labeled 2nd Inv-Battery on the communication board.
5. Connect the communication cable to the connector, as shown below.
6. If 2 or more batteries are being connected, daisy chain the connections between each battery.
7. Close Communication Gland 2 with a torque of 5 Nm.



NOTE

When connecting the SolarEdge Home Battery to an HD Wave or Genesis the EN line connection is not required.



→ To connect DC cables:

1. Connect the DC cables to the battery, as explained in the installation guide that comes with the battery.
2. Pass the other end of the DC cable through the Battery conduit of the inverter.
3. Connect the wires to the DC terminals.



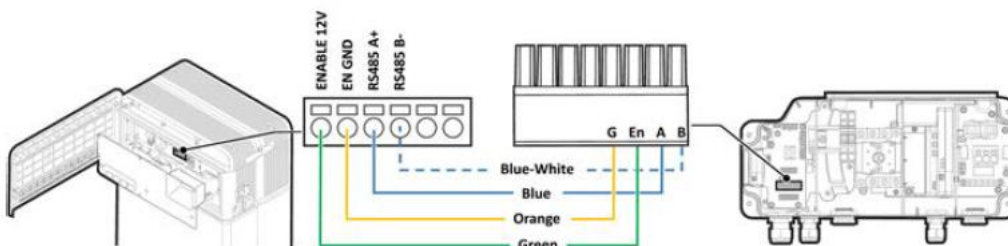
WARNING!

Make sure to connect the cables at correct polarity. Connecting the cables at reverse polarity may result in damage to the inverter or battery.

Proceed with the battery installation, as explained in the battery installation guide.

→ To connect communication between inverter and LG RESU Prime Battery via RS485:

1. Connect the communication cable to the battery's RS485 connector as shown below.
2. Open Communication Gland 2 at the bottom of the inverter's Connection Unit.
3. Feed the other end of the communication cable through one of the gland openings
4. Remove the connector from the port labeled 2nd Inv-Battery on the communication board.
5. Connect the communication cable to the connector, as shown below.
6. Close Communication Gland 2 with a torque of 5 Nm.



→ To connect DC cables:

1. Connect the DC cables to the battery, as explained in the installation guide that comes with the battery.
2. Pass the other end of the DC cable through to the DC Combiner.
3. Connect the wires to the DC battery terminals within the DC Combiner.



WARNING!

Make sure to connect the cables at correct polarity. Connecting the cables at reverse polarity may result in damage to the inverter or battery.

4. Proceed with the DC Combiner connections as per the installation guide.

Connecting DC Combiner Cables

For installing x3 SolarEdge Home Batteries the DC Combiner must be used as there is only a single DC input in the inverters connection unit. For one or two SolarEdge Home Battery installations the DC Combiner is optional.

Use the following cable types:

- DC - 6mm - 10mm CSA 600V insulated depending on route length.



WARNING!

Read carefully all handling and safety instructions in the installation guides that comes with the DC Combiner, Battery and the inverter.

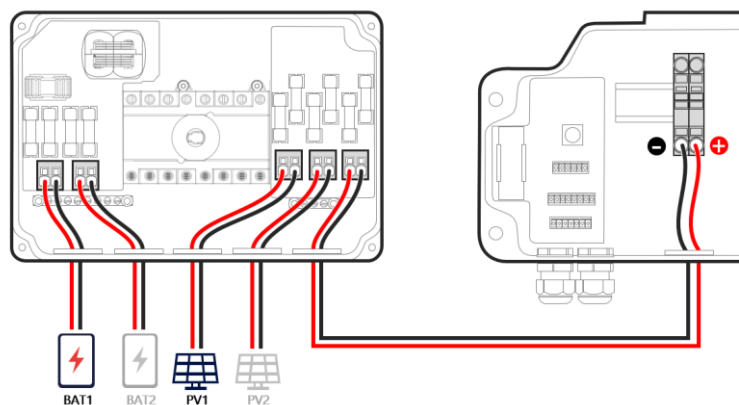


WARNING!

Before connecting the DC Combiner and battery to the inverter, ensure the battery and inverter power is off.

→ **To connect DC between the battery and the inverter:**

1. Open cover of the DC Combiner.
2. Open the conduit entries at the bottom of the DC Combiner and install conduits, as required by local regulations. Maximum supported conduit is diameter of 32 mm.
3. Connect the DC cable from the batteries as shown below.
4. Connect the DC cables form the PV array/s as shown below
5. Connect the ground to the combiner box by connecting it to the inverter.
6. Close cover of the DC Combiner with a torque of 1.2 Nm.

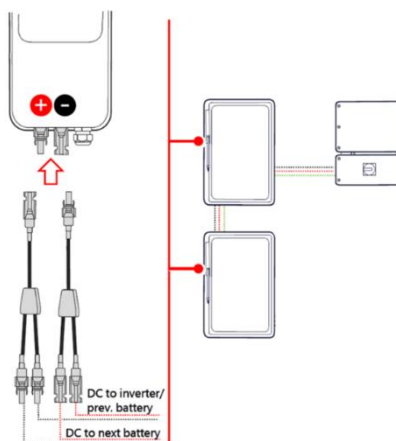


Connecting When the DC Combiner Is Not Used

The combining of multiple DC supplies will be required when the DC Combiner is not used as the DC terminal inside the inverter's DCD connection unit only has a single input.

If there are two or more PV Array's on the roof the recommendation is that these be combined into a single home run supply to the inverter, either at the roof or at a location prior to entering the inverter's DCD connection unit.

When two SolarEdge Home Battery batteries are to be installed ensure that the branch connectors are used.



As the inverter's DCD connection unit only has a single input, and there will be two DC connections to bring together, one from Power Optimizers as well as one from the batteries, crimp the DC cables together using a two into one bootlace ferrule before inserting into the DC terminal. Ensure that there is sufficient length to enable full purchase within the DCD DC connector, with some bootlace ferrules it may be necessary to leave 4-6mm of cable protruding from the end.



Pre-startup Battery Polarity Check

Before energizing the battery ensure that the polarity of the DC connections is correct, +to+ and -to-.

Use the following cable types:

- Use a voltmeter set to DC

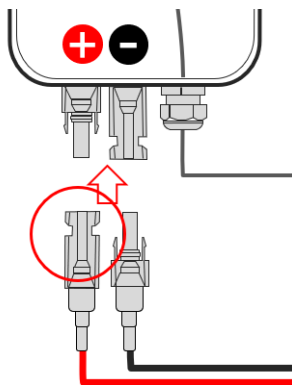


WARNING!

Startup of the Battery in reverse polarity may cause permanent failure of the battery not covered under warranty

→ **To check the DC Polarity between the battery and the PV (Optimisers):**

1. Ensure that the AC to the inverter is OFF.
2. Ensure that the DC Isolator on the DCD is in the OFF position
3. If a DC Combiner is connected ensure the DC Isolator is in the ON position.
4. With the MC4 connections at the Battery terminal removed, test for the nominal Safe DC string voltage. If a string contains x20 Optimisers then expect a 20Vdc result.
5. Ensure that the + plug (female negative MC4, see below highlighted) reads a + voltage value.

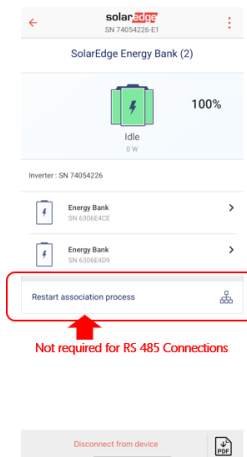


6. Repeat for all batteries connected.

Battery Association Note

When running through the battery commissioning stages please note that the 'Association' stage is only required for batteries connection via the SolarEdge Home Network' protocol.

For batteries connection via RS-485 the Association stage is not required.



Running a Battery Self-test

You can run a battery self-test only after finishing the battery installation and configuration (refer to the battery installation guide).

The purpose of the battery self-test is to check the battery's charge and discharge functionality.

→ **To run a battery self-test:**

1. Make sure the battery's circuit breaker switch is ON.
2. Switch the inverter ON/OFF/P switch to ON.
3. In SetApp, select Commissioning > Maintenance > Diagnostics > Self-Test Battery Self-Test > Run Test.
4. Wait for all tests to complete and check the results in the summary table.
5. If any of the tests have failed, see the table below for possible solutions:

Test Results	Solution
Charge failed	Check that the power and communication cables between the battery and inverter are properly connected.

Discharge failed	Check that the power and communication cables between the battery and inverter are properly connected.
Communication	Check that the communication cables between the battery and inverter are properly connected.
Inverter switch is off	Switch the inverter ON/OFF/P switch to ON.

→ To show the last test results:

- Select **Commissioning > Maintenance > Diagnostics > Self-Test > Battery Self-Test > Show Last Results**.

Connecting Backup Interface Communication Cables

For setting up the Backup Interface, for backup operation, a communication connection between the Backup Interface and the inverter needs to be made.

Use the following cable types:

- Communication - CAT6



WARNING!

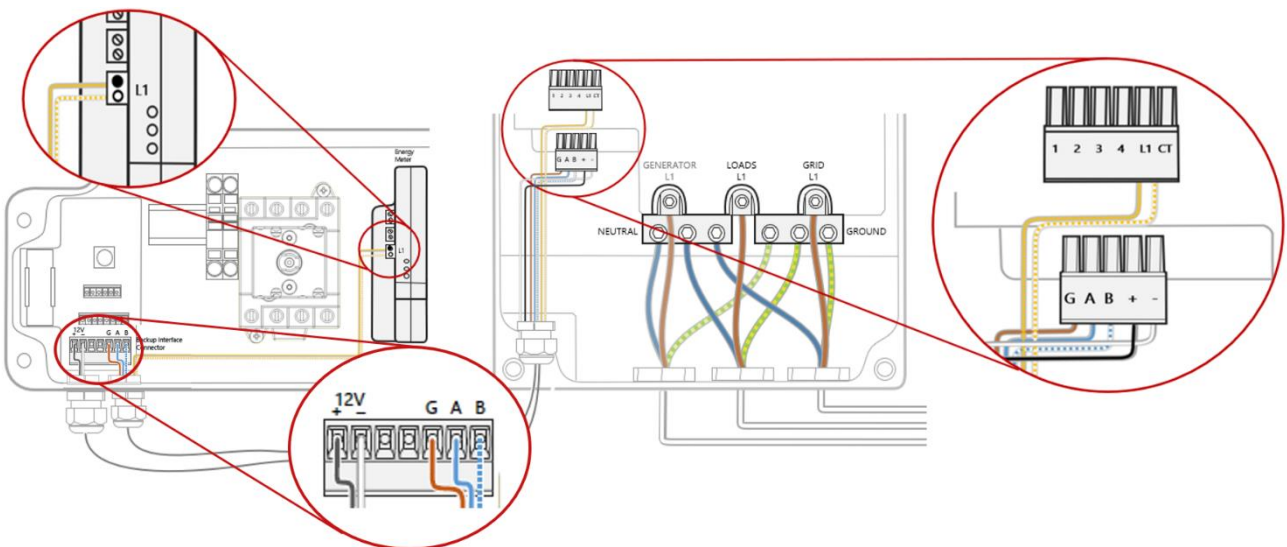
Read carefully all handling and safety instructions in the installation guides that comes with the Backup Interface and the inverter.



WARNING!

Before connecting the Backup Interface to the inverter, ensure the battery and inverter power is off.

As only x7 cores are required for all Backup Interface to Home Hub connections a single CAT6 cable with a minimum of x4 twisted pairs can be used.



- CT Connections

Ensure that the following polarity for the CT connections are made:

Connection inside Backup Interface:

- L1 – Positive
- CT – Negative

Connection inside DCD Inbuilt Meter

- ● – Positive
- ○ – Negative

Single Phase Home Hub Inverter

→ **To connect communication between the Backup Interface and the inverter:**

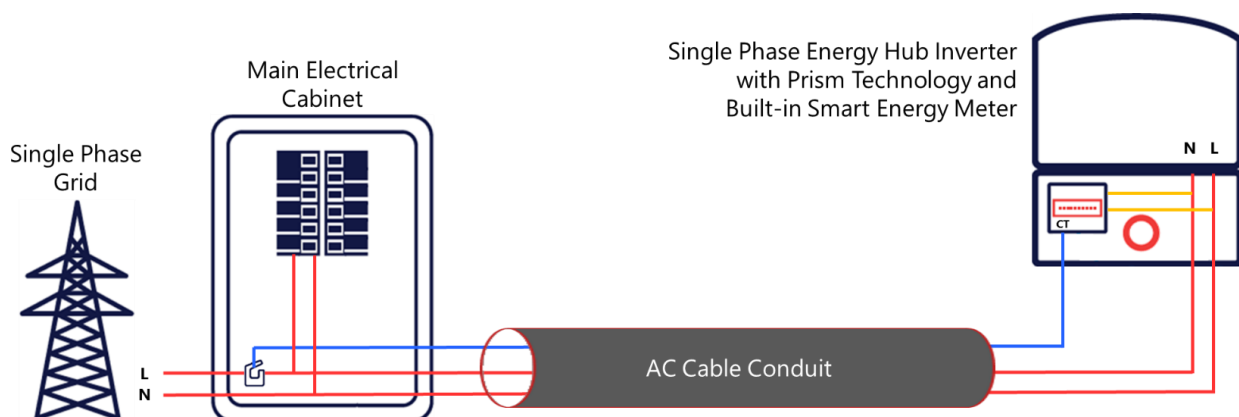
1. Open communication gland at the bottom of the Backup Interface and feed one other end of the communication cable through one of the gland openings at the bottom of the Backup Interface.
2. Connect the communication cable to the Backup Interface's RS485 connector as shown below. (Item 5)
3. Connect the 12V power supply connection to the Backup Interface's Modbus connector as shown below. (Item 4)
4. Connect the CT connection to the Backup Interface's CT terminal connector as shown below. (Item 6)
5. Open communication gland at the bottom of the inverter's Connection Unit.
6. Feed the other end of the communication cable through one of the gland openings.
7. Remove the connector from the port labeled Backup Interface on the communication board.
8. Connect the RS485 communication cable to the connector, as shown below.
9. Connect the 12V power supply connection to the connector, as shown below.
10. Connect the CT connection to the L1 terminal of the in-built Modbus meter within the inverter's Connection Unit, as shown below.
11. Close Communication Gland 2 with a torque of 5 Nm.

Current Transformer (CT) Installation

1. If the Backup Interface is not being installed, or if the CT within the Backup Interface is not being connected, this section describes the installation and extension process.
2. As the Home Hub inverter has a built in Modbus meter within the DC Connections module (DCD), in most cases when the CT is installed within the meter board the CT connection will need to be extended. A CAT6 shielded extension cable shall be used to connect the CT twisted pair to the meter. The extension cable is routed via the AC conduit, together with the AC wiring.
3. Wire the meter in accordance with the connection diagram in the scenario: Export/Import Energy Metering in a Single-Phase Grid Installation.

Export/Import Energy Metering in a Single Phase Grid Installation

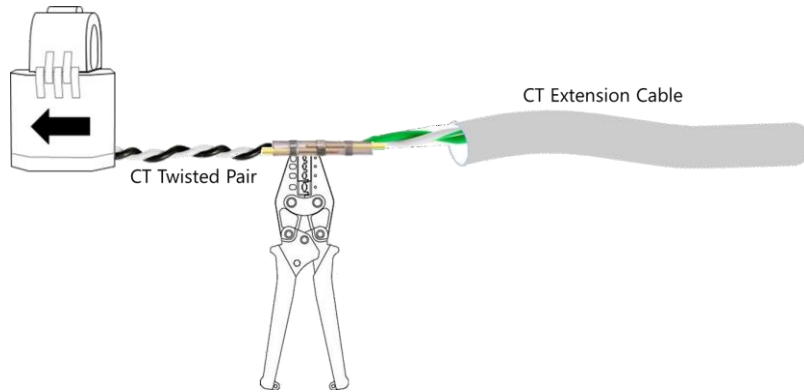
In the single-phase grid example in the figure below, one CT is installed for Export/Import metering.



→ **To install the CT:**

1. Power off the inverter and disconnect its main circuit breaker.
2. Attach the CT to the relevant AC wire, in accordance with the connection diagram in the scenario: Export/Import Energy Metering in a Single-Phase Grid Installation.
3. When attaching the CT to the conductor to be measured, the arrow on the CT should point in the direction of the current source.

4. Cut the CT's black-and-white twisted wire pair to the required length (leaving some additional spare length) and connect the pair to the shielded CT extension cable, splicing them using a crimping tool, as shown in the figure below.



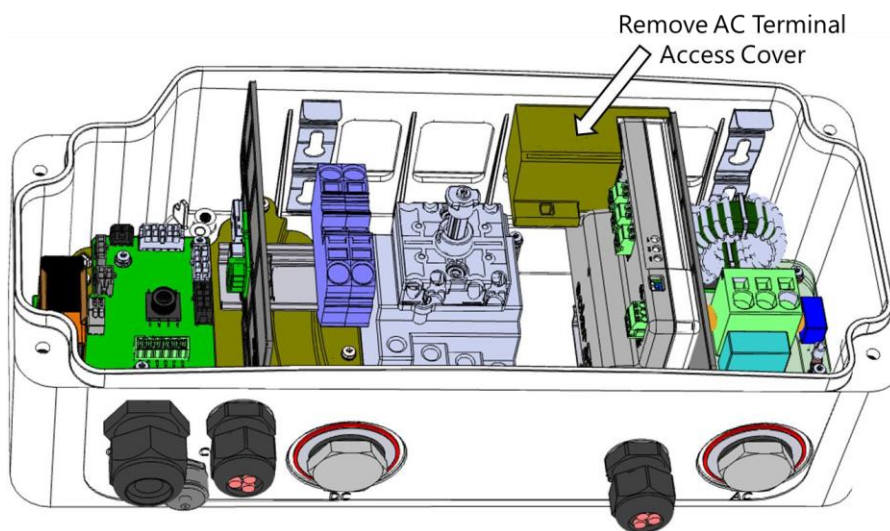
Do not use the method of twisting the wires and taping them together. This type of connection is not reliable, and the wires may eventually disconnect from each other.

CT's can be extended up to 100m. Connect the grid AC wiring – L and N – to the designated terminal blocks.

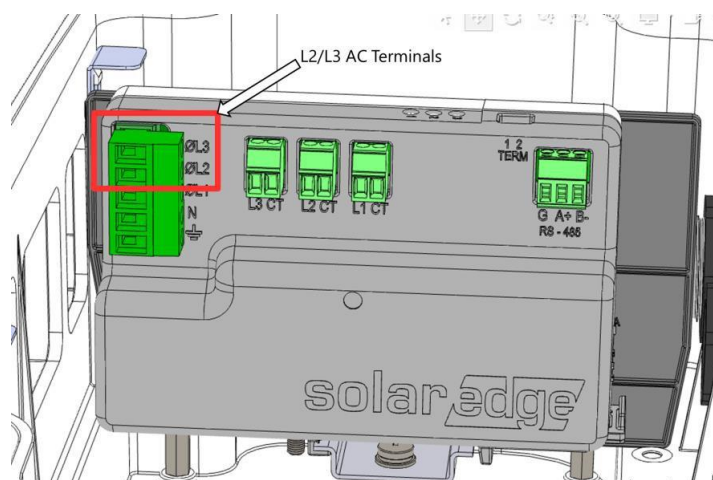
Home Hub 3Ph Metering Voltage Connections

When metering is required for a 3Ph site the following procedure is required to enable the additional voltage references.

To prepare the installation for use at a 3Ph site:



1. Remove the meter's AC terminal access cover.
2. Connect the L2 and L3 AC lines from the AC supply.



3. Replace AC terminal cover.
4. Fit two additional current transformers for L2 and L3.

Metering Connections for Multiple Inverter Sites

1. When sites are being installed with multiple Home Hub inverters in leader/follower configuration, only the leader inverter requires a metering connection.
2. The Home Hub inverters come with a pre-installed Modbus meter, any follower inverter will have to have this meter either disabled and removed via SetApp, or alternatively physically disconnected inside the DCD by unplugging the RS485 terminal prior to turning on the inverter.

Setting Backup Interface CT Value

This section describes how to configure your system for correct metering configuration when connecting the inbuilt Home Hub meter to the CT terminal inside the Backup Interface.

- The default CT setting for the meter within the Home Hub is 70A. The CT value for the device within the Backup Interface is 100A and the default setting needs to be updated.
- Open SetApp and select **Commissioning > Site Communication > RS485-1 > Modbus Meter > CT Rating > 100A**.

Enabling Backup Applications

This section describes how to configure your system for backup via the StorEdge application options. Before enabling StorEdge applications, make sure to:

- Finish battery installation and configuration (refer to the battery installation guide).
- Run a battery self-test, as described above.

Backup Power Applications

The produced power stored in the battery maybe used during power outages. When there is a grid outage, the Backup Interface automatically detects the grid failure and switches into Backup mode, disconnecting from the grid. The Home Hub inverter will switch over to backup mode (approx. 3 seconds) and will supply power to the backed-up loads.

This application requires connection to the Backup Interface and backed-up loads (pre-selected dedicated loads or the entire home).

To start using StorEdge (backup) applications, you first need to enable the Backup Configuration functionality. The Backup function is disabled by default and once enabled it will support the following two configurations:

- **Backup with Smart Energy Management** – Battery energy is used for maximizing self-consumption (MSC) or charge/discharge profile programming (for time of use arbitrage) and backup power applications.
- **Backup only** – energy stored in the battery is reserved and discharged only for backup power needs when there is no power from the grid.

If Backup Configuration is disabled, the system will continue to use the battery energy in MSC or charge/discharge profile programs, but it will NOT provide Backup to designated loads in case of a power outage.

→ To enable Backup Configuration:

- Open SetApp and select **Commissioning > Power Control > Energy Manager > Backup Configuration > Backup > Enable**.

After the Backup Configuration is enabled, the Backup Interface is automatically configured.

→ To enable a StorEdge application:

1. Select **Power Control > Energy Manager > Energy Control**.

2. Select one of the following applications:

- **Backup only** - Set the system to supply power to backed-up loads only in case of a power outage.
- **Time of use** - Set a charge/discharge profile and the level of charging the battery from AC.
- **Maximum Self Consumption (MSC)** - Set the system to maximize self- consumption, and then the level of stored energy to be reserved for backup.

System Startup and Shutdown

→ To start up the system:

1. Turn ON the SolarEdge Home Battery MCB.
2. Move the SolarEdge Home Battery toggle to the ON position.
3. Switch to the ON position, the DC Isolator on the DC Combiner (If installed).
4. Switch to the ON position, the DC Isolator on the inverter DCD.
5. Move the SolarEdge inverter toggle to the ON position.
6. Switch to the ON position, the AC to the inverter at the adjacent AC isolator (if installed) and inside the main switch board.

→ To shut down the system:

1. Move the SolarEdge inverter toggle to the OFF position and wait until the green LED is blinking, indicating that the DC voltage is safe (<50V), or wait five minutes before continuing to the next step.
2. Switch to the OFF position, the AC to the inverter at the adjacent AC isolator (if installed) and inside the main switch board.
3. Switch to the OFF position the DC Isolator on the inverter DCD.
4. Switch to the OFF position the DC Isolator on the DC Combiner (If installed).
5. Move the SolarEdge Home Battery toggle to the OFF position.
6. Turn OFF the SolarEdge Home Battery MCB.

→ To shut down the system in case of emergency:

1. Switch to the OFF position, the AC to the inverter at the adjacent AC isolator (if installed) and inside the main switch board.
2. Switch to the OFF position the DC Isolator on the inverter DCD.
3. Switch to the OFF position the DC Isolator on the DC Combiner (If installed).
4. Turn OFF the SolarEdge Home Battery MCB.

Common Installation Configurations

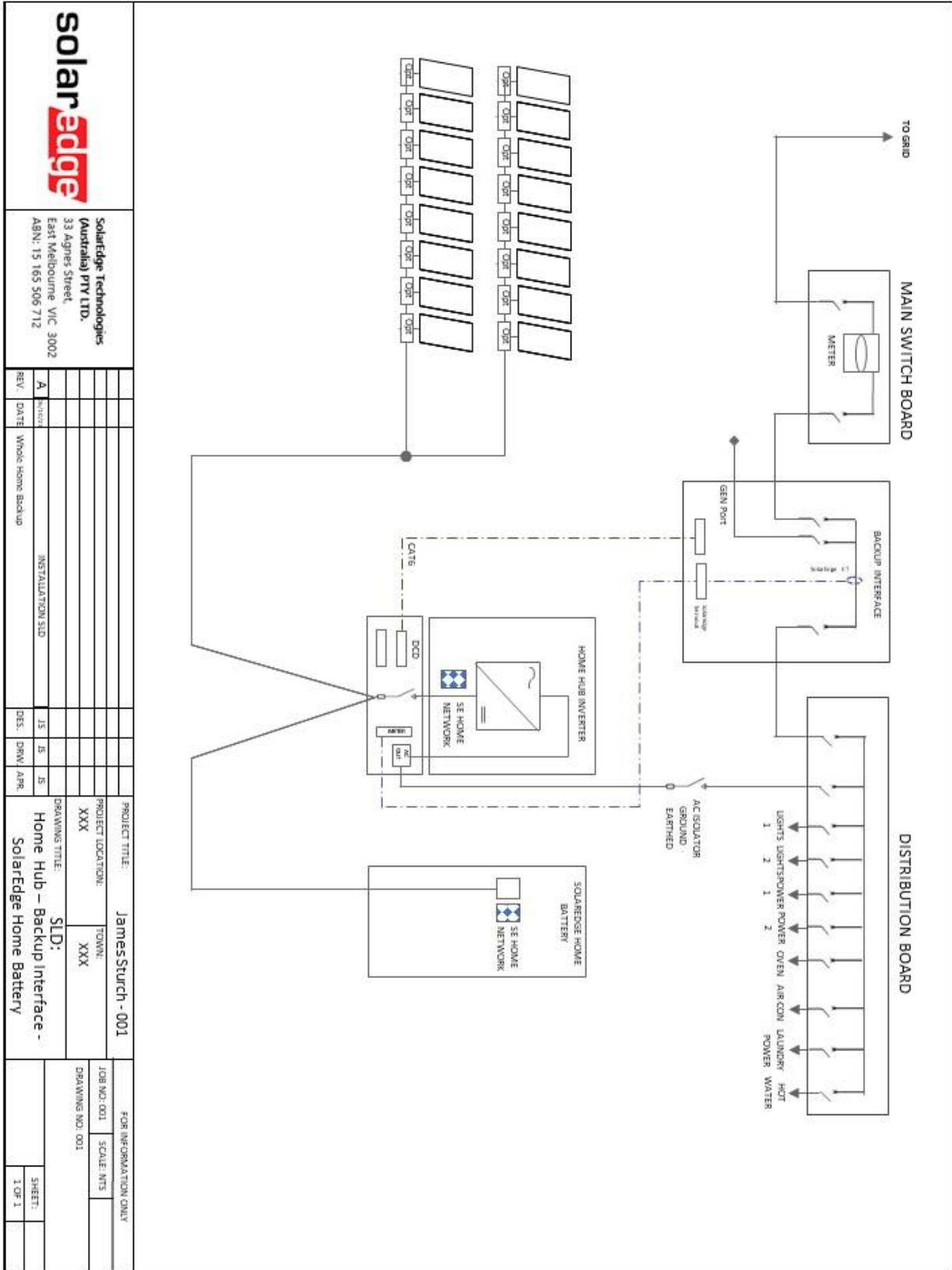


Figure 1: Home Hub, Backup Interface, SolarEdge Home Battery, Full Home Backup

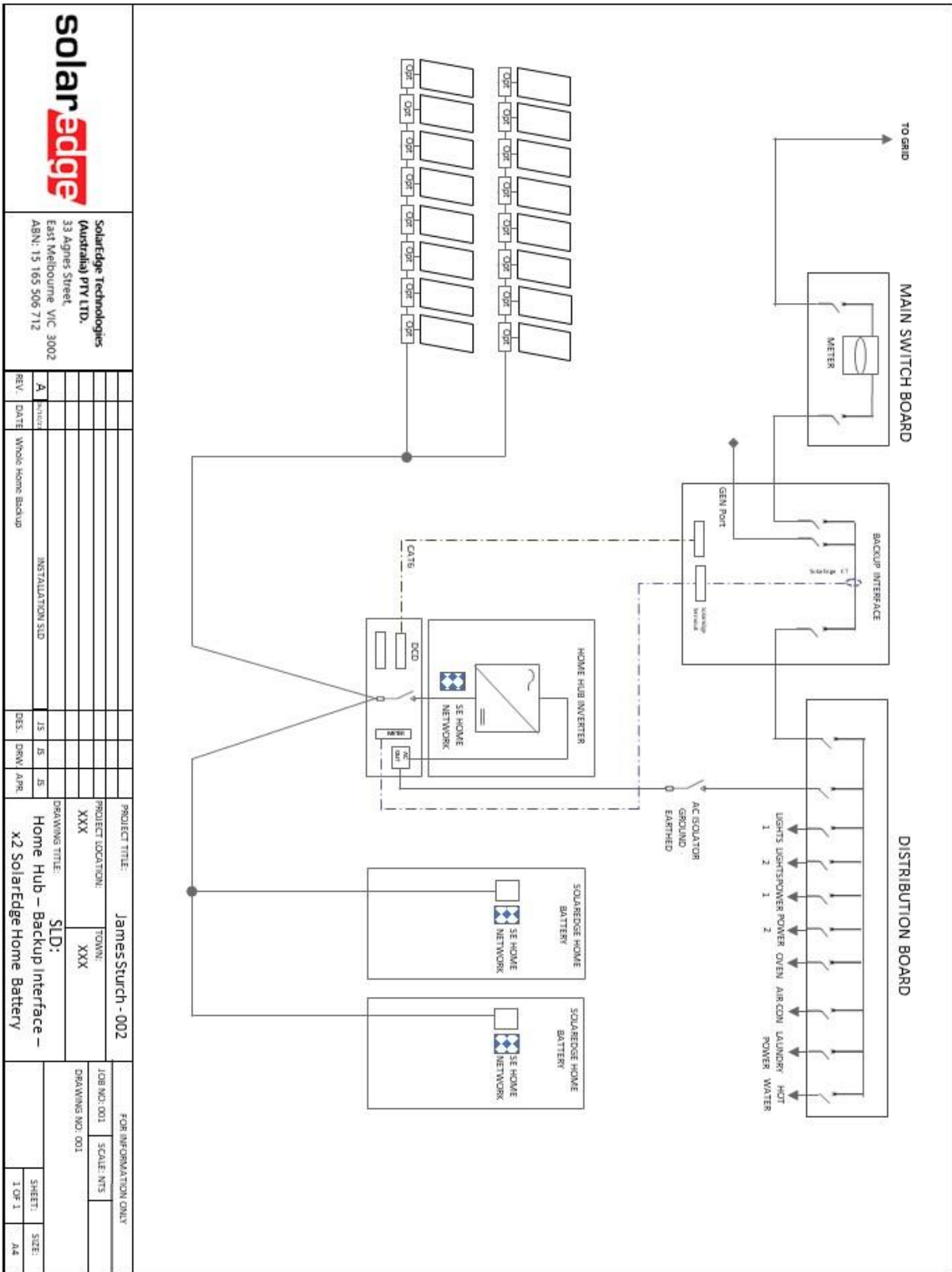
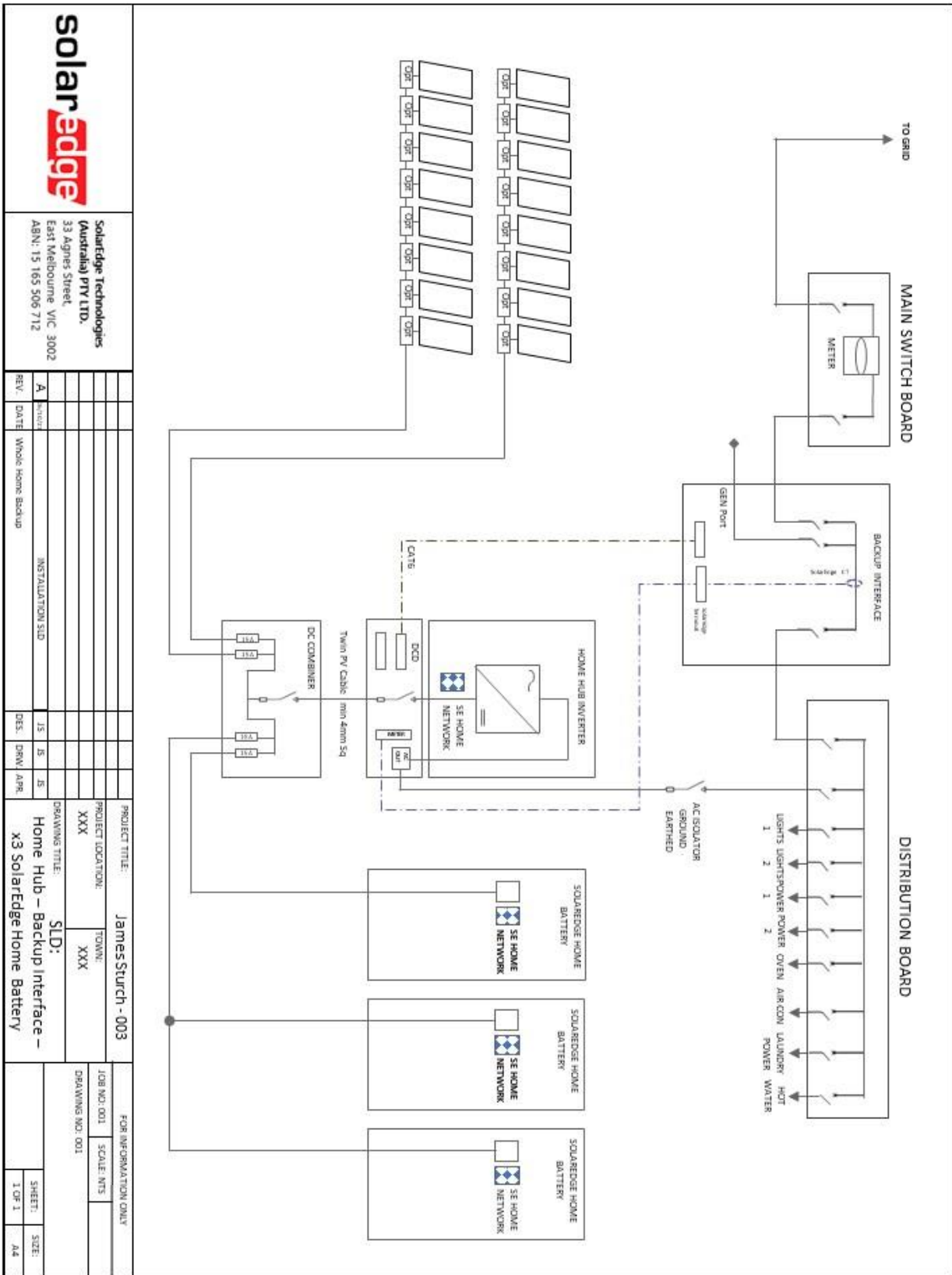
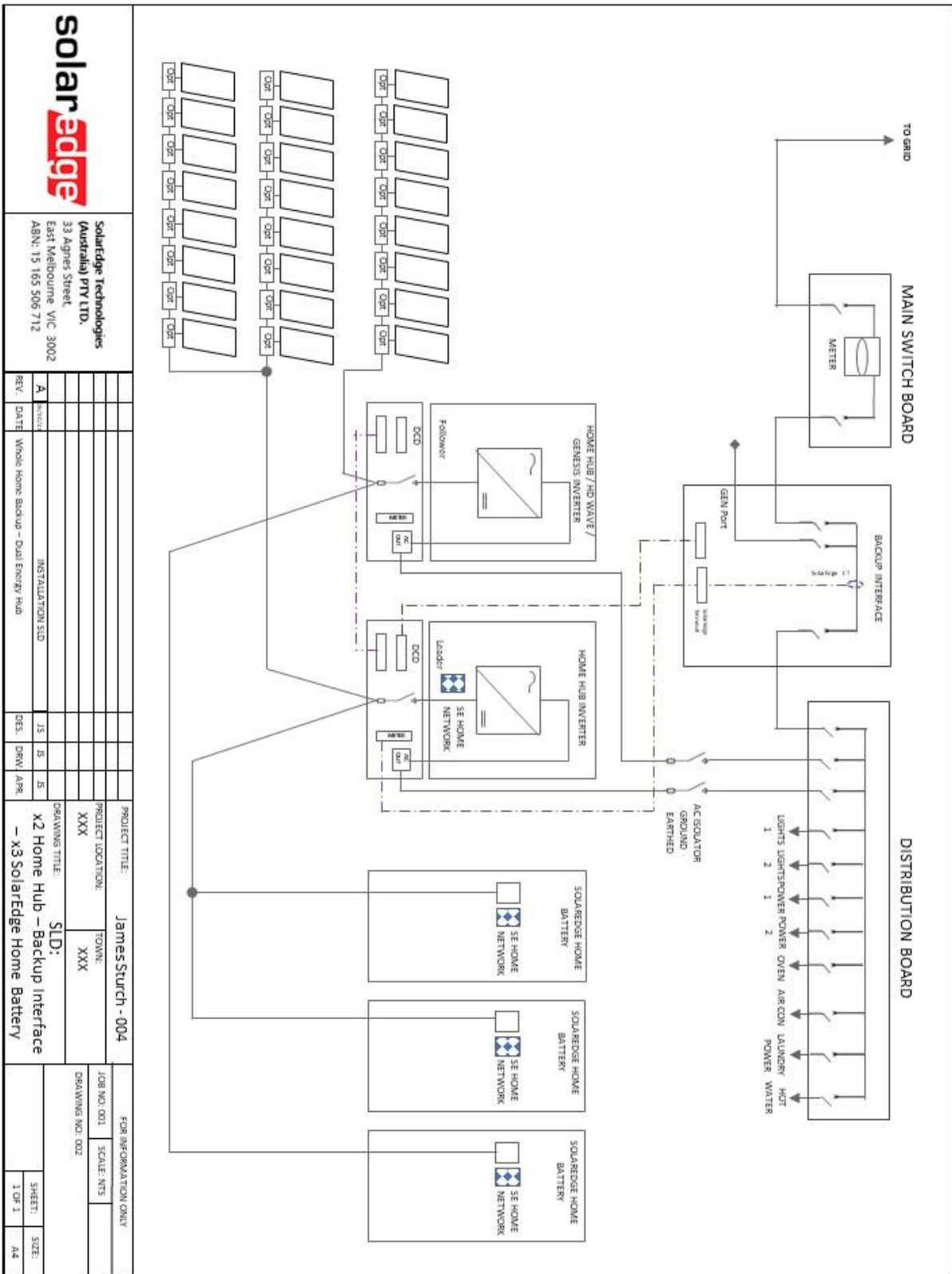


Figure 2: Home Hub, Backup Interface, Dual SolarEdge Home Batteries, Full Home Backup



		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712	
		PROJECT TITLE: James Sturch - 003	FOR INFORMATION ONLY
REV: A	DATE: 15/01/2023	PROJECT LOCATION: XXX	TOWN: XXX
DESCRIPTION: Whole Home Backup	INSTALLATION STD:	DRAWING TITLE: SLD: Home Hub - Backup Interface - X3 SolarEdge Home Battery	JOB NO: 001
DES: DRN/ APR	DES: 15/01/23	DRAWING NO: 001	SCALE: NTS
			SHEET: 1 OF 1
			SIZE: A4

Figure 3: Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner, Full Home Backup, Option A



solar edge
SolarEdge Technologies (Australia) PTY LTD.
 33 Agnes Street,
 East Melbourne VIC 3002
 ABN: 15 165 506 712

REV:	A	DATE:	15/05/2024	DESIGNER:	JS	DATE:	15/05/2024	DRAWN:	JS
PROJECT TITLE:		James Sturch - 004							
PROJECT LOCATION:		XXX							
DRAWING TITLE:		SLD: X2 Home Hub - Backup Interface - X3 SolarEdge Home Battery							
JOB NO. 001		SCALE: NTS		DRAWING NO. 002		FOR INFORMATION ONLY			
SHEET:		1 OF 1		SIZE:		A4			

Figure 4: Twin Home Hub, Backup Interface, Three SolarEdge Home Batteries, Full Home Backup, Option A

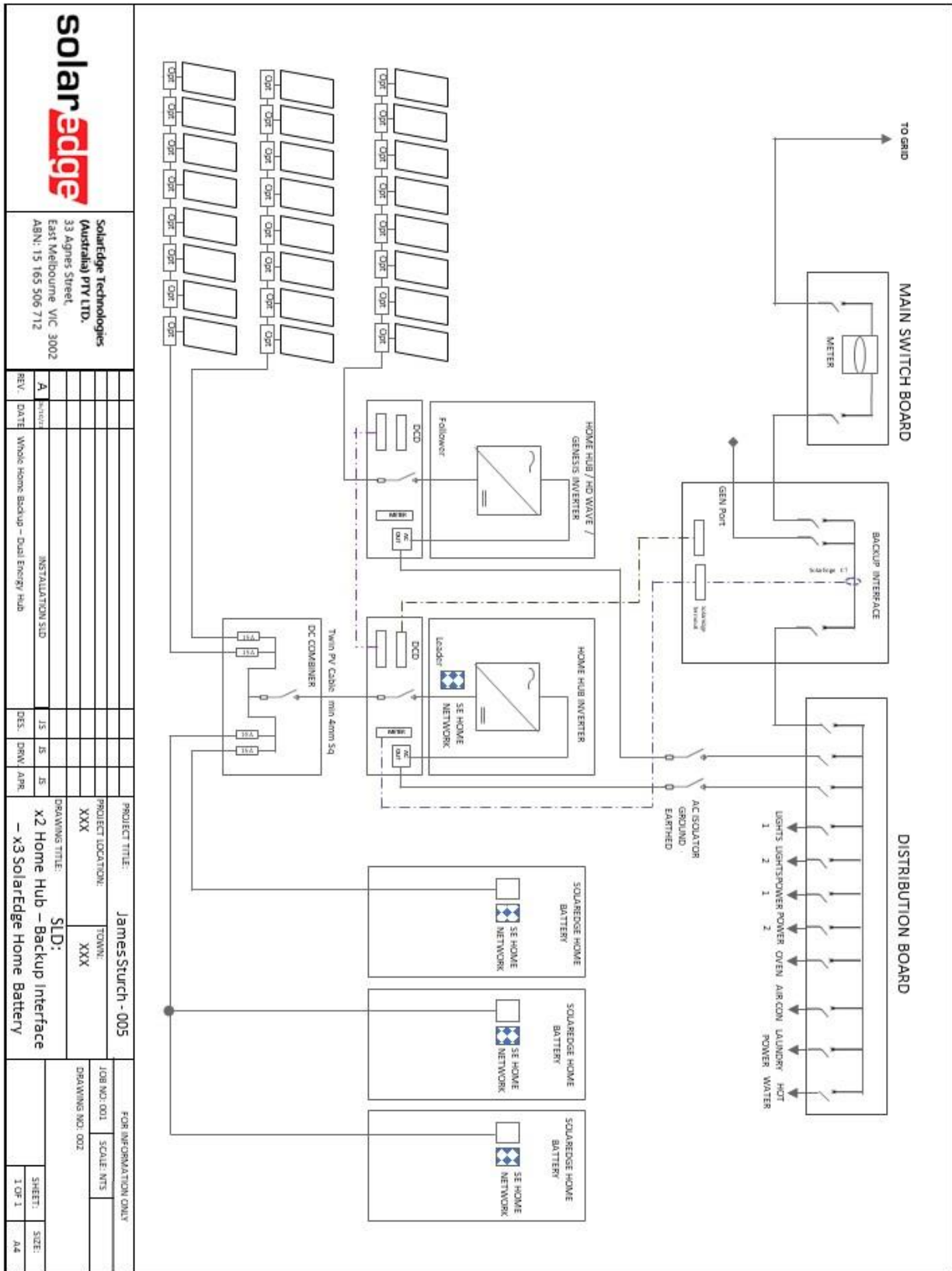


Figure 5: Twin Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner, Full Home Backup, Option B

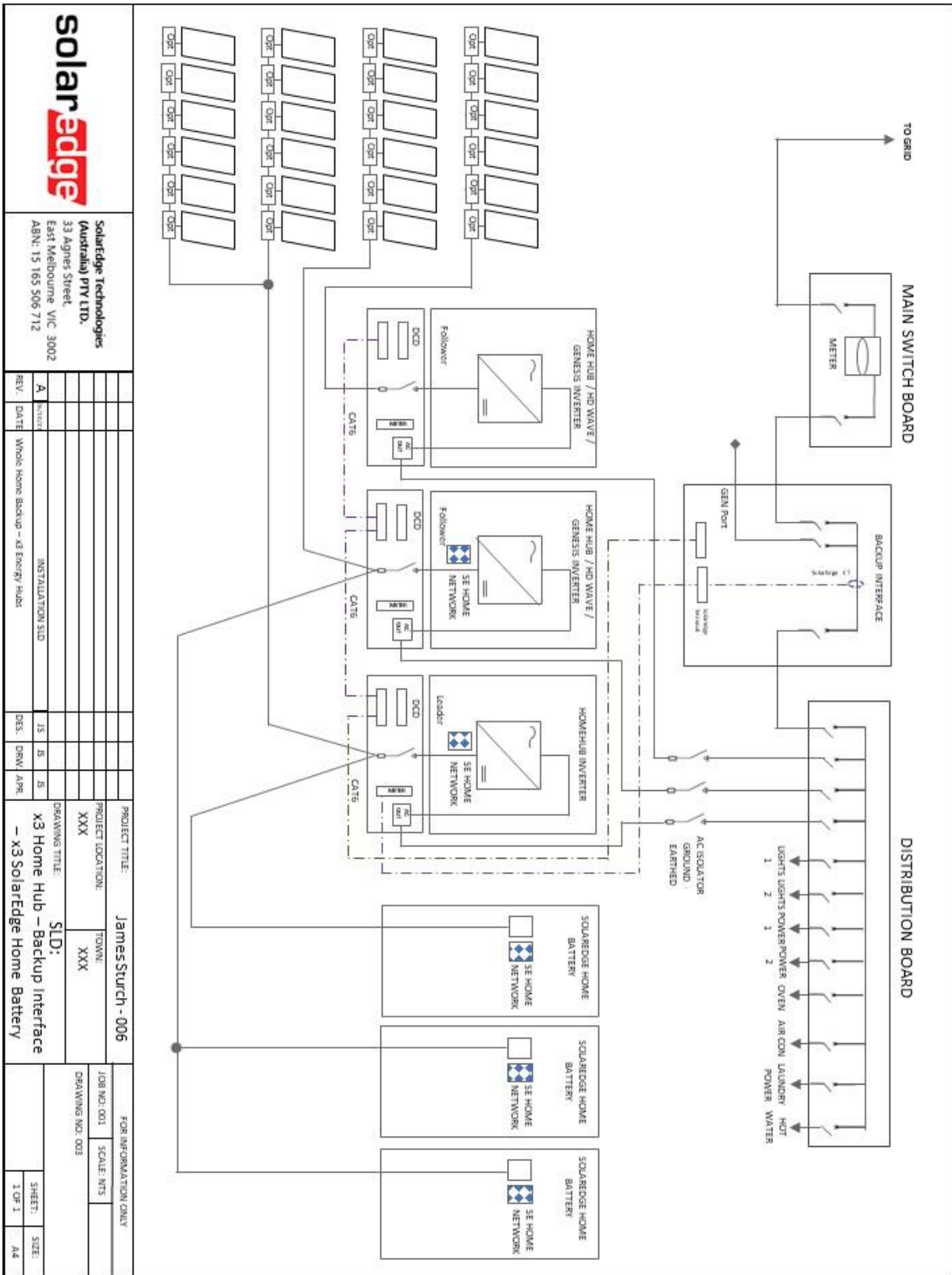


Figure 6: Three Home Hub, Backup Interface, Three SolarEdge Home Batteries, Full Home Backup, Option A

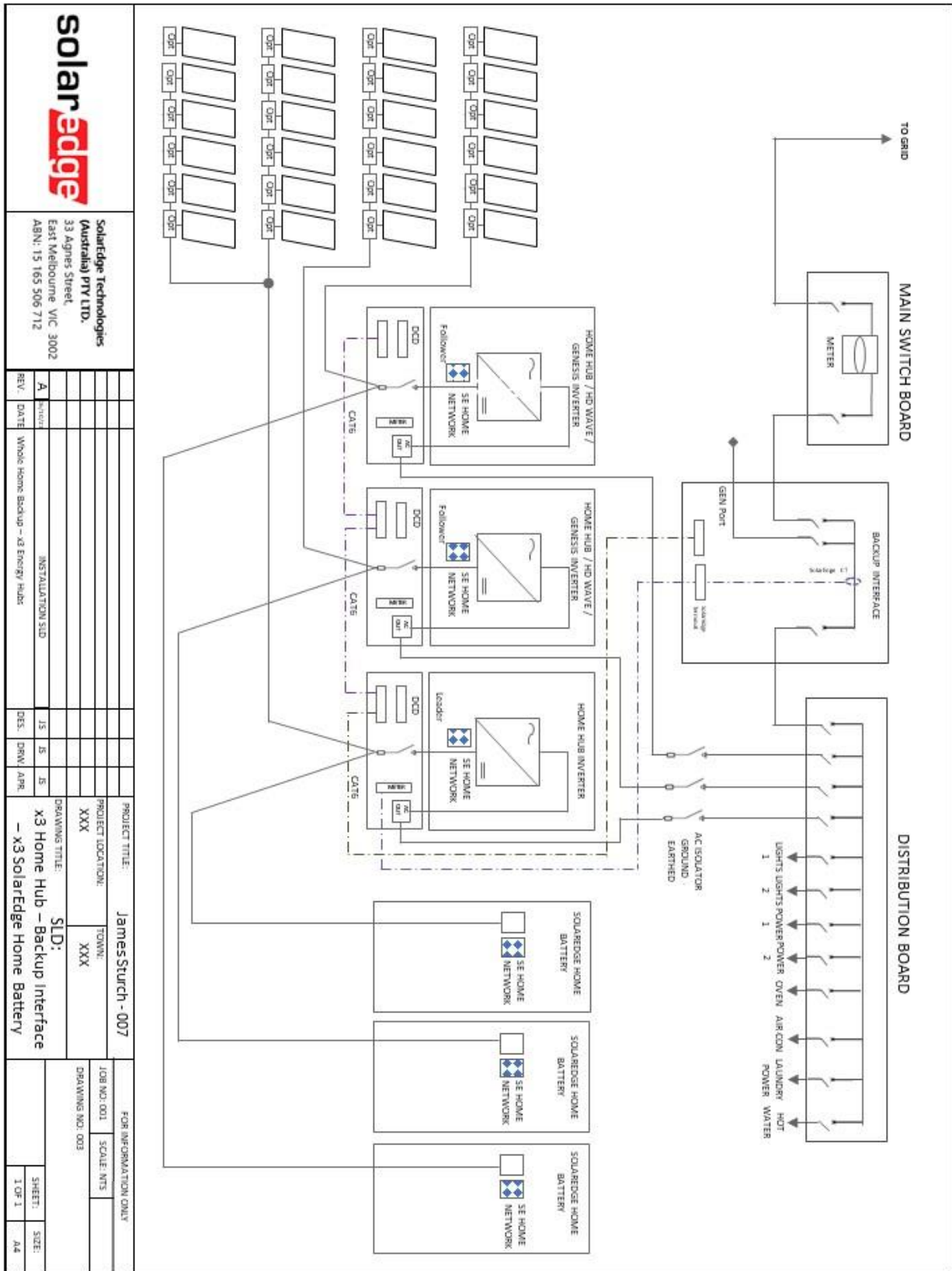


Figure 7: Three Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner, Full Home Backup, Option B

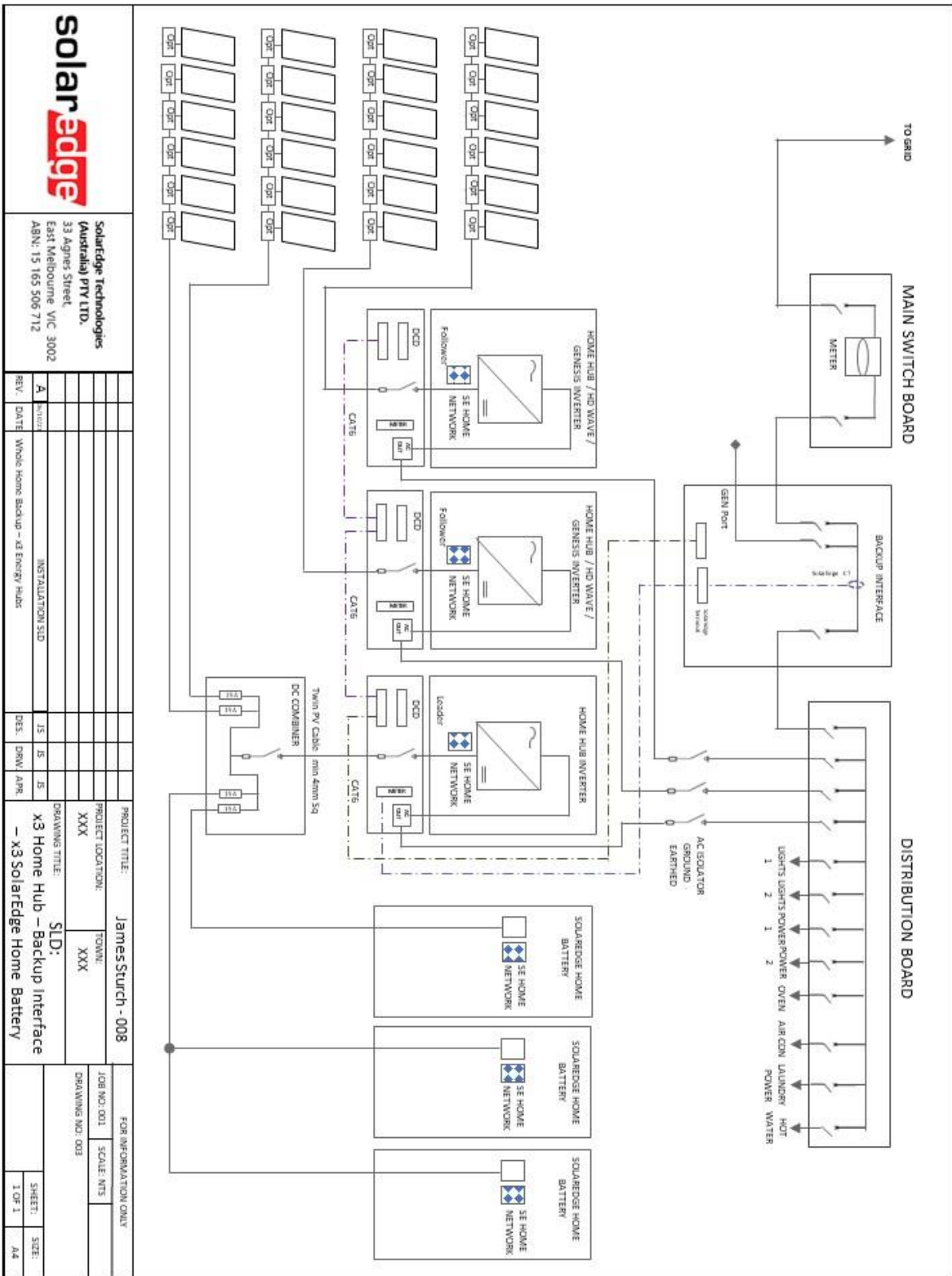


Figure 8: Three Home Hub, Backup Interface, Three SolarEdge Home Batteries, Full Home Backup, Option C

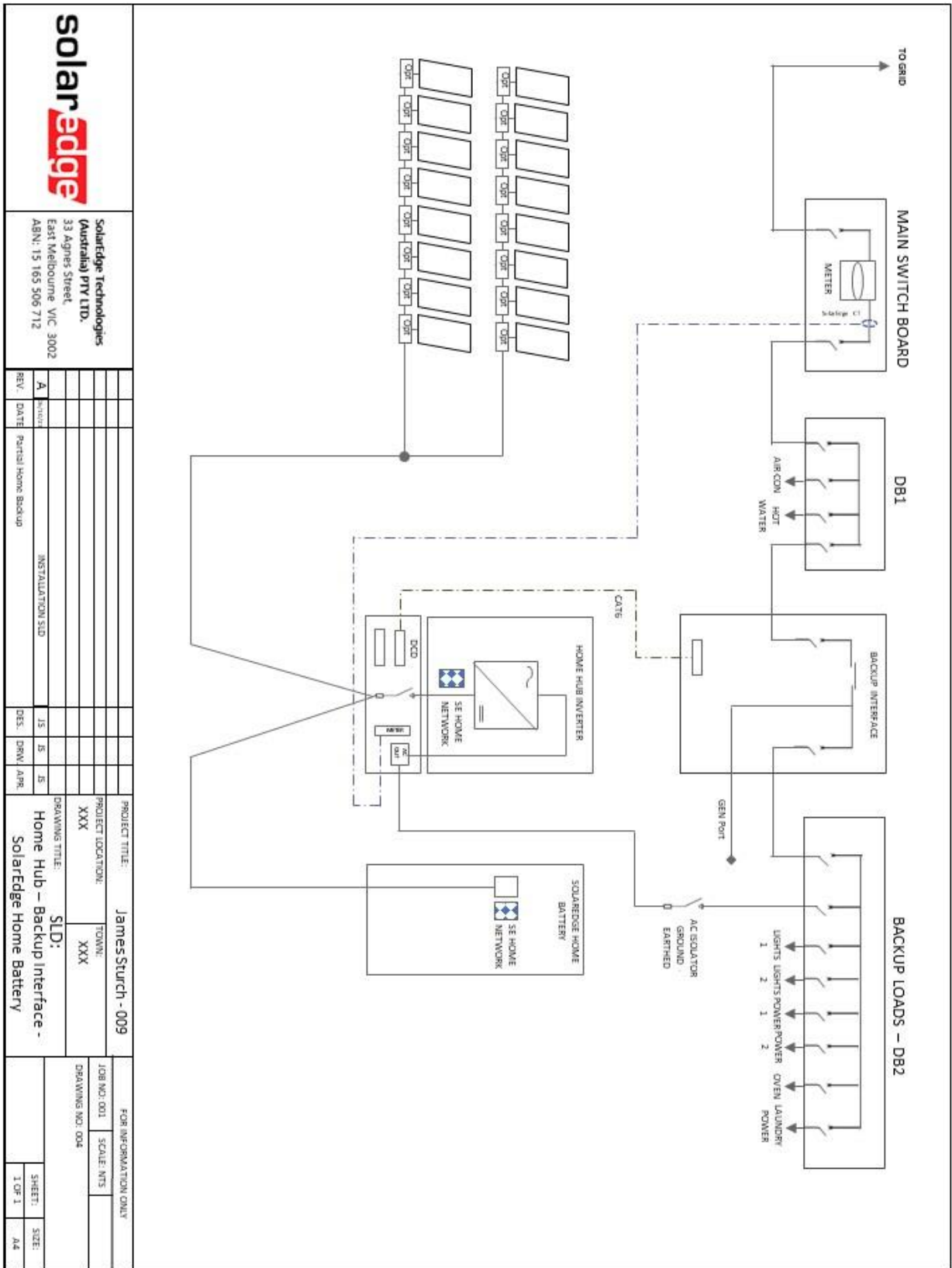


Figure 9: Home Hub, Backup Interface, and SolarEdge Home Battery, Partial Home Backup

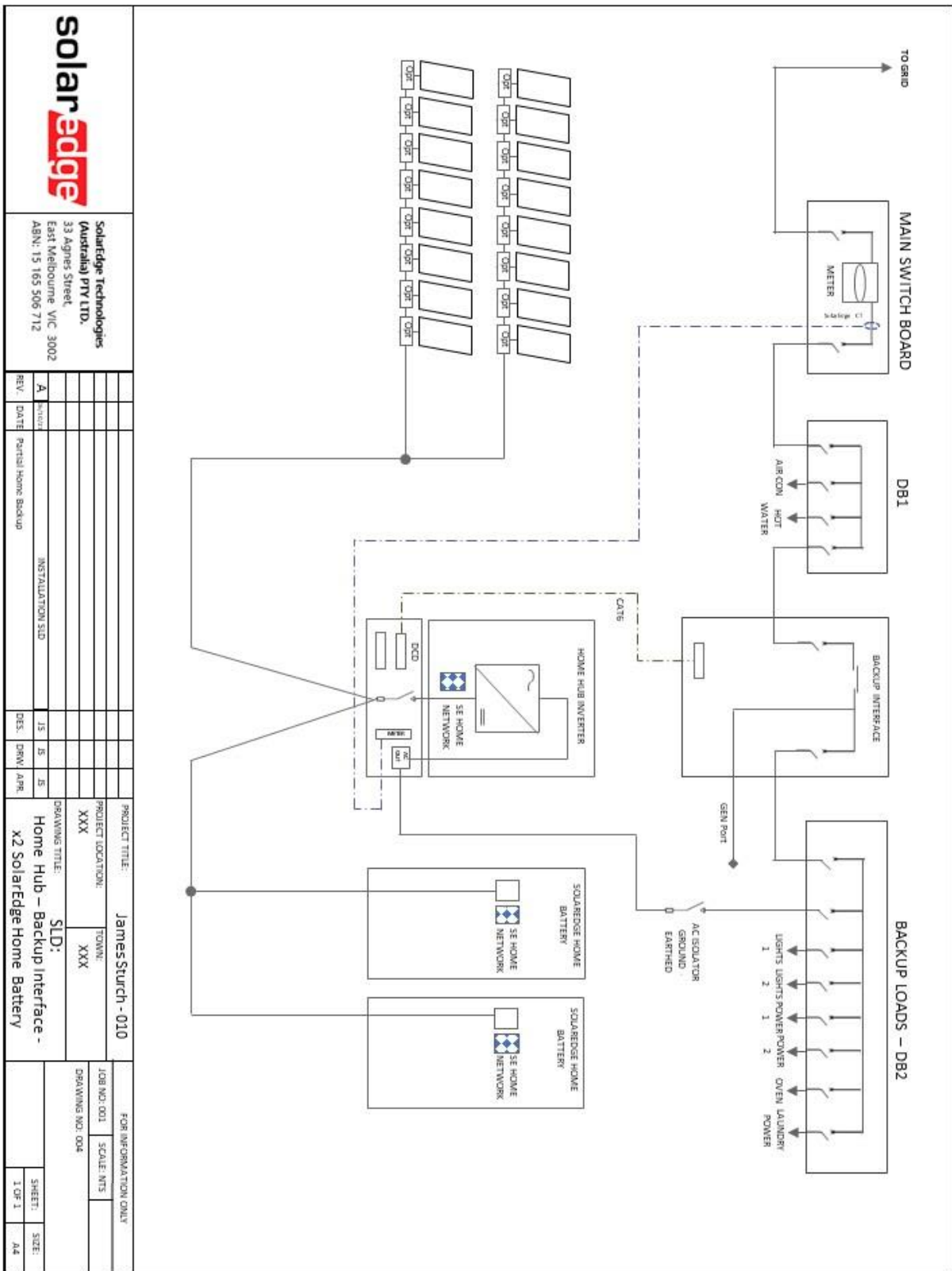


Figure 10: Home Hub, Backup Interface, Dual SolarEdge Home Batteries, Partial Home Backup

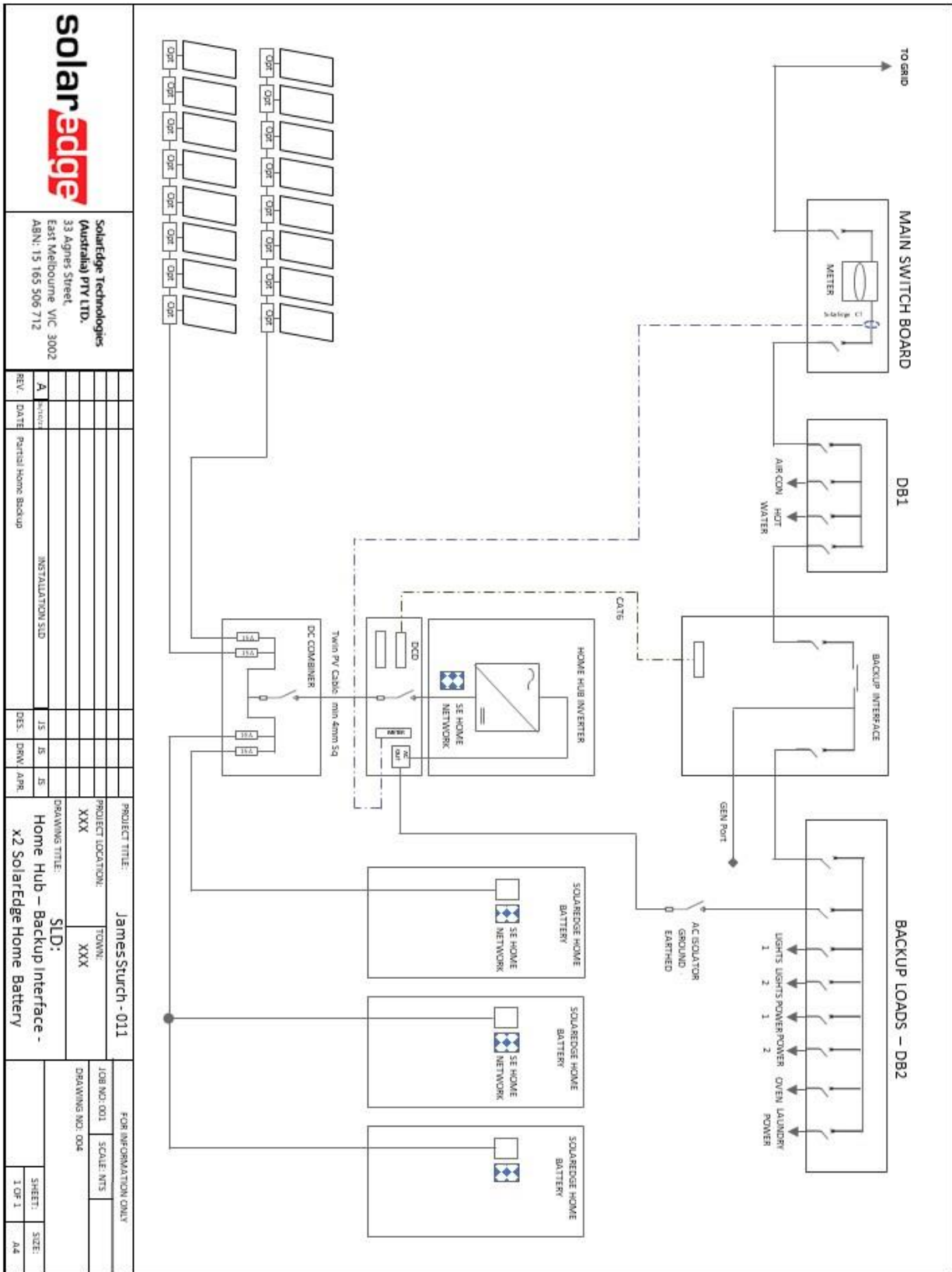


Figure 11: Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner, Partial Home Backup

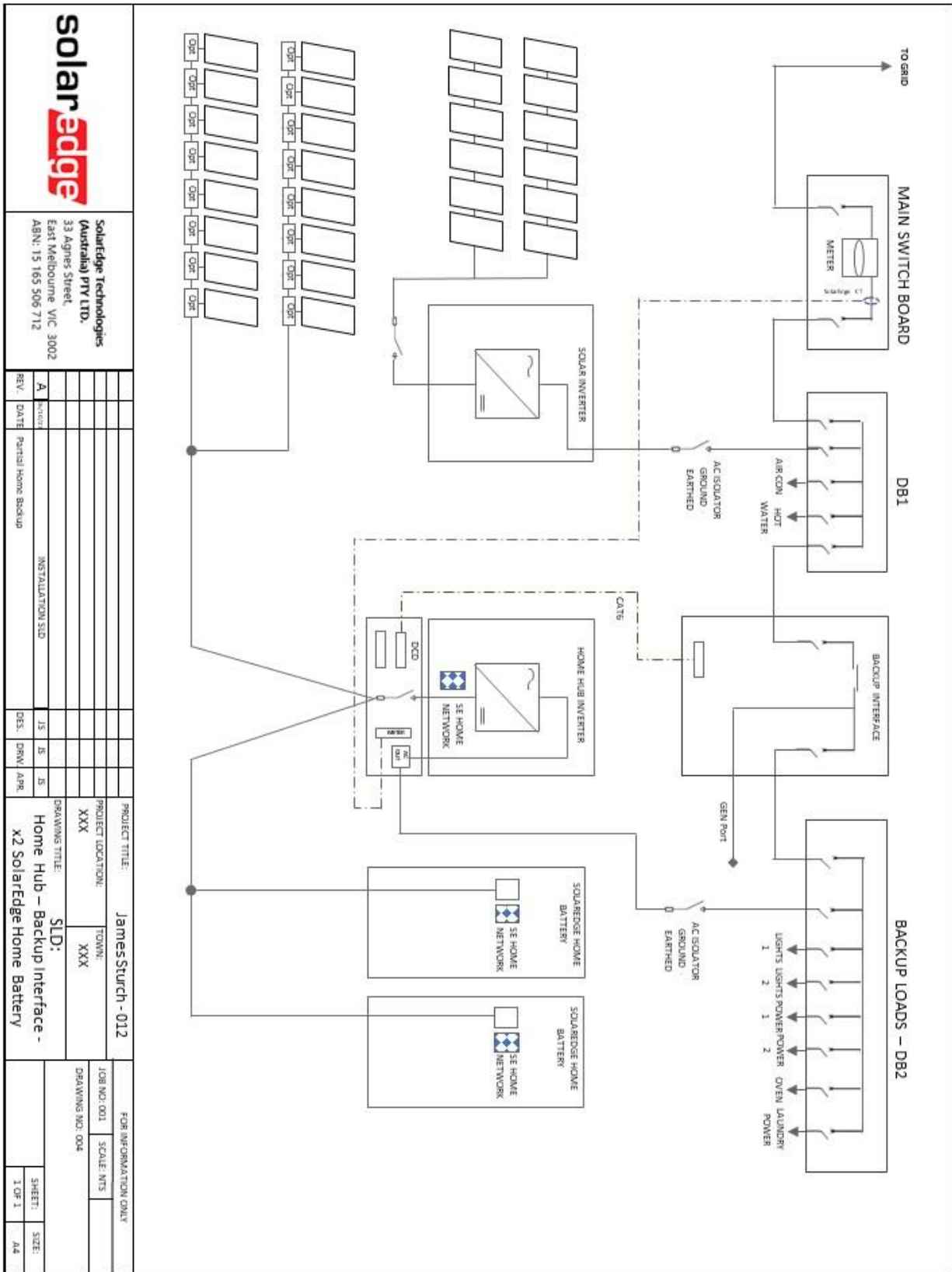
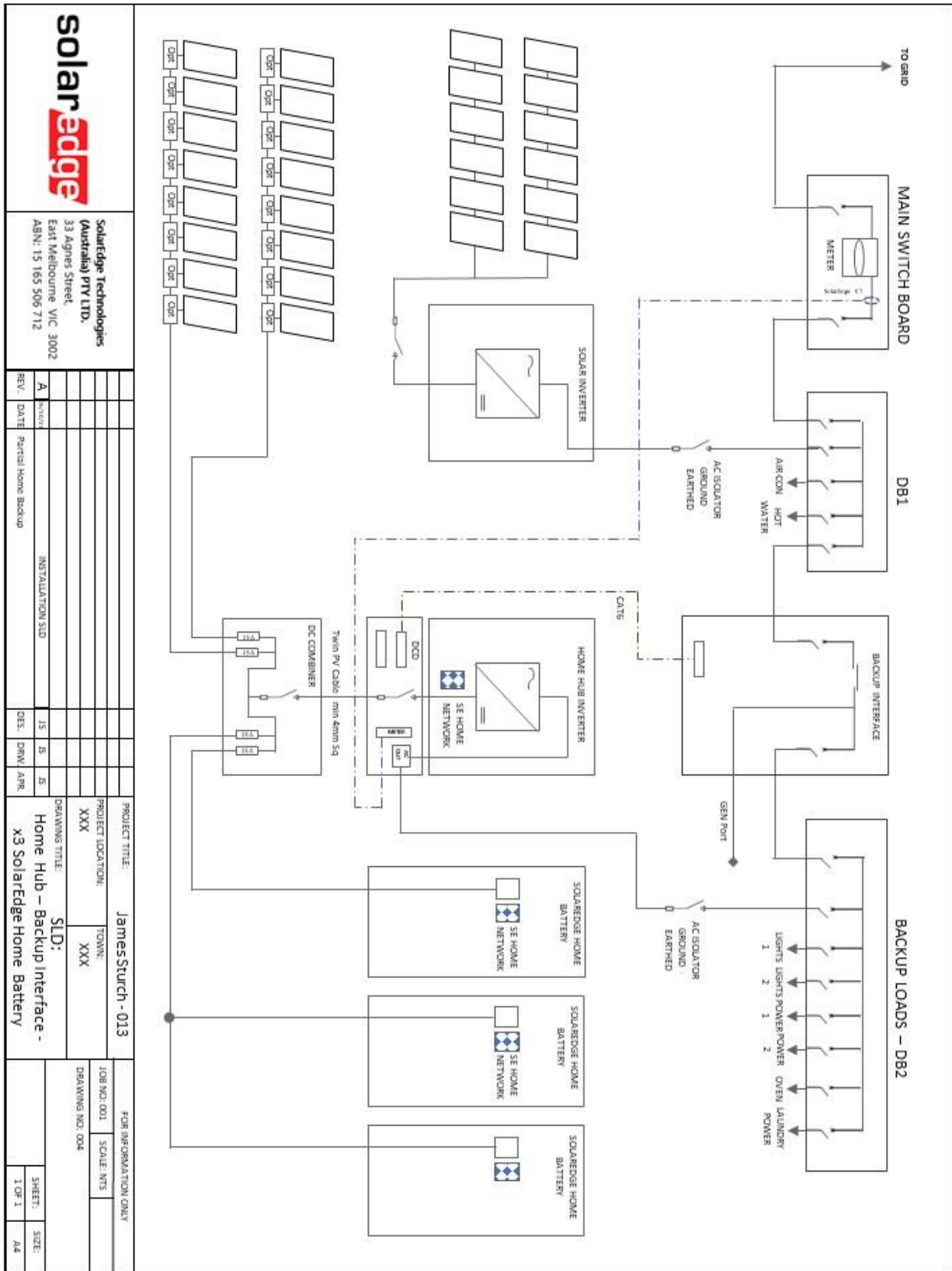
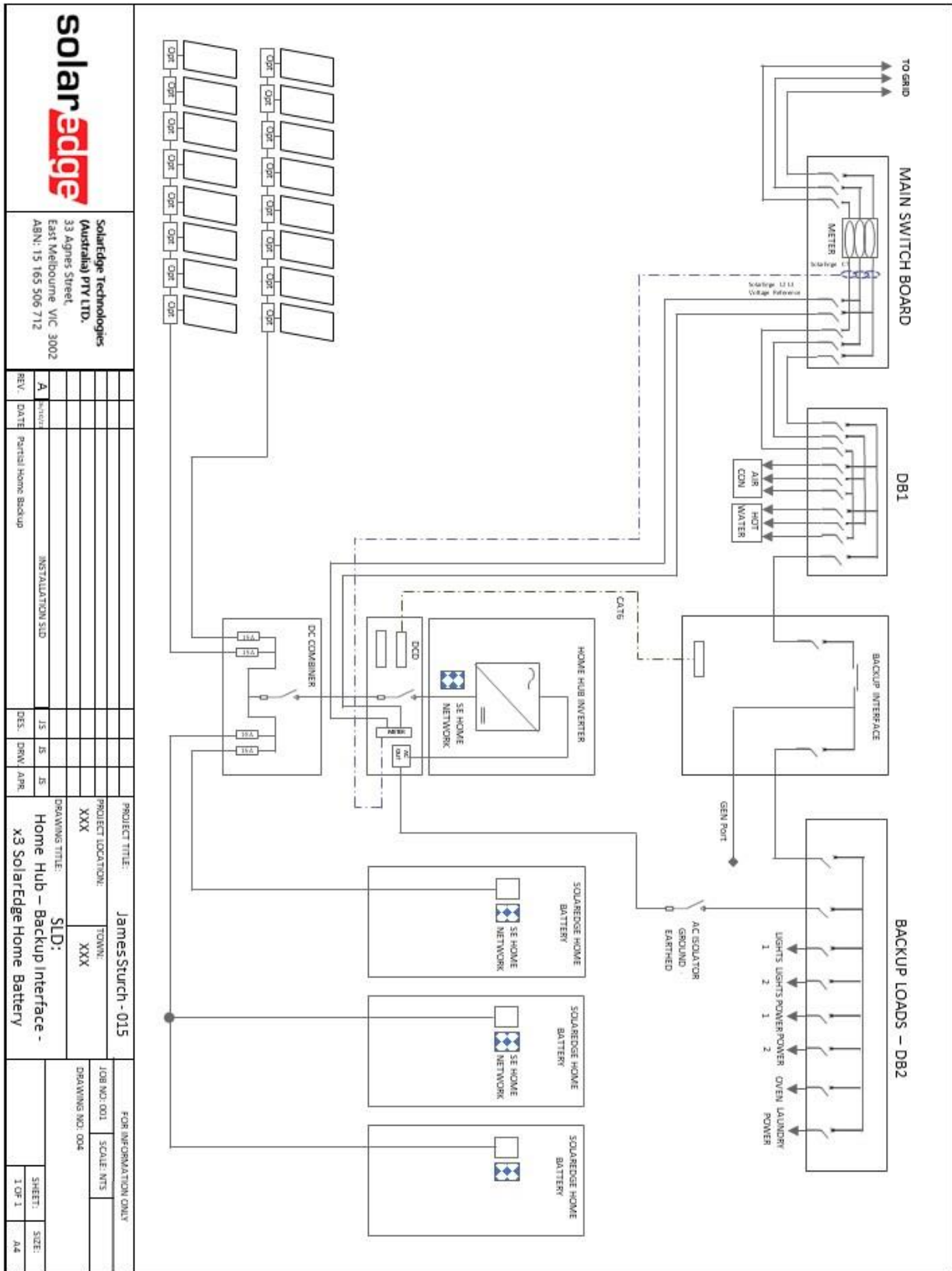


Figure 12: Home Hub, Backup Interface, Dual SolarEdge Home Batteries, Partial Home Backup and AC Coupled Inverter



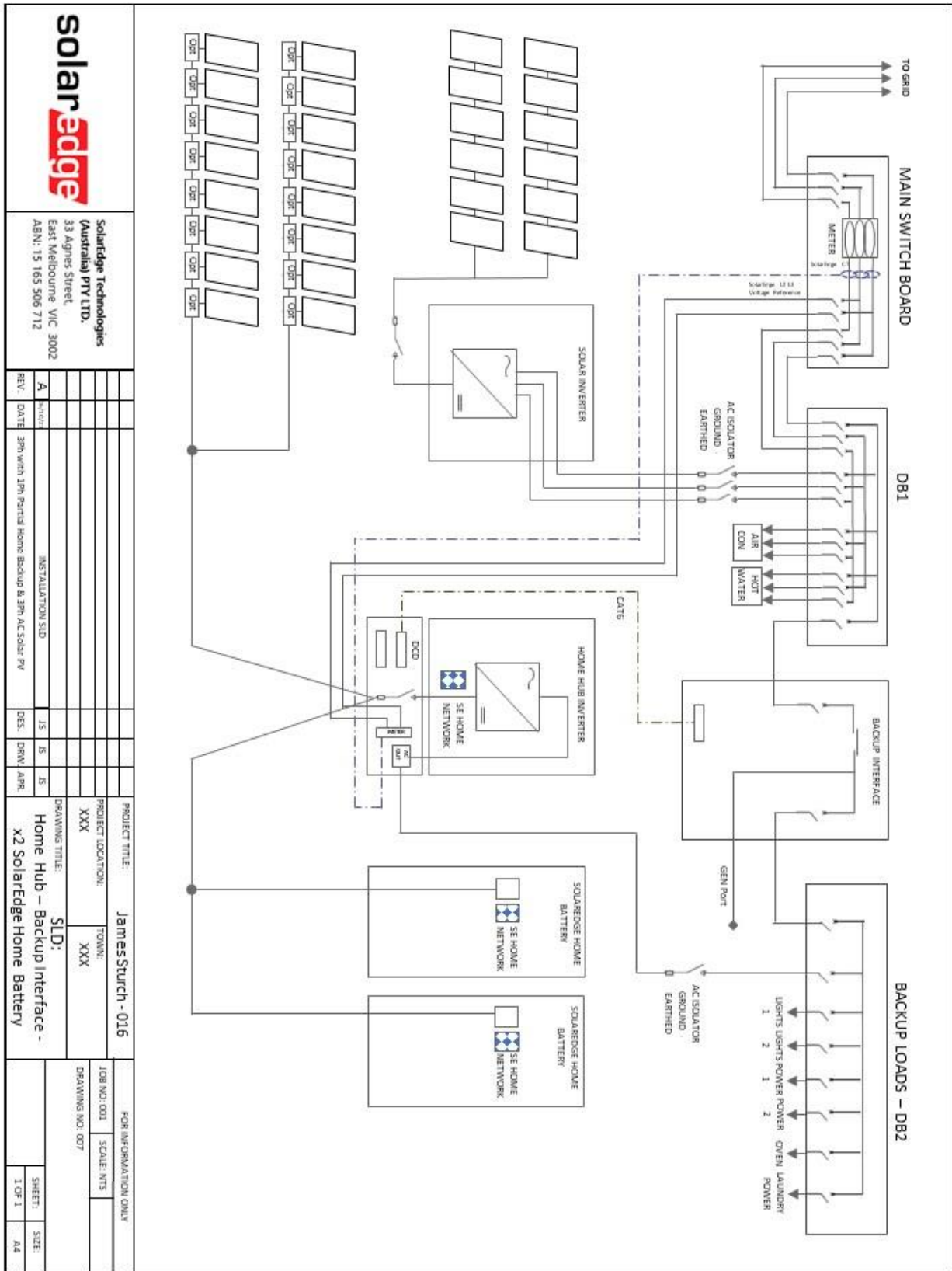
		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712			
		REV: A	DATE:	DES: JS	DRW: APR
		PROJECT TITLE: James Sturch - 013		FOR INFORMATION ONLY	
		PROJECT LOCATION: TOWN: XXX		JOB NO: 001 SCALE: NTS	
		DRAWINGS TITLE: Home Hub - Backup Interface - X3 SolarEdge Home Battery		DRAWING NO: 004	
		DRAWINGS TITLE: SLD:		SHEET: 1 OF 1	
		DRAWINGS TITLE: Home Hub - Backup Interface - X3 SolarEdge Home Battery		SIZE: A4	

Figure 13: Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner, Partial Home Backup and AC Coupled Inverter



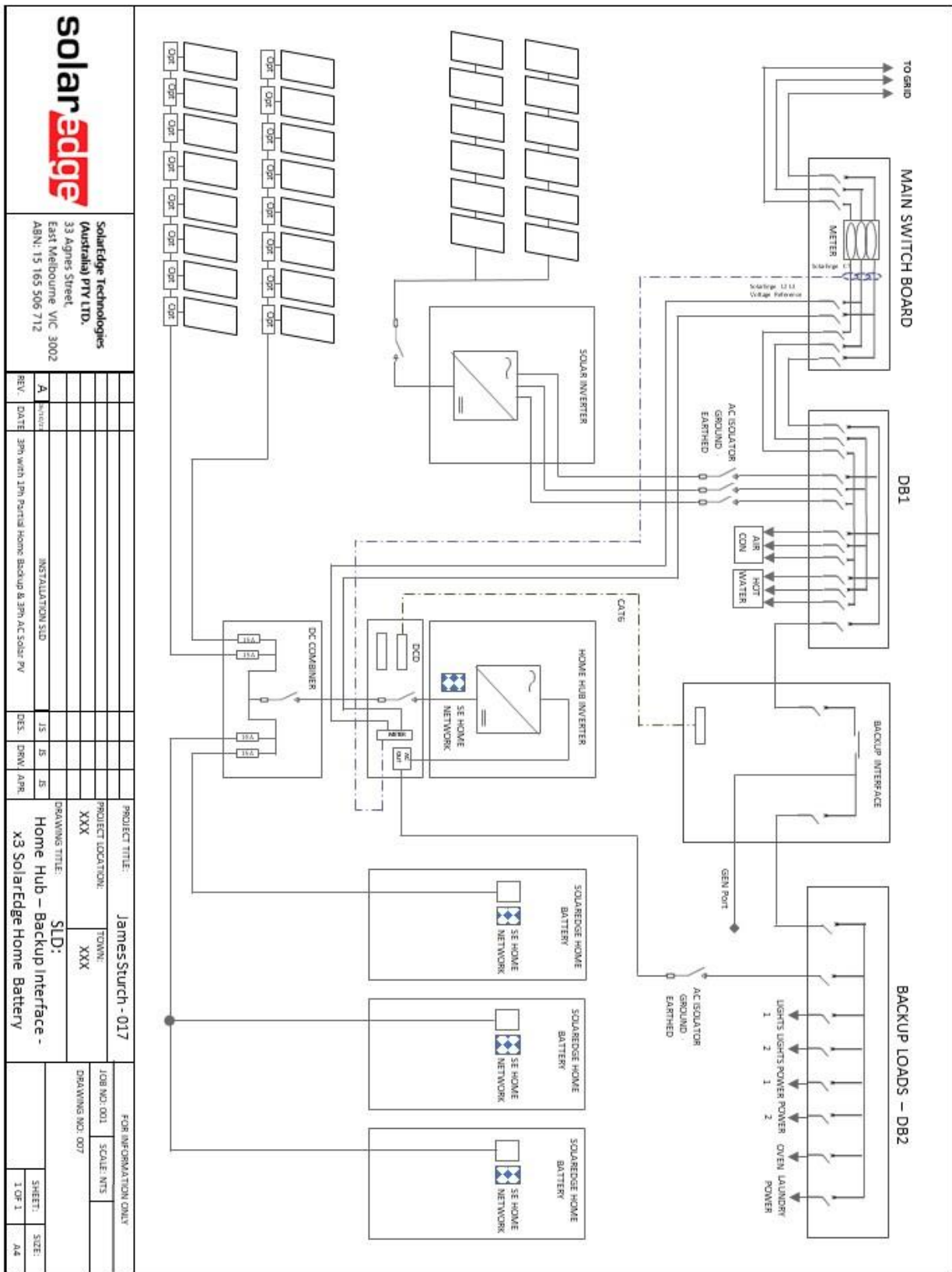
		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712									
		REV: A	DATE:	DES: JS	DRW: JS	PROJECT TITLE: James Sturch - 015		JOB NO: 001		SCALE: NTS	
INSTALLATION STD		PARTIAL HOME BACKUP		PROJECT LOCATION: TOWN: XXX		DRAWING TITLE: Home Hub - Backup Interface - X3 SolarEdge Home Battery		DRAWING NO: 004		FOR INFORMATION ONLY	
								SHEET: 1 OF 1		SIZE: A4	

Figure 15: Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner and Partial Home Backup, 3Ph Grid



		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712		PROJECT TITLE: James Sturch - 016		FOR INFORMATION ONLY	
		REV: A DATE: 30th with 1st Partial Home Backup & 3PH AC Solar PV		PROJECT LOCATION: TOWN: XXX		JOB NO: 001 SCALE: NTS	
DRAWING TITLE: SLD: Home Hub - Backup Interface - X2 SolarEdge Home Battery		DES: JS JS JS DRW: APR		DRAWING NO: 007		SHEET: SIZE: 1 OF 1 A4	

Figure 16: Home Hub, Backup Interface, Dual SolarEdge Home Batteries, Partial Home Backup, 3Ph Grid and AC Coupled Inverter



solar edge
 SolarEdge Technologies
 (Australia) PTY LTD.
 33 Agnes Street,
 East Melbourne VIC 3002
 ABN: 15 165 506 712

REV.	DATE	DESCRIPTION	DES.	DRW.	APP.
A	1/1/2024	INSTALLATION SLD	JS	JS	JS
3PH with 1PH Partial Home Backup & 3PH AC Solar PV					

PROJECT TITLE: James Sturch - 017
 PROJECT LOCATION: TOWN: XXX
 DRAWINGS TITLE: SLD: Home Hub - Backup Interface - X3 SolarEdge Home Battery

JOB NO: 001		SCALE: NTS	
DRAWING NO: 007		FOR INFORMATION ONLY	
SHEET: 1 OF 1	SIZE: A4		

Figure 17: Home Hub, Backup Interface, Three SolarEdge Home Batteries, DC Combiner and Partial Home Backup, 3Ph Grid and AC Coupled Inverter

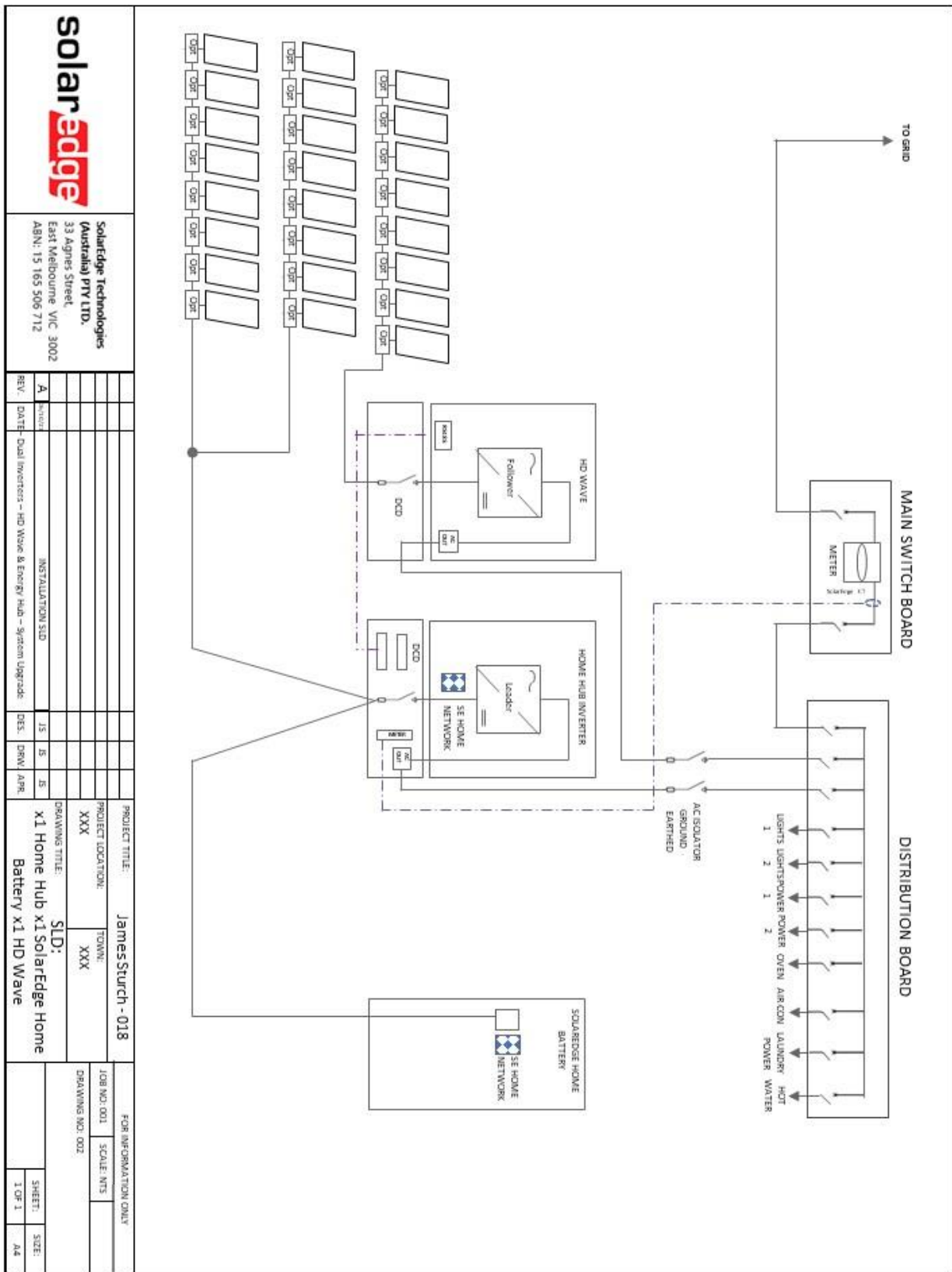


Figure 18: Home Hub, SolarEdge Home Battery addition to site with HD Wave, 1Ph Grid, metering option 1 – Existing CT

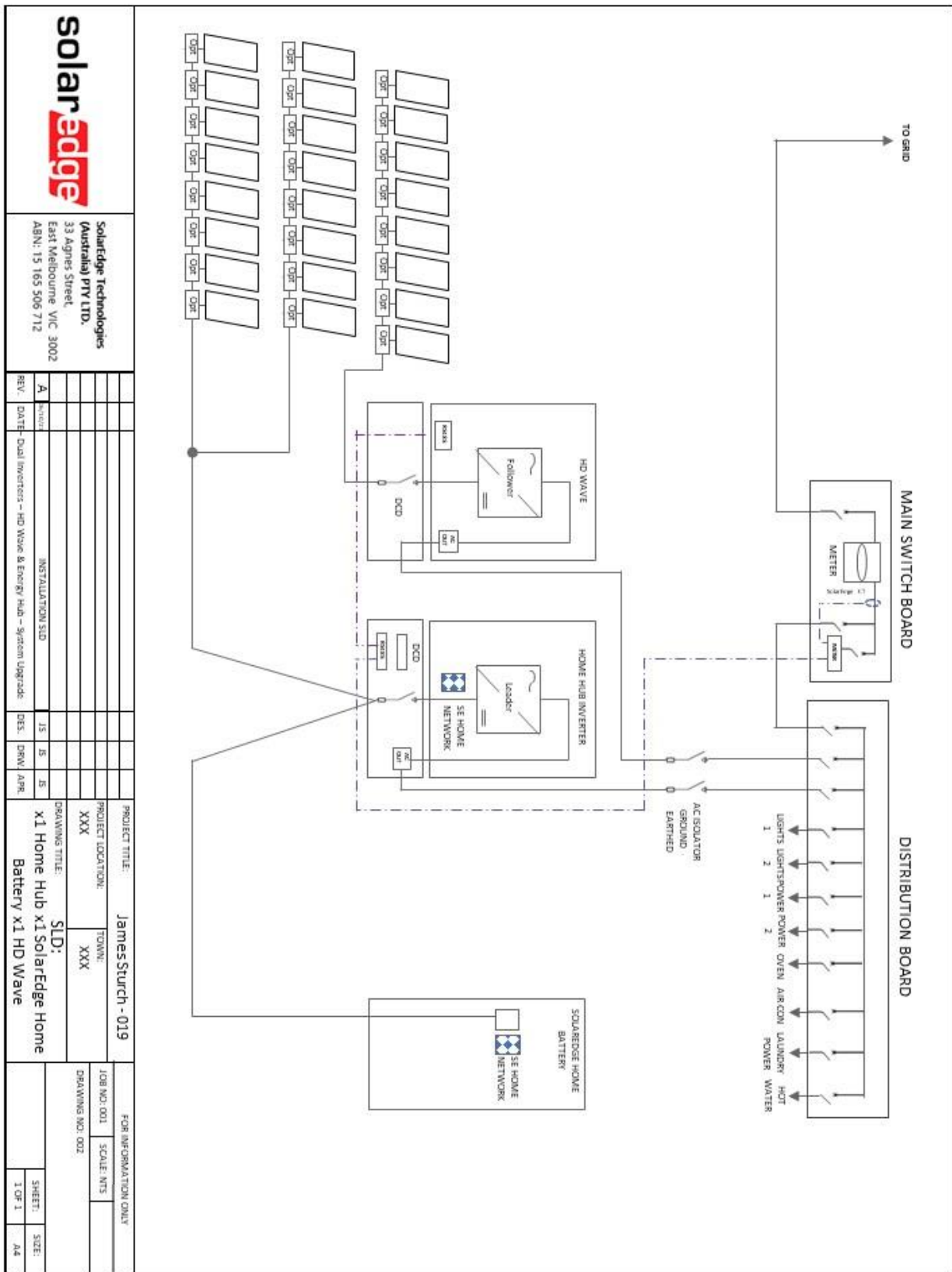
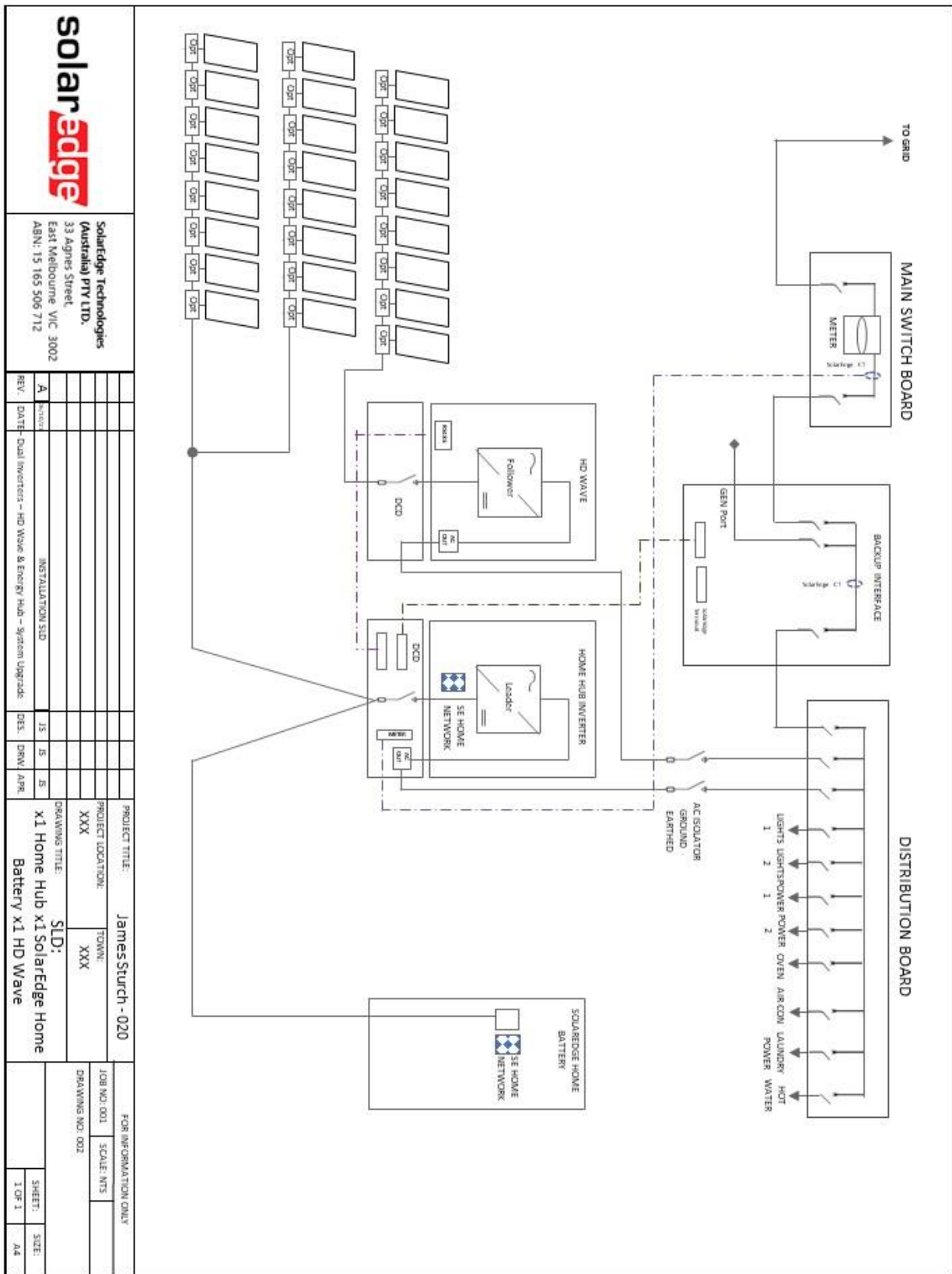


Figure 19: Home Hub, SolarEdge Home Battery additon to site with HD Wave, 1Ph Grid, metering option 2 – Existing metering



		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712																	
		PROJECT TITLE: James Sturch - 020		PROJECT LOCATION: XXX		TOWN: XXX		JOB NO: 001		SCALE: NTS		DRAWING NO: 002		SHEET: 1 OF 1		SIZE: A4		FOR INFORMATION ONLY	
REV: A		DATE: XXXX		DESCRIPTION: Dual Inverters - HD Wave & Energy Hub - System Upgrade		DES: JS JS		DRW: JS		APR: JS		DRAWING TITLE: SLD: x1 Home Hub x1 SolarEdge Home Battery x1 HD Wave							

Figure 20: Home Hub, Backup Interface, SolarEdge Home Battery additon to site with HD Wave,1Ph Grid, metering option 1 – Existing CT

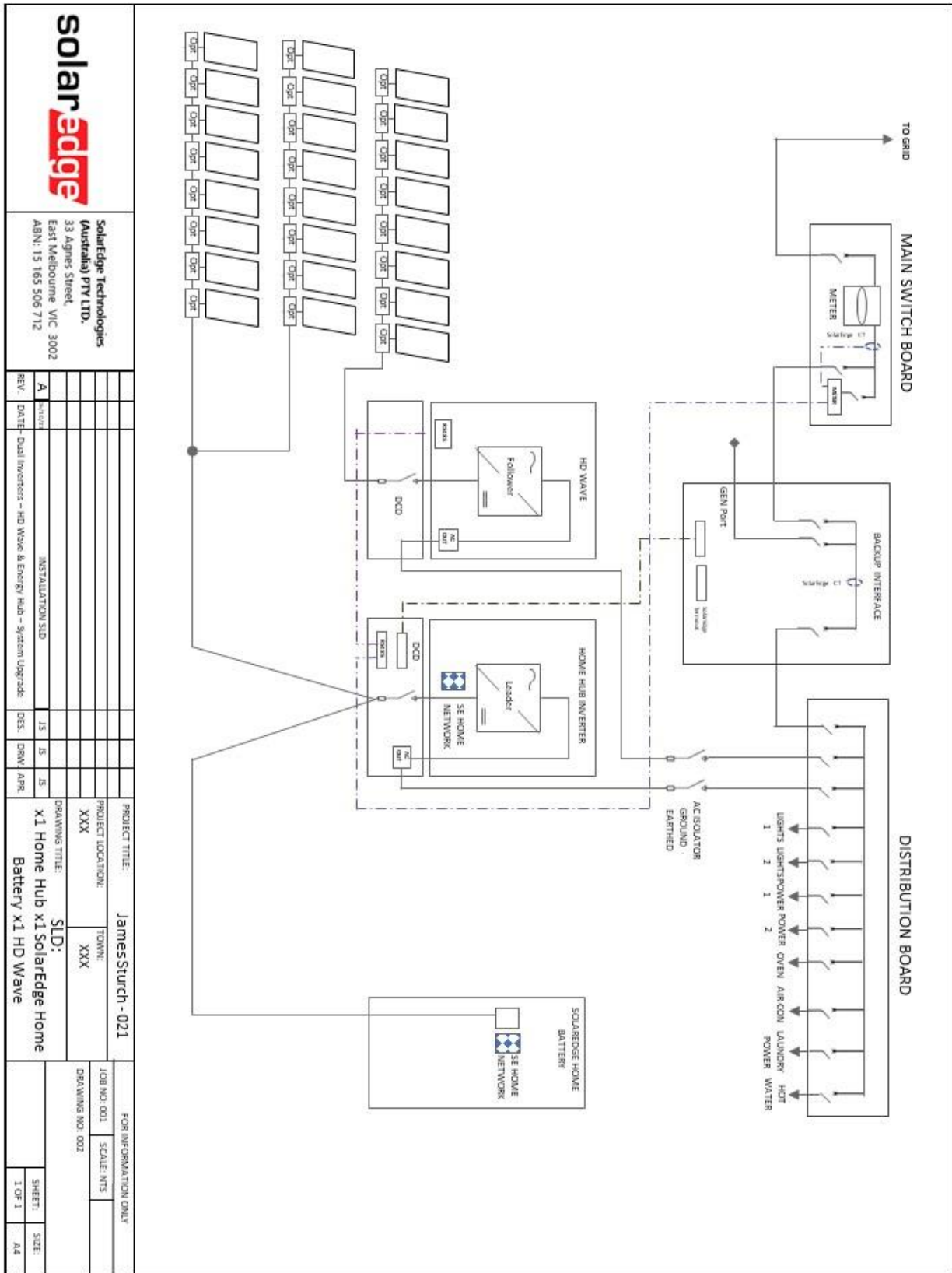
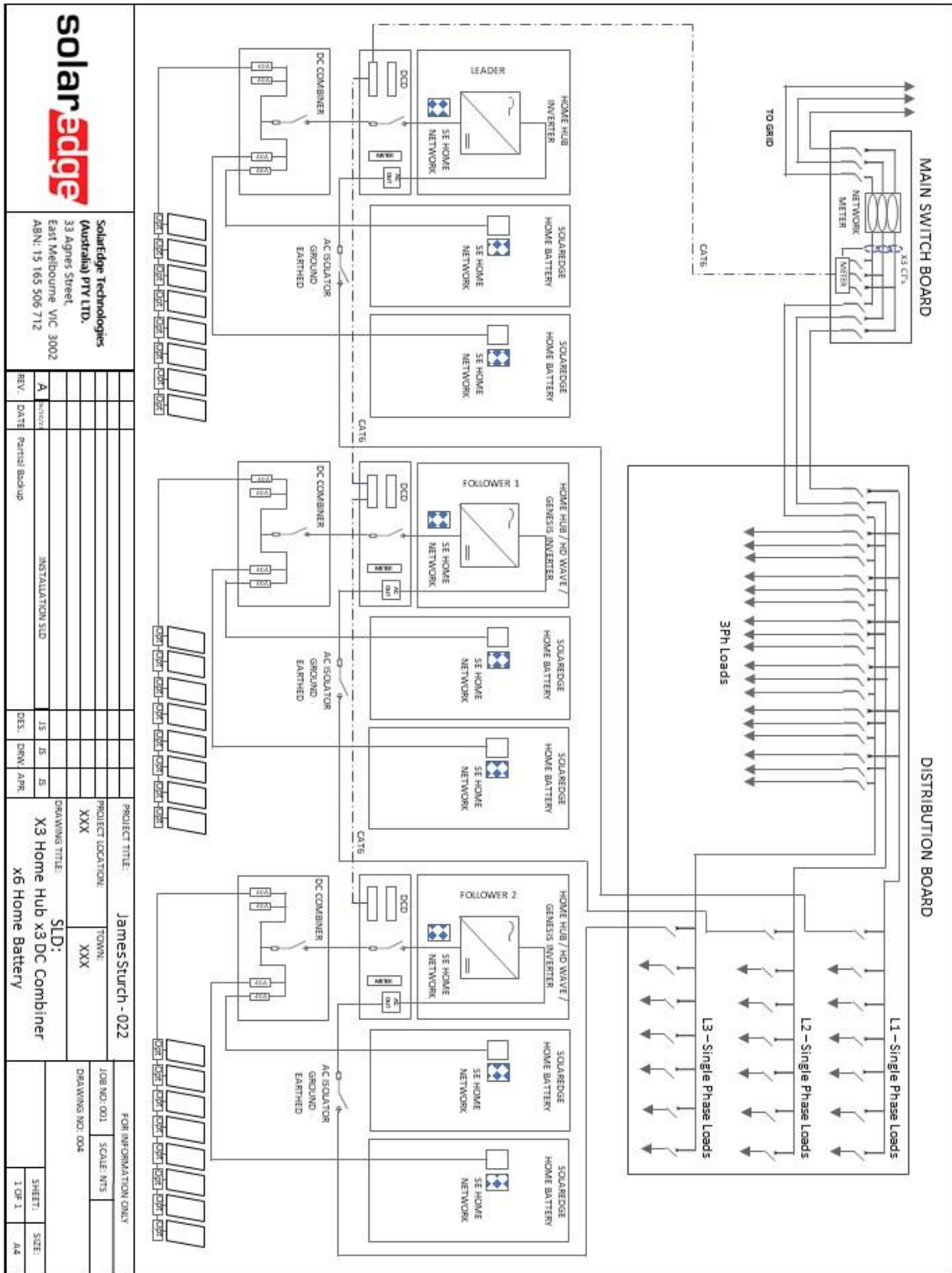
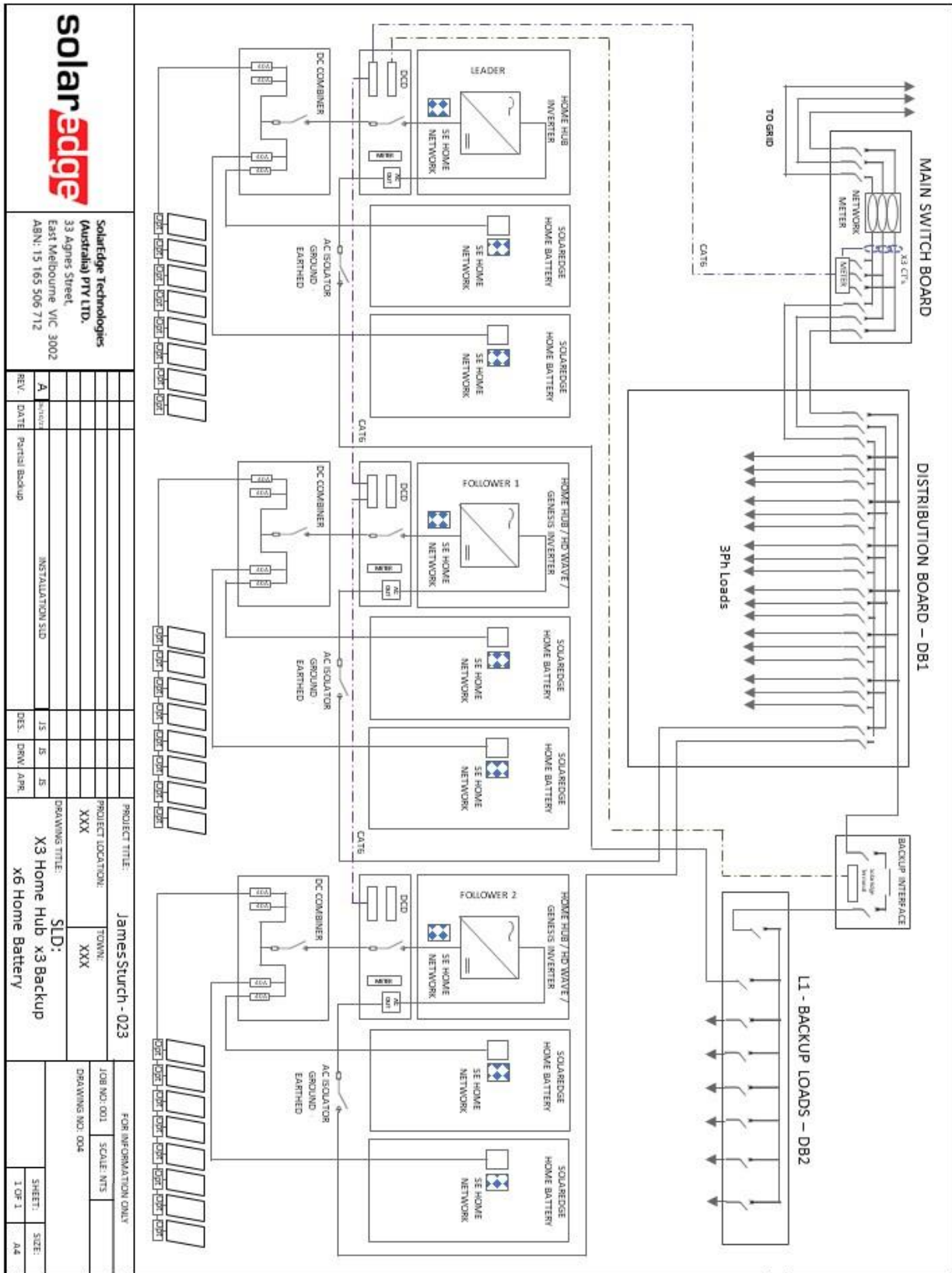


Figure 21: Home Hub, Backup Interface, SolarEdge Home Battery additon to site with HD Wave,1Ph Grid, metering option 2 – Existing Metering



		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712		PROJECT TITLE: James Sturch - 022		FOR INFORMATION ONLY	
		REV: A DATE: Partial Backup		PROJECT LOCATION: TOWN: XXX		JOB NO: 001 SCALE: NTS	
REV: A DATE: Partial Backup		DRAWING TITLE: X3 Home Hub X3 DC Combiner x6 Home Battery		DRAWING NO: 004		SHEET: 1 OF 1 SIZE: A4	

Figure 22: Three Home Hub's, x6 SolarEdge Home Batteries, 3Ph metering in the existing switch board.



		SolarEdge Technologies (Australia) PTY LTD. 33 Agnes Street, East Melbourne VIC 3002 ABN: 15 165 506 712		PROJECT TITLE: James Sturch - 023		FOR INFORMATION ONLY	
		REV: A DATE: Partial Backup		PROJECT LOCATION: TOWN: XXX		JOB NO: 001 SCALE: NTS	
DRAWINGS TITLE: X3 Home Hub X3 Backup X6 Home Battery		DES: JS JS JS DRW: APR		DRAWING NO: 004		SHEET: 1 OF 1 SIZE: A4	

Figure 23: Three Home Hub's, x6 SolarEdge Home Batteries, 3Ph metering in existing switch board, partial backup on one phase only.

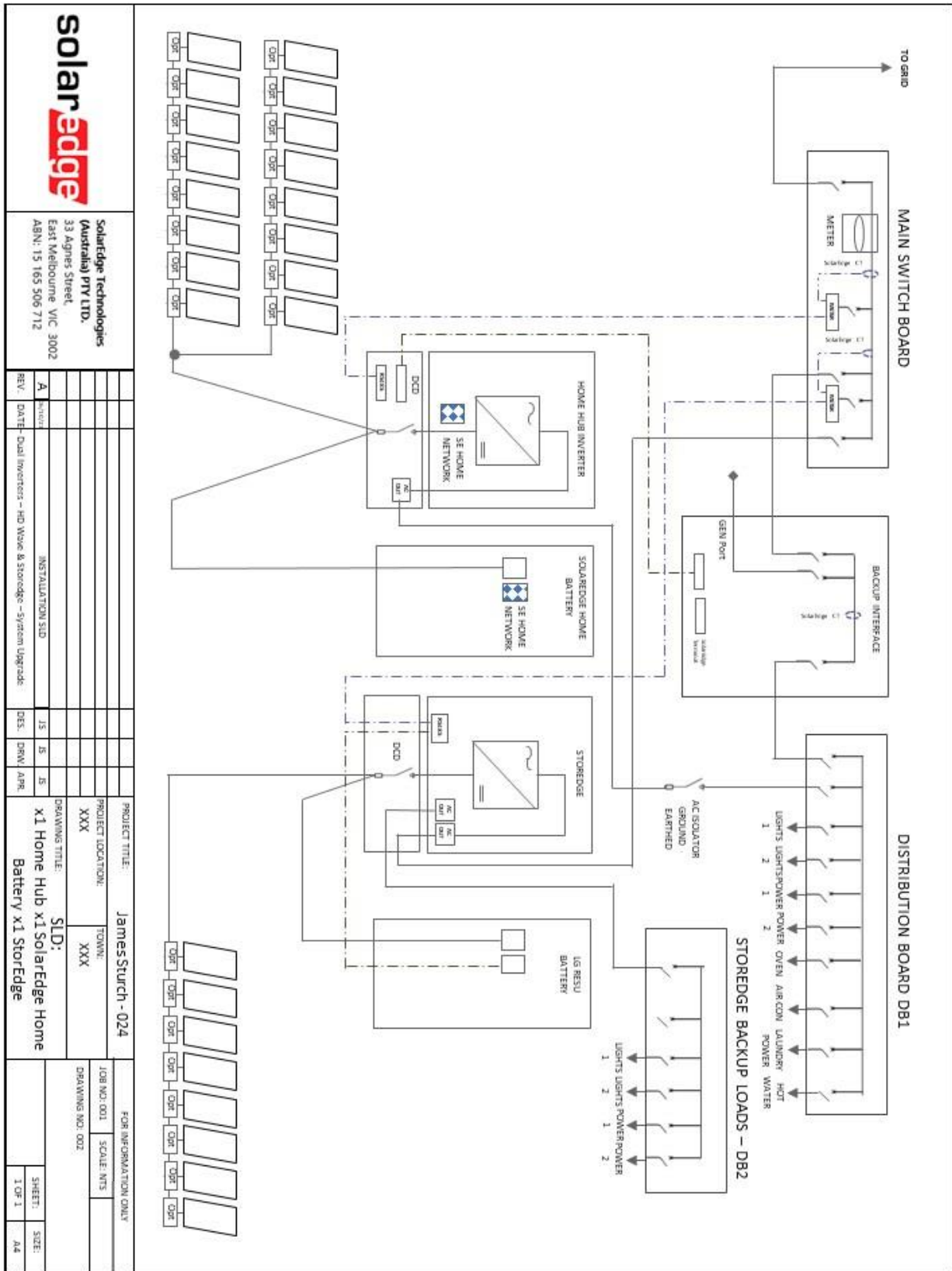


Figure 24: Home Hub, SolarEdge Home Battery Partial Backup, StorEdge, LG RESU Prime, Metering Option A.

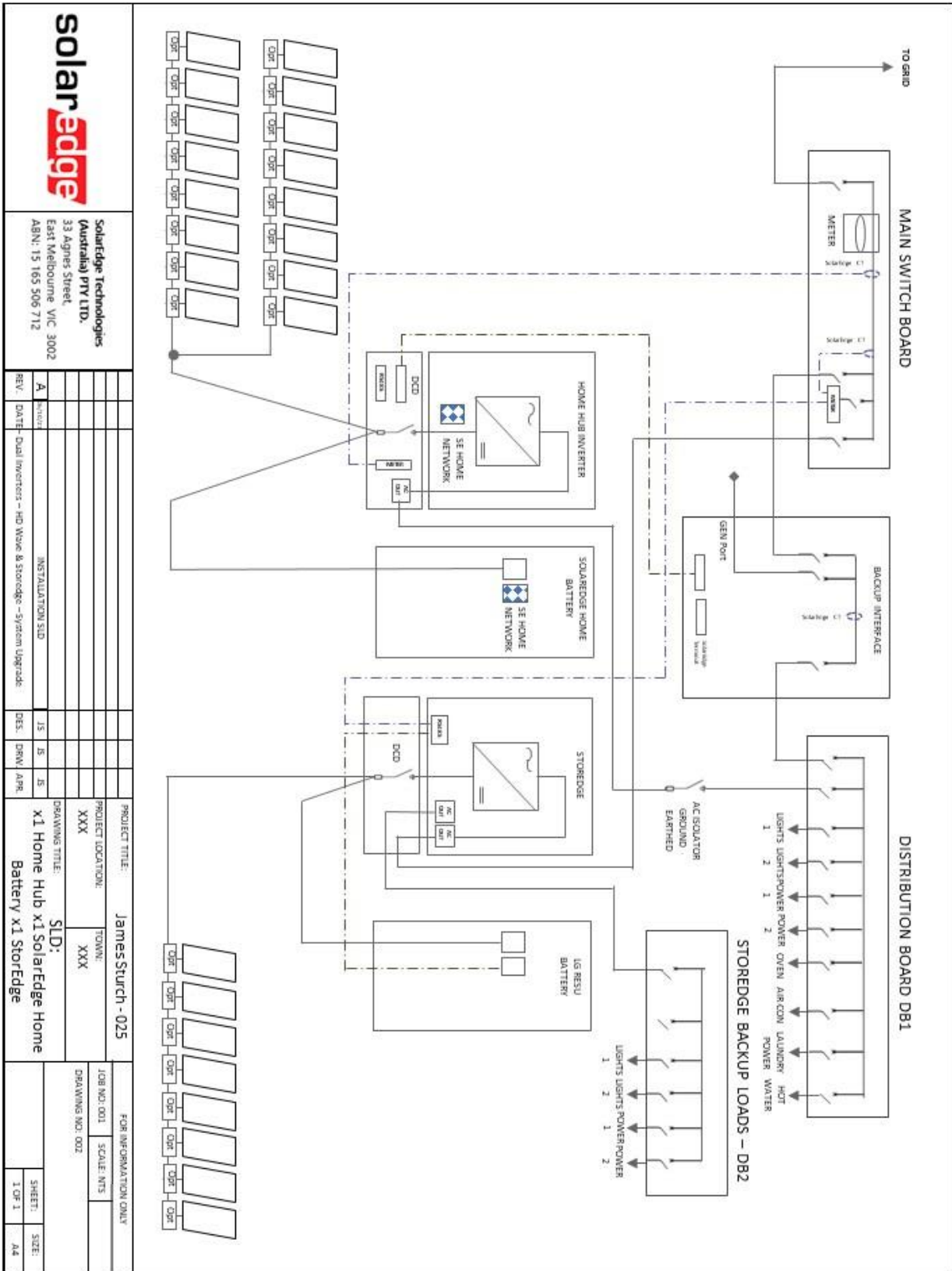


Figure 25: Home Hub, SolarEdge Home Battery, Partial Backup, StorEdge, LG RESU Prime, Metering Option B.

NOTE: The Home Hub and StorEdge inverters are separate systems (No Leader Follower configuration). Both systems require their own individual site ID as they cannot be combined in the monitoring portal.

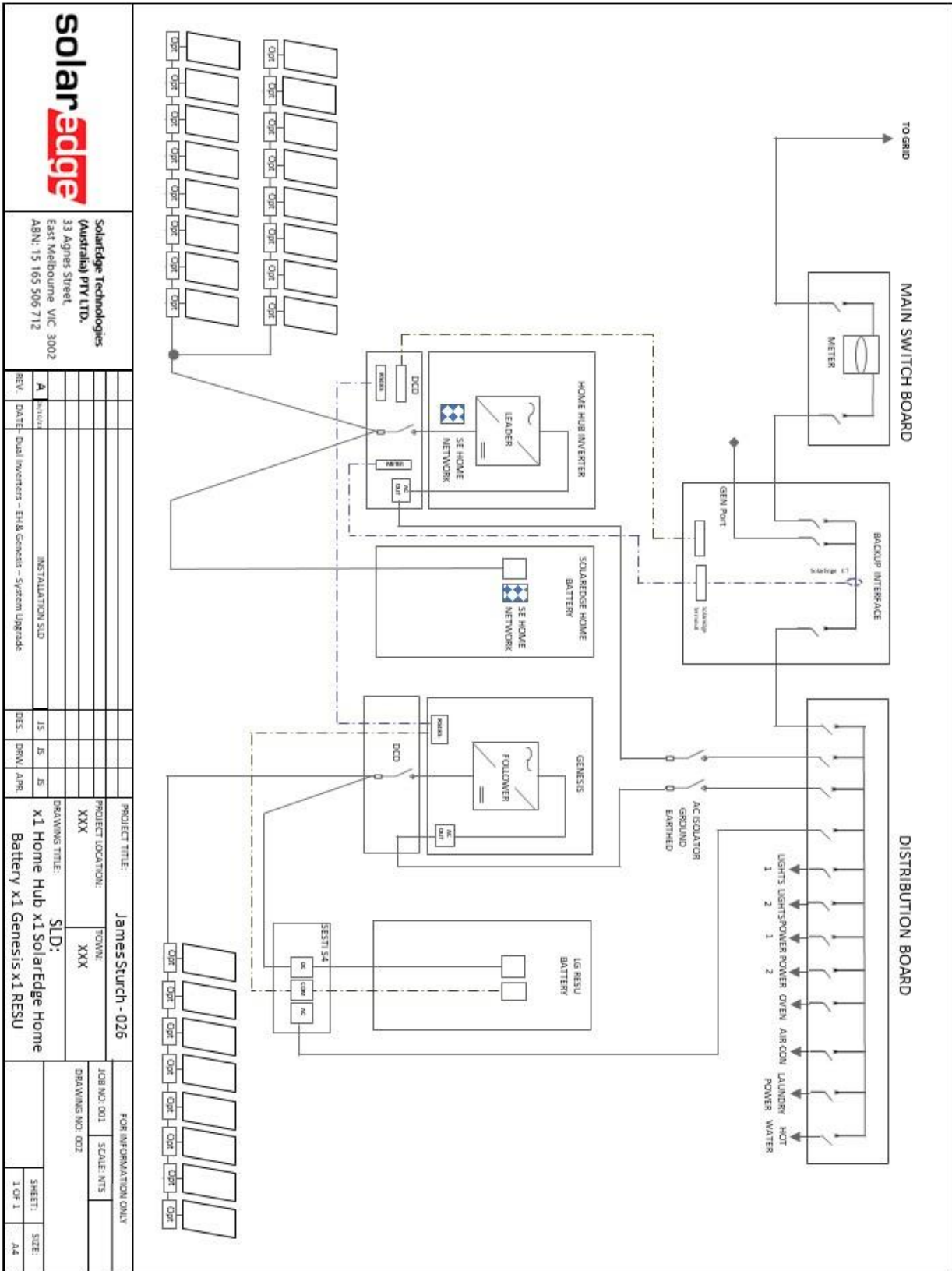


Figure 26: Home Hub, SolarEdge Home Battery, Full Home Backup, Genesis, SESTI S4 , LG RESU Prime, Metering via Backup Interface.

AS/NZS 4777.2:2020 Residential STC kWp Calculations

New Labelling Requirements

To align with the new testing requirements and product definitions contained within AS/NZS 4777.2:2020. All SolarEdge inverters will have their labelling updated to reflect the new requirements illustrated in Table 1.

Depending upon additional hardware components installed, the inverter and overall system will fall into one of three definitions across two main categories:

1. Non-multiple mode inverters – incapable of providing backup. HD-Wave, HD- Wave Genesis, HD-Wave EV and Residential 3Ø inverters.
2. Multiple mode inverters – capable of providing backup. The Home Hub inverter with Backup Interface.

Inverter/System Definition	Backup	System Configuration	Product Code Suffix
PV & Battery Inverter	-	Solar + DC-Coupled Battery	SExxxxH
Multiple Mode Inverter	Y	Solar + DC-Coupled Battery + Backup	SExxxxH-MM

Table 1: Definitions and corresponding Product Code suffix designations.

Guidance Relating to PV DC Oversizing of SolarEdge Systems

To SolarEdge inverters provide the ability to significantly oversize the system's PV array once a battery is connected to facilitate improved battery charging performance.

The following table details the maximum volume of PV DC Capacity and therefore number of STC's, which can be generated based on the inverter capacity and associated hardware components.

Home Hub Inverter	STC Calculation for PV Oversizing
PV only	133.3% x inverter AC output
PV + Battery	Up to 300% x inverter AC output (See Table 3) with battery
HD-Wave & Genesis	STC Calculation for PV Oversizing
PV only	133.3% x inverter AC output
PV + Battery	Up to 200% x inverter AC output (Inverter + DC Combiner)

Table 2: System Definition and STC Calculation for PV oversizing

Home Hub as a multiple mode inverter allows greater PV DC oversizing than the non-multiple mode inverters, such as the Genesis inverter.

When adding extra PV DC capacity for battery charging, we suggest using the following methodology:

1. Oversize the inverter by 133.3% in-line with CER recommendation.
2. Connect up to 5kW for each battery up to the maximum allowable level specified on the Energy Hub datasheet.

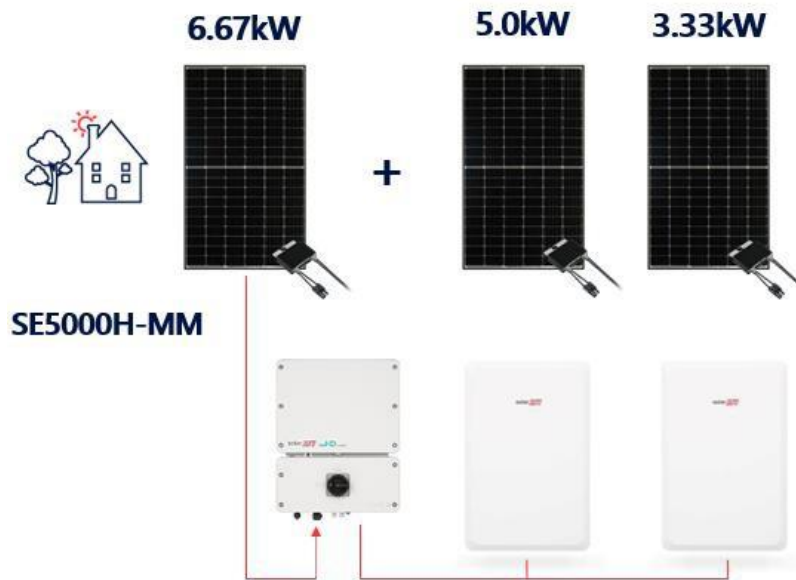


Figure 27: Home Hub SE5000H-MM maximum oversizing example

Guidance Relating to kWp Ratio for STC Calculations – SolarEdge Home Battery

The applicable volume of STC's is defined by the inverter type and its definition.

Home Hub as a multiple mode inverter that allows greater PV DC oversizing than the non- multiple mode inverters such as the Genesis inverter.

Non-multiple mode inverters do not specifically require a DC Combiner Box for battery connection, rather it is needed to facilitate extra PV STC claims for battery charging.

We suggest when making grid connection applications or STC claim submissions the inverter model specified contains the product code suffix that reflects the system's full capabilities. For example, Home Hub submissions specify "SE5000H-MM", for Genesis submissions, specify "SE5000-BPV".

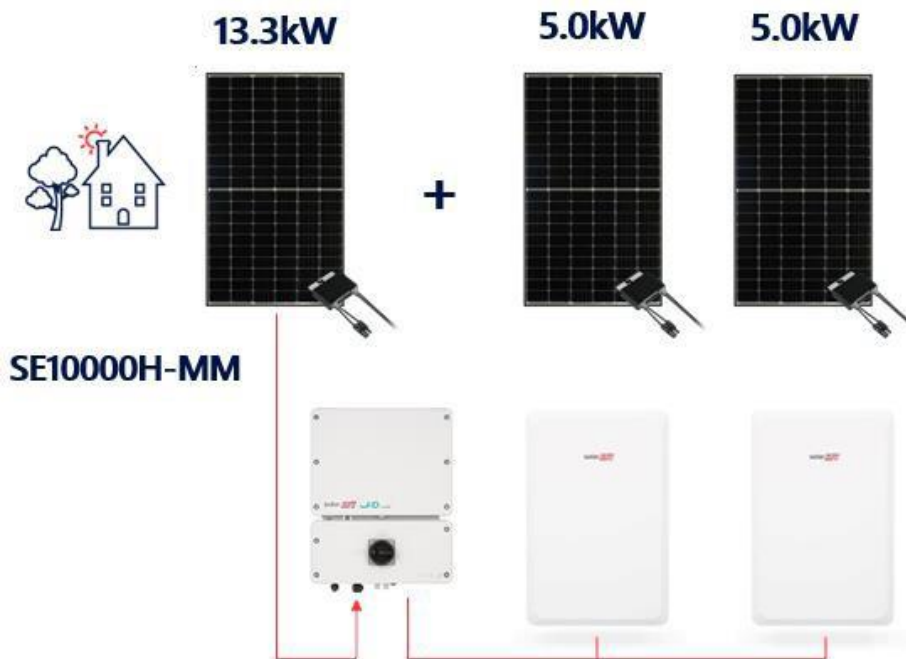


Figure 28: Home Hub SE10000H-MM maximum oversizing example

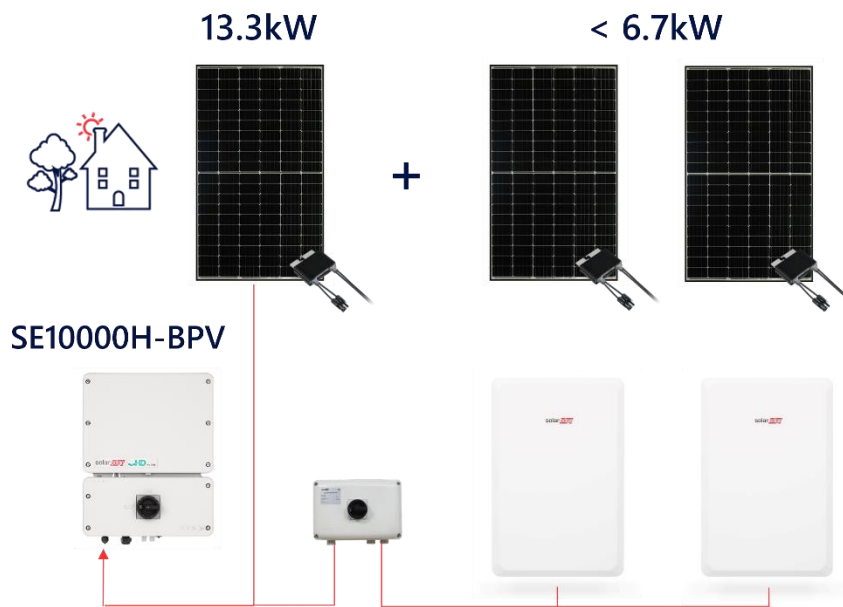


Figure 29: Genesis SE10000H maximum oversizing example.

Inverter	Inverter Model	DC Combiner	PV Only		PV Plus SolarEdge Home Battery					
			Battery No.	PV kWp	Battery No.	PV kWp	Battery No.	PV kWp	Battery No.	PV kWp
Home Hub	SE3000H-MM	Y*	0	4.0	1	9.0	2	9.0	3	9.0
	SE4000H-MM	Y*	0	5.33	1	10.33	2	12.0	3	12.0
	SE5000H-MM	Y*	0	6.67	1	11.67	2	15.0	3	15.0
	SE6000H-MM	Y*	0	8.0	1	13.0	2	18.0	3	18.0
	SE8250H-MM	Y*	0	11.0	1	16.0	2	21.0	3	22.0
	SE10000H-MM	Y*	0	13.33	1	18.33	2	22.0	3	22.0
HD Wave EV & Genesis	SE3000H	Y**	0	4.0	1	6.0	2	6.0	3	6.0
	SE5000H	Y**	0	6.67	1	10.0	2	10.0	3	10.0
	SE6000H	Y**	0	8.0	1	12.0	2	12.0	3	12.0
	SE8250H	Y**	0	11.0	1	16.0	2	16.5	3	16.5
	SE10000H	Y**	0	13.33	1	18.33	2	20.0	3	20.0

(*) DC Combiner Required for connection of 3rd. SolarEdge Home Battery

(**) DC Combiner Required for additional STC's when adding SolarEdge Home Batteries

Table 3: Maximum PV Oversizing guidelines

Guidance Relating to RCD Requirements

PV System Residual Current Factors

In every PV installation, several elements contribute to the current leakage to protective earth (PE). These elements can be divided into two main types:

- **Capacitive discharge current** - Discharge current is generated mainly by the parasitic capacitance of the PV modules to PE. The module type, the environmental conditions (rain, humidity) and even the distance of the modules from the roof can affect the discharge current. Other factors that may contribute to the parasitic capacitance are the inverter's internal capacitance to PE and external protection elements such as lightning protection.

During operation, the DC bus is connected to the alternating current grid via the inverter. Thus, a portion of the alternating voltage amplitude arrives at the DC bus. The fluctuating voltage constantly changes the charge state of the parasitic PV capacitor (i.e. capacitance to PE). This is associated with a displacement current, which is proportional to the capacitance and the applied voltage amplitude.

- **Residual current** - if there is a fault, such as defective insulation, where an energized cable comes into contact with a grounded person, an additional current flows, known as a residual current.

Residual Current Device (RCD)

All SolarEdge inverters incorporate a certified internal RCD (Residual Current Device) to protect against possible electrocution in case of a malfunction of the PV array, cables or inverter (DC). The RCD in the SolarEdge inverter can detect leakage on the DC side. There are 2 trip thresholds for the RCD as required by the DIN VDE 0126-1-1 standard. A low threshold is used to protect against rapid changes in leakage typical of direct contact by people. A higher threshold is used for slowly rising leakage currents, to limit the current in grounding conductors for fire safety. The default value for higher speed personnel protection is 30mA, and 300mA per unit for lower speed fire safety.

Installation and Selection of an External RCD Device

Section 7.3.4.1 of AS/NZS 3000:2018 details the general requirements for the AC isolation switch in accordance with clause 2.3.2.2. Requirements of AS/NZS 4777 series are deemed to satisfy these requirements, however. Section 2.6.2.2 defines the specific types of RCD's and their application. There are 6 different types of RCD's available and complaint for installation depending upon the characteristic of supply, these being:

- **Type A RCD** - Residential sinusoidal waveforms.
- **Type A RCD** - Residential pulsating direct currents
- **Type I RCD** - Residual alternating currents not exceeding 10mA, interrupt time not exceeding 40ms
- **Type F RCD** - Composite residual, pulsating direct or high frequency leakage currents
- **Type B RCD** - Residual sinusoidal up to 1000Hz, alternating or pulsating, residual direct currents
- **Type S RCD** - Specifically designed where tripping is delayed after a pre-determined time

Mitigation of Nuisance Tripping

Section 2.6.3.2.3.3 of AS/NZS 3000:2018 details the requirements wherever a 30mA RCD shall be provided for final subcircuits with a rating not exceeding 32A. However, exceptions to these requirements apply as per clause 2.6.3.2.3.3 Exceptions 3 (II) which states that 'These requirements need not apply to the following'...' may cause spurious nuisance tripping through high leakage currents being generated in the normal operation of the equipment'.

Installation and Selection of an External RCD Device

Installation of an RCD must always be conducted in accordance with local electrical regulations and standards. SolarEdge recommends the use of a type-A RCD. Unless a lower value is required by the specific local electric regulations.

For Single Phase inverter installations SolarEdge suggests an RCD value between 30mA and 100mA. If an RCD is used, 100mA is required for installations above 20kWdc whereas a 30mA RCD is required for installations below 20kWdc.