SolShare Installation Manual

USA - AE-PN-083-v3.0

This manual is intended for installations in the United States of America. It is subject to change. Please check our website at www.allumeenergy.com for the most up-to-date manual version.

AE-PN-083-v3.0
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All information and specifications are subject to change without notice.

Summary

Hello

Thank you for purchasing a SolShare system.
You are supporting the growth of solar energy. Due to the cutting edge nature of this product, this installation will likely be different from any other piece of solar technology you have installed in the past. As a result, please follow the guidelines in this manual carefully.

Made in Australia, your system is designed to meet all United States conditions, regulations and codes. This guide provides the general instruction of the installation procedure of the SolShare.

If you have questions or feedback on the product or this manual, feel free to reach out to Allume on +1 (213) 347-4293 and ask for a technical representative. Otherwise, you can email support@allumeenergy.com.au with any queries.

Commissioning Notes

To be completed during installation and data entered into Commissioning App

Installer name: ..... Company: .....

Serial Number: 2P_100_ [ ] [ ] [ ] [ ]

Installation Address: .....

.....

State: ..... Postal/Zipcode: ..... Country: .....

Unit Connection Identifier

SolShare Connection	**Unit Connected** *(eg: Apt 1, Unit B, Common light & power, No connection)*
	Unit number
1 (L1)	.....
2 (L2)	.....
3 (L1)	.....
4 (L2)	.....
5 (L1)	.....
6 (L2)	.....
7 (L1)	.....
8 (L2)	.....
9 (L1)	.....
10 (L2)	.....

Handling and Safety Instructions

This guide is provided to help the installer understand the standard SolShare installation procedure.

Installations may vary depending on the existing electrical infrastructure and local electrical safety standard. It is the responsibility of the electrician to ensure their installation meets the local electrical safety standard.

During installation, testing and inspection, adherence to all the handling and safety instructions is mandatory. **Failure to do so may result in injury or loss of life and damage to the equipment.**

SAFETY SYMBOLS INFORMATION

The following safety symbols are used in this document. Familiarise yourself with the symbols and their meaning before installing or operating the system:

Warning:
xxxxx xxxx xxxx xxx xxxx xx xxxx xxx xxxx

This symbol denotes a critical safety instruction that must be followed to ensure safety of installer and safe operation of the SolShare once commissioned. This box is sometimes denoted in green to provide further emphasis.

Warning:
xxxxx xxxx xxxx xxx xxxx xx xxxx xxx xxxx

Important:
xxxxx xxxx xxxx xxx xxxx xx xxxx xxx xxxx

This symbol indicates an instruction which: will ensure proper operation of the SolShare once commissioned or will help with the installation efficiency. This same box is sometimes denoted in green to provide further emphasis.

Important:
xxxxx xxxx xxxx xxx xxxx xx xxxx xxx xxxx

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. This manual contains important instructions for the SolShare 2P-100 that shall be followed during installation and maintenance of the power division control system.

WARNING: The SolShare cover must be opened only after the input and all output circuits are individually disconnected.

WARNING: Ensure the SolShare is grounded prior to operation. This product must be connected to a grounded, metal, permanent wiring system or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the product.

WARNING: Opening of the SolShare must only be performed by certified electrician

WARNING: The Distributed Energy Resource System Grounding shall be installed per the requirements of the National Electrical Code, ANSI/NFPA 70 and is the responsibility of the installer

CAUTION: The unit must be operated according to the technical specification datasheet provided with the unit

CAUTION: HEAVY OBJECT – This product has a weight of approximately 38kg. It's un-boxing and mounting requires 2 people.

NOTE: The SolShare is Type 4 rated per the UL50E standard. Where used, cable glands must be UL Listed or Recognized and rated to minimum UL Category 4, otherwise the supplied blanking seal to remain in place.

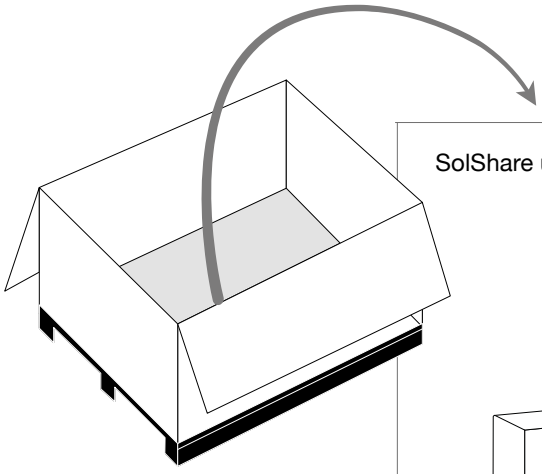
NOTE: Use only copper conductors rated for a minimum of 90 degrees Celsius, 194 Fahrenheit.

NOTE: The symbol ⏚ appears at grounding points within the SolShare equipment. This symbol is also used in the manual.

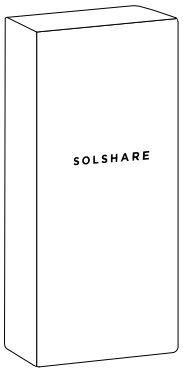
I/ What's in the box

Check for Transport Damage

Make sure the SolShare is intact following transportation. If there are any signs of visible damage, please contact your dealer immediately. Carefully check that all of the components have been supplied. If anything is missing, contact your dealer.

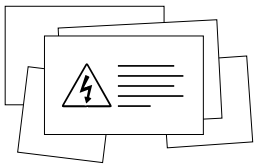


SolShare unit

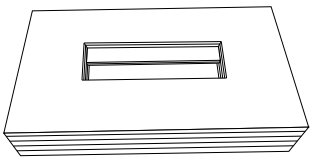


x 1

Switchboard labels

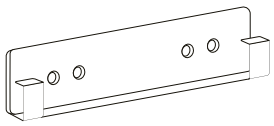


CT Connector Install Aid



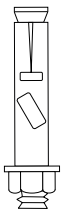
x 1

Mounting bracket



x 2

Fastener

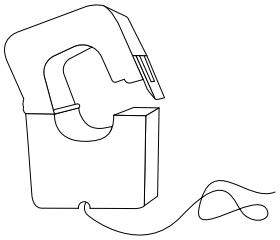


x 4

Locking plate

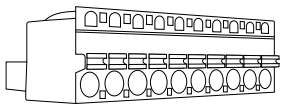
x 1

Split current transformer with 10m tails



x10 pairs

CT connector block



x4

Installation overview

The SolShare-2P distributes solar energy by rotating the supply to each unit on each line.

One output on each line (2 units) will receive the solar generation at any point in time. The SolShare will rotate the supply periodically, approximately every 60 seconds, whilst ensuring each unit receives the same amount of solar energy each month.

For example, if a 16.4kW AC solar system is installed, with 10 units connected, then each unit will receive solar energy allocation equivalent to a dedicated 1.6kW solar system. Units can be connected to solar on both L1 and L2 if their demand merits a larger solar allocation than 1.6kW.

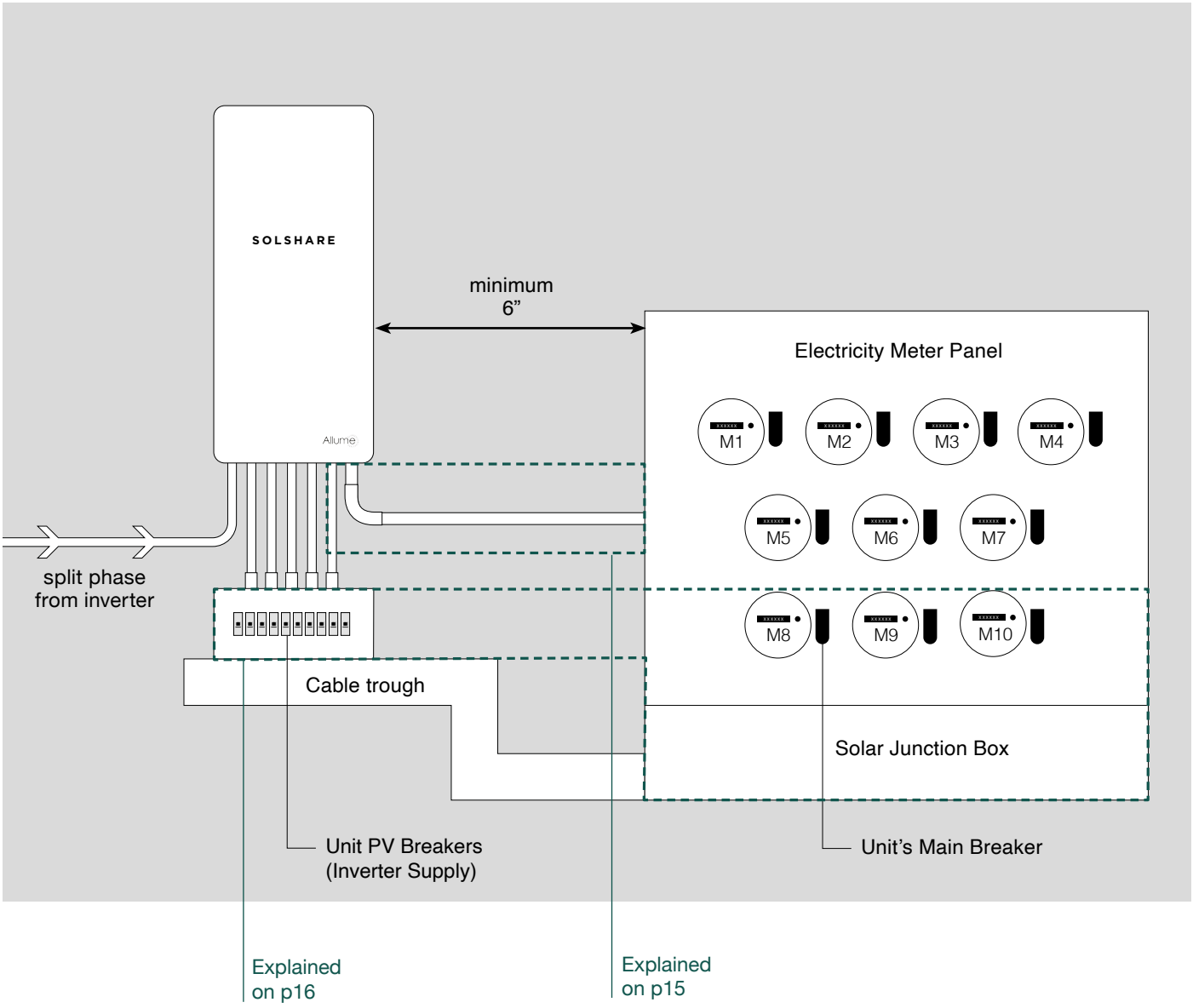
If a unit has received more solar energy than their total energy consumption for the month then the SolShare will suspend solar energy supply to that unit, preferencing other connected units until their total demand again exceeds their solar delivery. This is intended to remove any financial wastage of the solar energy.

If a non-even allocation of solar to each unit is required, then the SolShare's sharing algorithm can be configured to incorporate this. Please contact Allume energy at support@allumeenergy.com.au to arrange this.

The SolShare takes a single split-phase input from a grid-connected solar inverter(s) and connects to each participating unit on a single line (L1 or L2) to the load side of their Unit Main Breaker at their meter panel.

A single-pole Unit PV Breaker (Inverter Supply) is required on each output between the SolShare and each unit's Main Breaker. This allows for the isolation of the SolShare and the solar supply of any of the connected units.

A typical installation configuration is displayed below.



II/ Mounting the SolShare

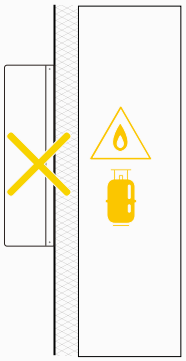
A. Installation site selection

To minimize cabling required, the SolShare should be mounted as close to the main switchboard (tenancy isolator board) as possible.

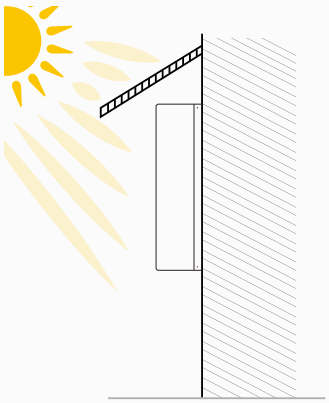
To allow for easy installation and maintenance ensure that there is adequate space surrounding the SolShare and that it is mounted at a convenient height. Please ensure the following mounting requirements are also met when selecting the location of the SolShare.

Do not mount the SolShare on flammable wall material

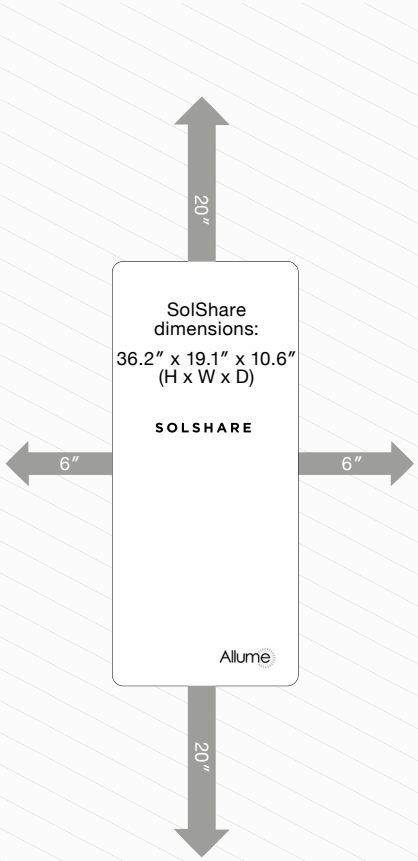
Do not mount the SolShare near flammable material or gases



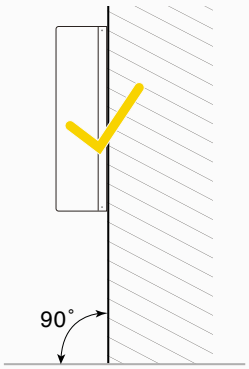
Do not mount in direct sunlight



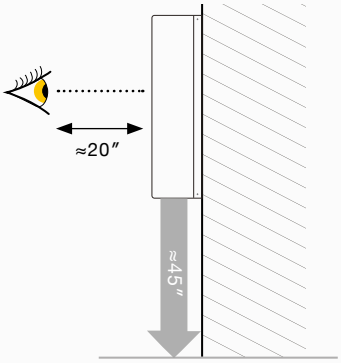
Requirement for installation space



Mount vertically



Install in an easy to observe and operate location



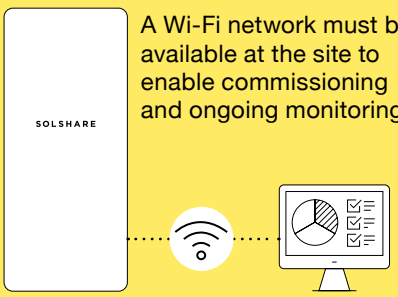
Environmental boundaries

Max ambient temperature: +122°F (50°C)

Min ambient temperature: -13°F (-10°C)

Relative humidity: 0-90%

Internet communications



A Wi-Fi network must be available at the site to enable commissioning and ongoing monitoring.

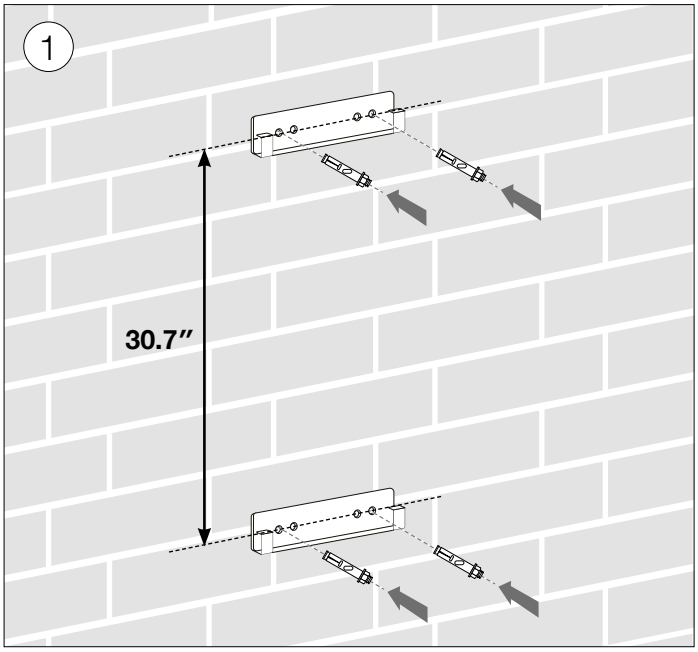
Note: Where possible, do not install the SolShare below a cable tray - this may affect the SolShare's ability to connect reliably with the Wi-Fi at site.

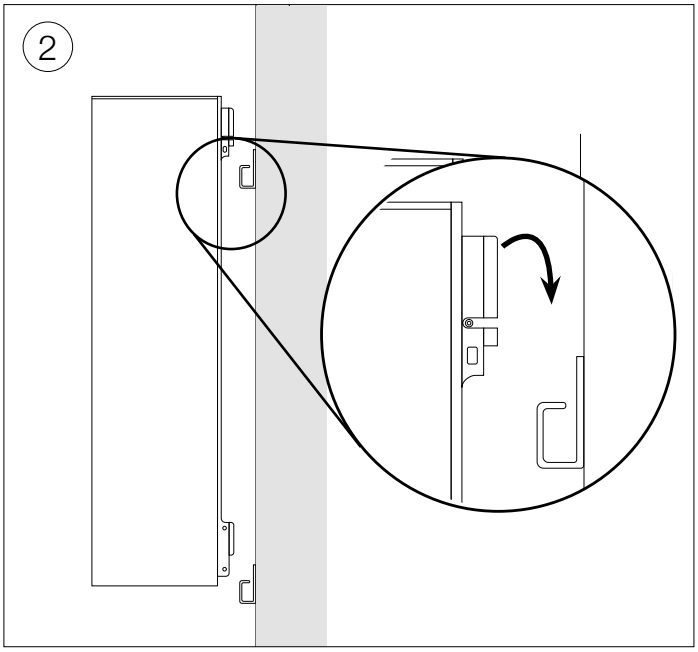
B. Installation

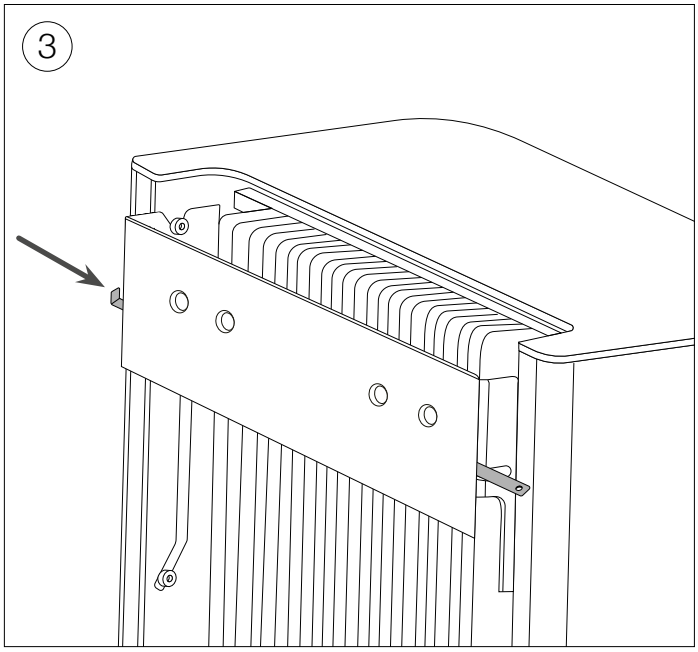
Follow the steps below to mount the brackets and enclosure:

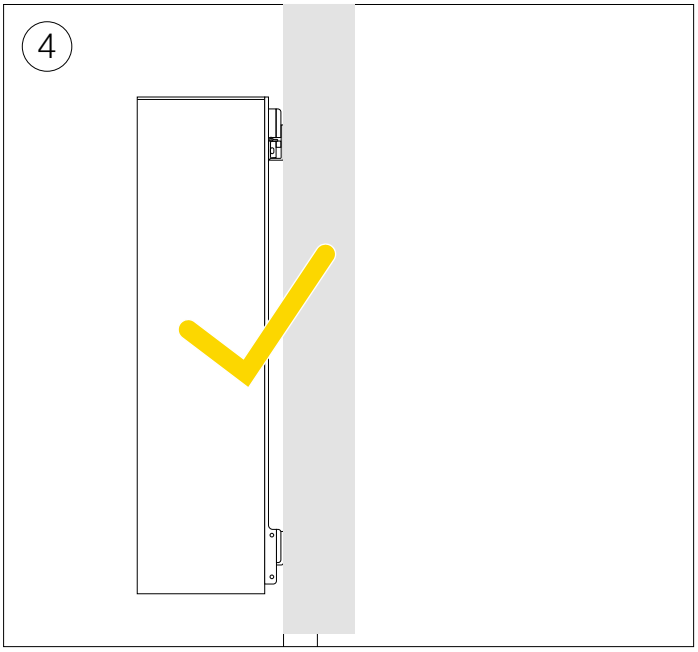
1. Firmly secure the mounting brackets to the chosen wall for installation. Allume Energy recommend using the provided fasteners to attach the brackets into a suitable stone or masonry wall. If another wall material has been chosen for installation, please use suitable fasteners with at least 66 pounds shear force per fastener.
2. Lift the SolShare onto the mounting brackets as directed in the diagram. Check both top and bottom brackets are secure.
3. Insert the locking bolt through the SolShare top mounting bracket as shown and secure at both ends.
4. Ensure the SolShare is securely fastened to the wall and locked into place.

Important:
- The mounting wall and fastener selection is at the discretion of the installer. Allume Energy take no responsibility in the appropriate site selection for the SolShare or the appropriate bracket fastener choice.
- Weight rating fasteners should be rated to at least 66 pounds of shear force per fastener.







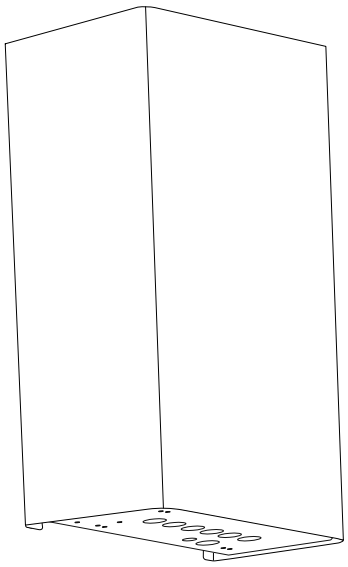


III/ Electrical connection

A. Input / Output Connections

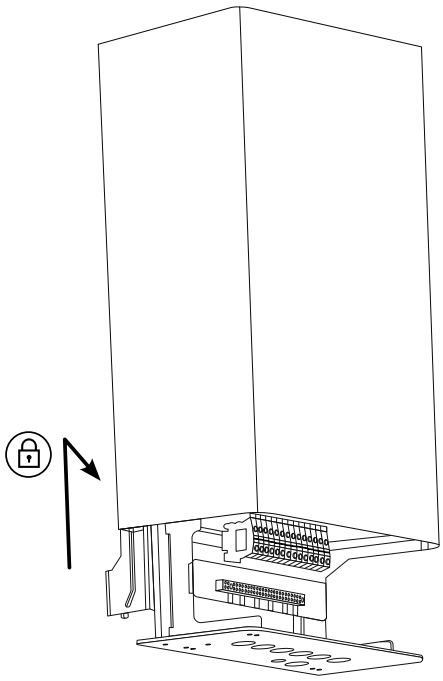
1. Lift up cover to reveal the lower section of the box, where the electrical connections are made.

1



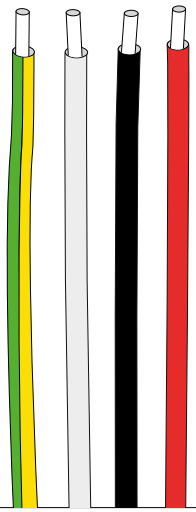
Box as you find it, closed. Unscrew the 4 screws on the underside of the SolShare to allow access to connection terminals. Retain screws to replace later.

2



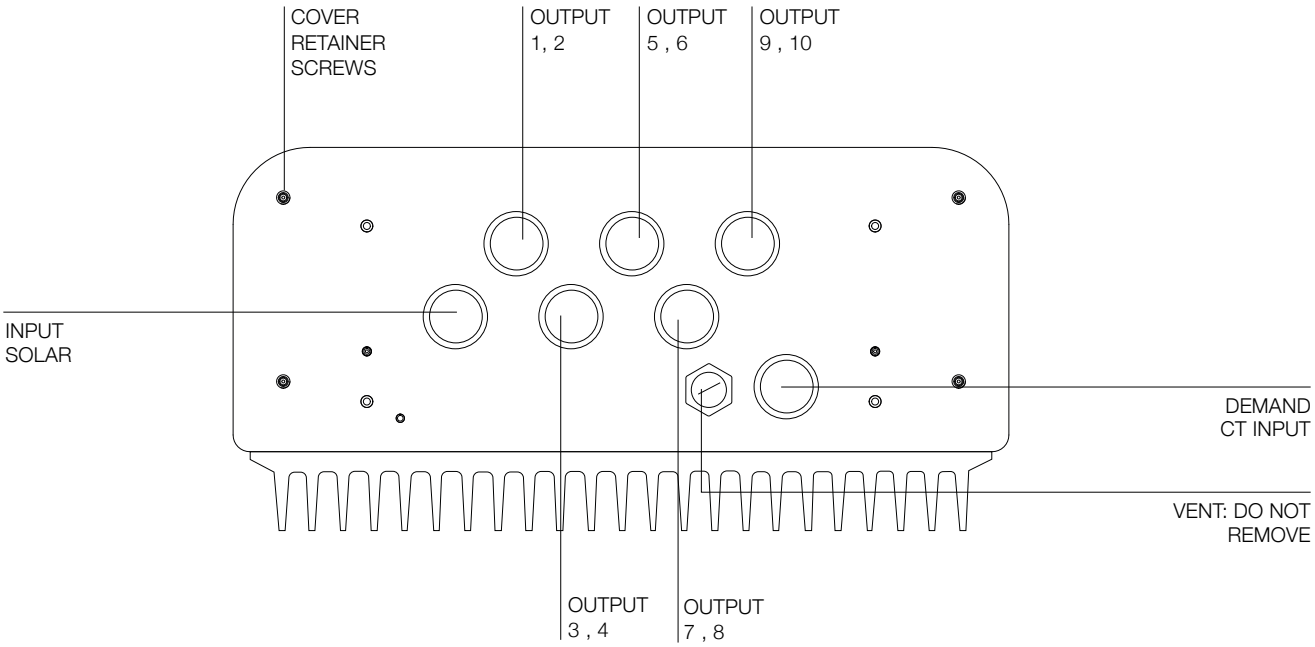
To reveal the lower section, slide cover up about 6″. Whilst sliding cover upwards, pull cover gently towards you. This will ensure it finds the locking slot.

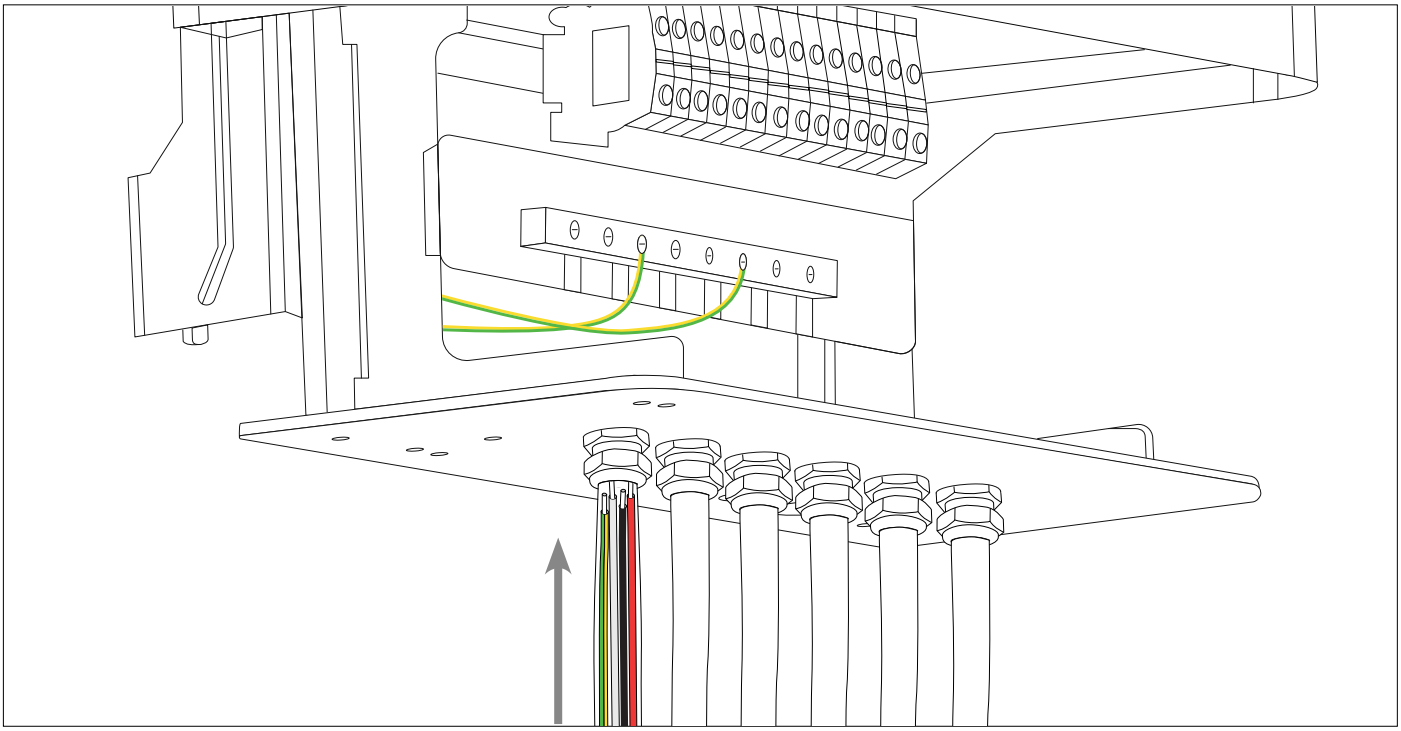
Important:
The cover should lock into place when it's pulled up properly. Before beginning wiring ensure cover is locked in place by pulling down firmly. To bring cover back to initial position, lift cover upwards and away from you, then allow to slide down back into place.



The AC cables
Please choose appropriately gauged cables as per solar system size. Using different color cables for L1 and L2 is recommended. All input and output cables should be rated to total generation capacity of inverter.

SolShare underside view
Each output gland will correspond to the output of an L1 and L2 cable, corresponding to the solar supply for two units. The leftmost membrane gland corresponds to the solar input.





Warning:
- No wiring loops of excess conductor length are allowed to be made. Field wiring of all circuits must maintain 1/4” separation from all other circuits
- All electrical connections including sensor circuits, made between the Allume Energy SolShare 100 and an electrical distribution panel shall be run through conduit or another type of NEC compliant raceway

Gland & Conduit Installation

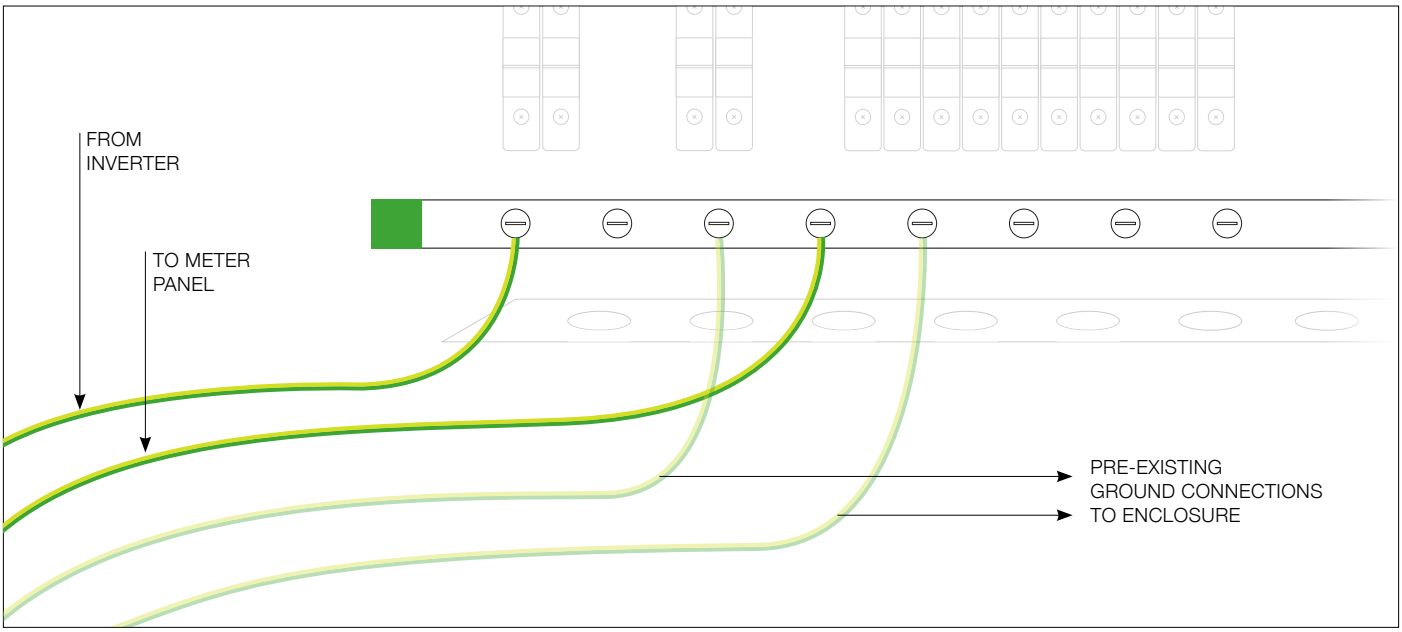
1. For conduit hubs, use only UL Listed raintight, or wet location hubs for entry into the enclosure (see appendix note to be retained).

2. Replace plugs with input gland and required number of output glands.
- The number of output glands required will depend on the number of units connected to the SolShare.
- One gland for every 2 units is recommended. However, fewer glands may be used if cable gauge permits.

3. Run input conduit from inverter to SolShare input (via PV AC Disconnect)

4. Run output conduits from out glands to Unit PV Breakers (Inverter Supply)

Important:
The Unit PV Breakers (Inverter Supply) can be mounted on the meter panel or in a separate enclosure adjacent to meter panel (as pictured on page 8)



Ground Connection Tightening Torque - IN-LBS (N.m)	
Conductor size	Attachment method / Bare wire / Termial / Lug / Ferrule
14 AWG - 10 AWG	35 [4.0]
8 AWG	40 [4.5]
6 AWG - 4 AWG	50 [5.6]

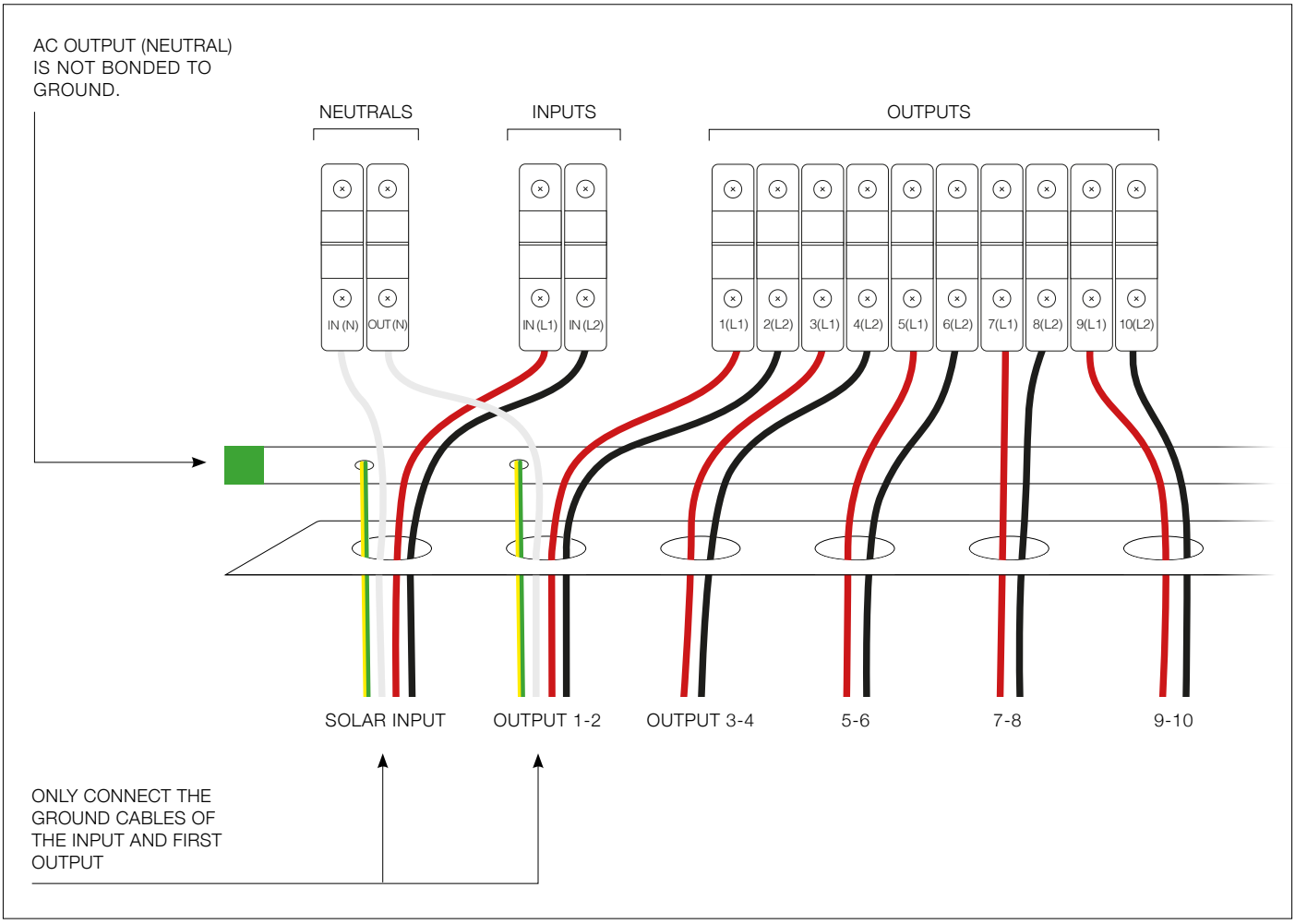
Ground Connection

Please refer to Appendix B for Conductor Specification options.

1. Run input ground from inverter and connect to the SolShare's ground bar (as shown above)

2. Run output ground cable from ground point in meter panel and connect to the SolShare's ground bar (as shown above).

Warning:
Only one ground output should be wired from SolShare to meter panel.



Terminal block - Neutral & Phase connections	
Conductors	from 12 AWG 90C (4mm2) to 4 AWG (25mm2)
Stripping length	0.5″
Tightening torque	30 lb-in (3.4Nm)

Neutral Connection

Please refer to Appendix C for Terminal Block Connection options.

1. Run input neutral from inverter and connect to the SolShare's neutral input connector (as shown above)

2. Run output neutral cable from neutral point in meter panel and connect to the SolShare's neutral output connector (as shown above).

Warning:
Only one neutral output should be wired from SolShare to meter panel.

Warning:
Neutral bonding to protective ground must take place only at the main distribution panel.

Input Power Connection

1. Run input L1 and L2 from inverter and connect to the SolShare's L1 and L2 input connectors (as shown above)

Warning:
All output cable gauges must be same as input cable gauge.

Output Power Connection

1. Complete column 2 of the Commissioning Document on page 5, allocating each SolShare output to a unit/apmt number.

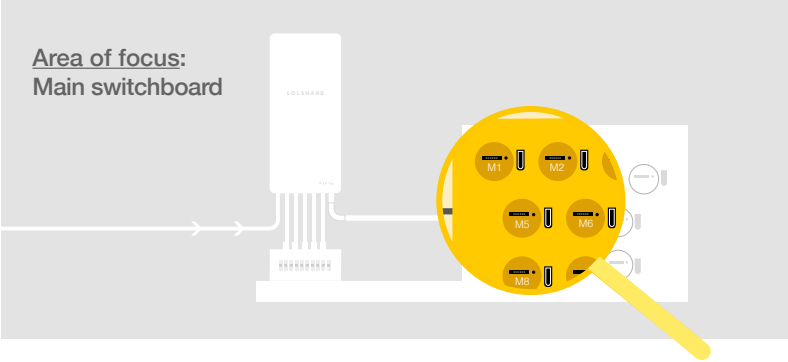
2. Cut output power cables to appropriate length to reach from SolShare output to *Unit PV Breakers (Inverter Supply)*. Label both ends of these cables with the unit/apmt number.

3. Run cables between SolShare and Unit PV Breakers (Inverter Supply). Terminate cables to appropriate SolShare output connectors as per the configuration in step 1.

Important:
The *Unit PV Breakers (Inverter Supply)* can be mounted on the meter panel or in a separate enclosure adjacent to meter panel (as pictured on page 8)

Warning:
No wiring loops of excess conductor length are allowed to be made. Field wiring of all circuits must maintain 1/4" separation from all other circuits.

B. Output Connection to Main Switchboard



A PV Breaker (Inverter Supply) must be installed between the SolShare output and Main Breaker for each participating unit.

For single-phase meters this should be a single pole main circuit breaker (MCB), for three-phase customers this should be a three pole MCB.

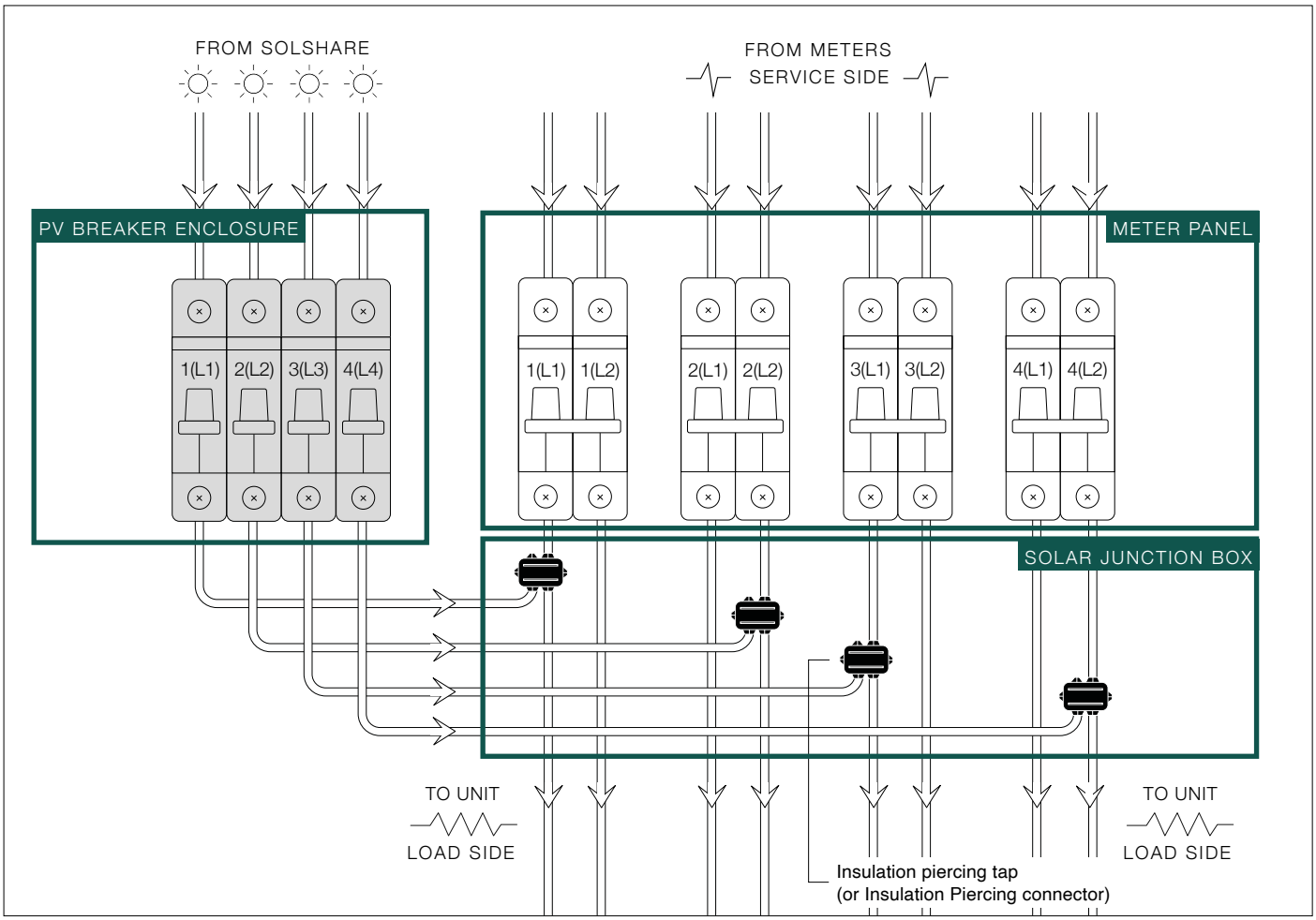
Ideally these PV Breakers should be mounted within the existing main switchboard. If there is not adequate space to do this, Allume recommends they be installed in a location that is easily accessible from the main switchboard. If positioned seperately, ensure clear labeling in the main switchboard of the location of PV Breakers.

The outputs from the solar must be wired to the PV Breakers. The outputs of the PV Breakers (Inverter Supply) must be wired on the load side of the unit's Main Breaker.

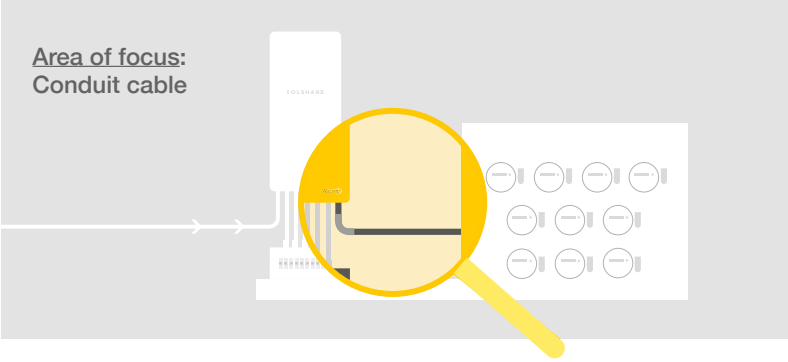
Ensure each output is labelled as per the figure below. This will help later on in the installation when wiring the current transformers to each unit.

Important:
Connect only one line of solar to each unit. Make sure the solar supplier line alternates between each unit as shown below.

Warning:
OCPD (Over Current Protective Devices) provided between the AC line and an inverter operating in parallel with the grid are required to be rated for bi-directional use.



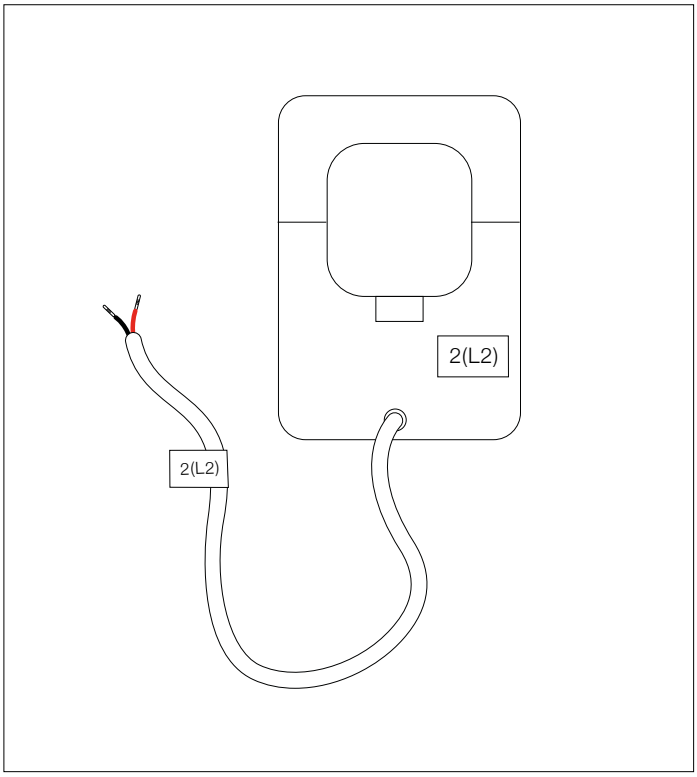
Important:
Make sure to label both ends of each solar cable.



C. Running current transformer tails

1. Run CT conduit from Solshare to main switchboard. (CT conduit gland is the largest gland on underside of SolShare)
2. Follow labels on current transformers and current transformer tails. Ensure these match the corresponding unit.
3. Run tails of CTs from main switchboard to SolShare through conduit.

Important:
Ensure labeling of head and tails of CT cables as follows.

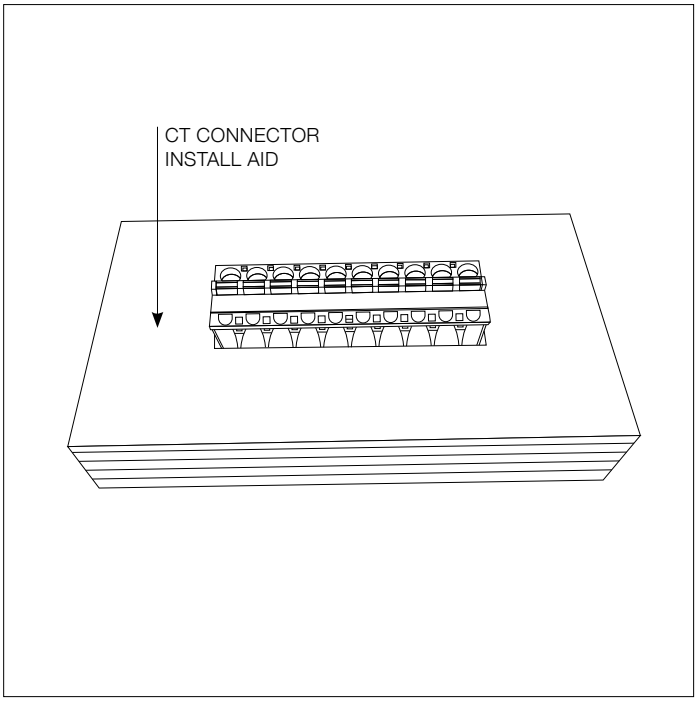


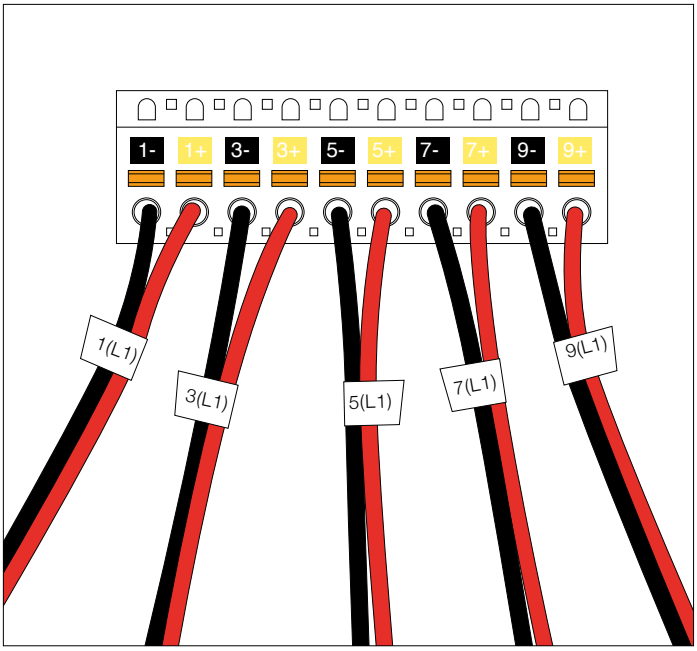
D. Current transformers to SolShare connections

Wiring tails to Solshare:

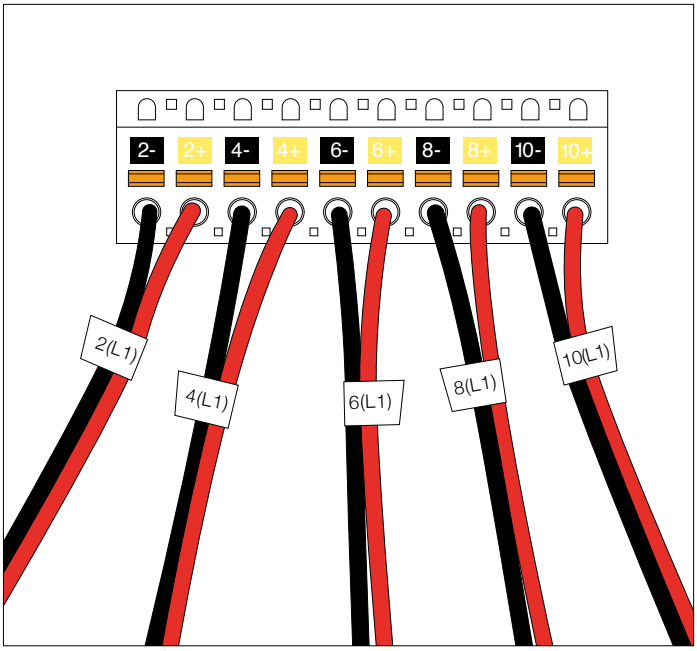
1. Connect the CT cabling to the CT connector block, as per the diagrams overleaf. To do this:
   - Place CT connection block into CT connector install aid.
   - Push the orange tab in and hold.
   - Feed the CT cable into the hole.
   - Once inserted, release the orange tab.
   - Confirm cable is secure by giving it a gentle tug.
2. Repeat for Even connections on L1.
3. Repeat steps 1 & 2 for L2 phase connector blocks, odd and even connections.
4. Plug each CT connector block into the corresponding socket of the SolShare.

Important:
Make sure colors and orientation of connectors are identical to the image above. To ensure you are positioning them correctly, check that the orange tabs are above your plugged in cables, and labels read as above.





Odd connector label



Even connector label

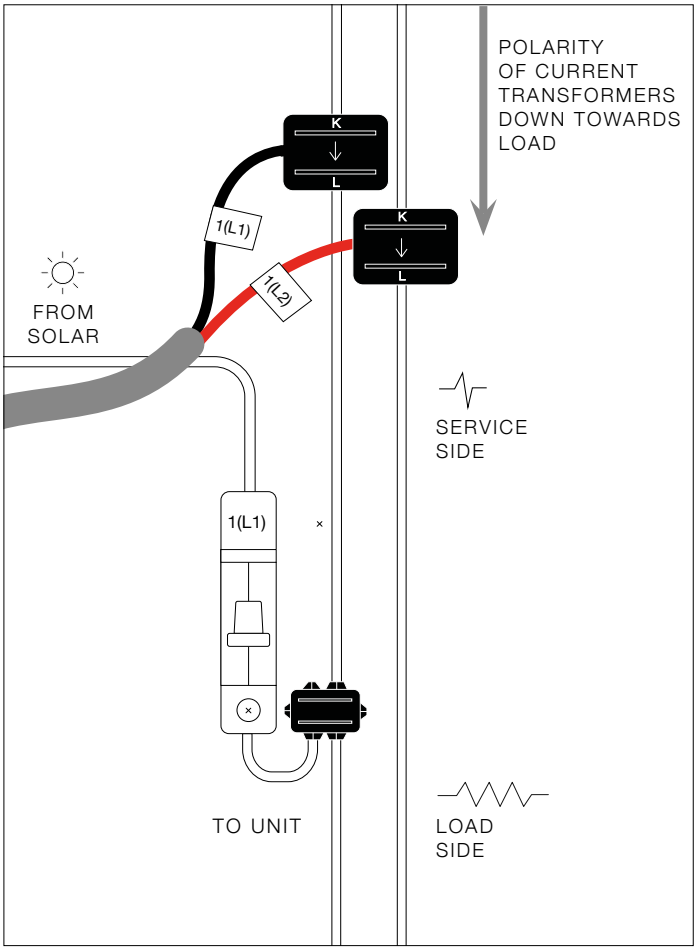
E. Current transformer clipping

Clipping the current transformers onto the service side cable:

1. Match the labelled CTs with their corresponding labelled service supply cable.
2. Confirm correct polarity of the CT by ensuring the arrow on the CT head matches the current flow direction on service supply cable.
3. Clip CT over service supply cable.

Important:
Solar is connected only on one line, however connect CTs on both incoming supply lines as per diagram.

Important:
The CT must be connected on the service side of the PV tap, as per diagram.



F. Preparing the SolShare

Important:
- Before commissioning re-check all CTs and output cables are connected as per their labels.
- Record connection information on commissioning notes page, you will need to enter this while commissioning the unit after the cover is closed.

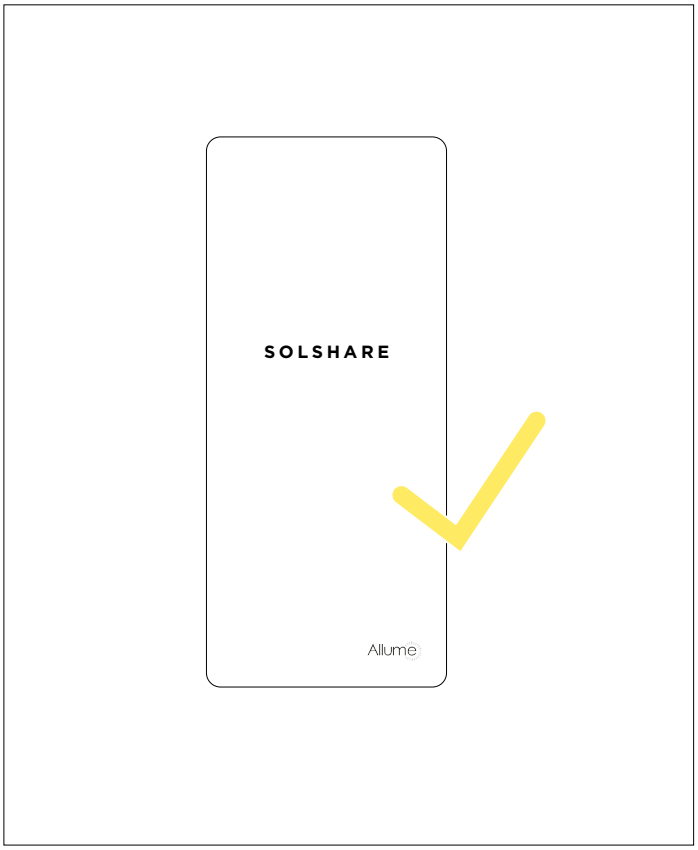
To commission the SolShare:

1. Pull down cover of SolShare. Fasten shut by replacing the 4 screws on the underside of the SolShare, that were removed in section III/A.1.
2. Switch on all Unit PV Breakers (Inverter Supply) and Unit Main Breakers.
3. Switch on inverter main switch.

To connect the SolShare to Wi-Fi (must be done within 5 mins of powering on the SolShare):

1. Using a laptop or phone (your device), connect your device to the SolShare SSID (this will appear as SolShare2P_100_XXXX where XXXX is the last 4 digits of the SolShare serial number).
2. Open an internet browser on your device and navigate to 192.168.4.1.
3. Once the page loads in the browser, enter the SSID and password of the Wifi network that you want the SolShare to connect to.
4. Once you see a confirmation page in the browser, wait for the SolShare to reboot.5. Disconnect your device from the SolShare SSID and reconnect it to the internet in preparation for the commissioning steps below.

If you are having troubles with this process or need more detail, consult the How to set-up/change Wi-Fi credentials document.



G. Commissioning the SolShare

1. To commission the SolShare, scan the QR code on the right side of the SolShare or go to https://commissioning.allumeenergy.com.au to access the SolShare Commissioning App.

2. Follow the steps in the Commissioning App to commission each SolShare. The Commissioning App Guide provides more information on the commissioning process.

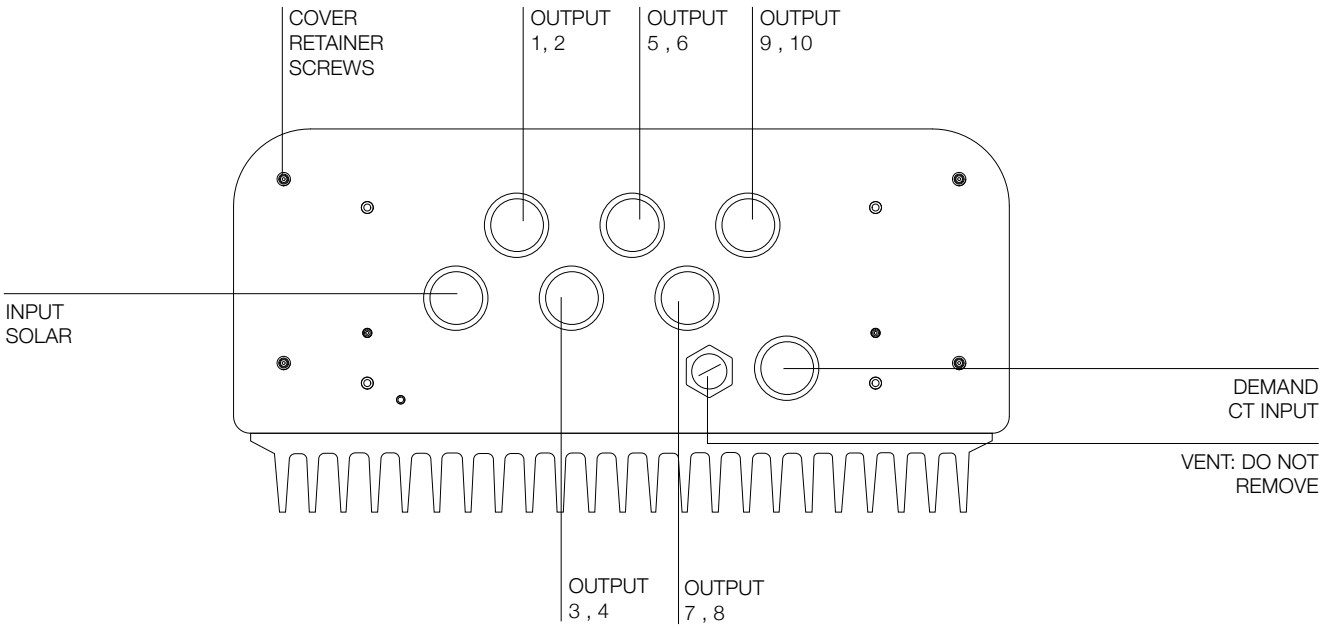
NOTE: The SolShare requires a fully operational inverter in order to complete commissioning. During the SolShare commissioning process, you will be prompted to commission the inverter. Please make sure that the inverter is ready to be commissioned prior to starting the commissioning process for the SolShare.

3. If you experience issues with the commissioning process contact Allume on +1 (213) 347-4293 or service@allumeenergy.com.au

Appendix

Appendix A – Cable Gland Selection Criteria

SolShare underside view
Each output gland will correspond to the output of an L1 and L2 cable, corresponding to the solar supply for two units. The leftmost membrane gland corresponds to the solar input.



Parameter	Specification
Panel thickness	1/6″
CT Hole Diameter	1.4″ (suitable for 1″ conduit)
Solar Input/Output hole diameter	1.4″ (suitable for 1″ conduit)
Flammability rating (minimum)	UL94 HB
Temperature rating (minimum)	90°C (194°F)
Enclosure rating (minimum)	UL Category 4 - Liquid Tight
Approvals	UL 514

Appendix B – Ground Bar Connection

Diagram 1.

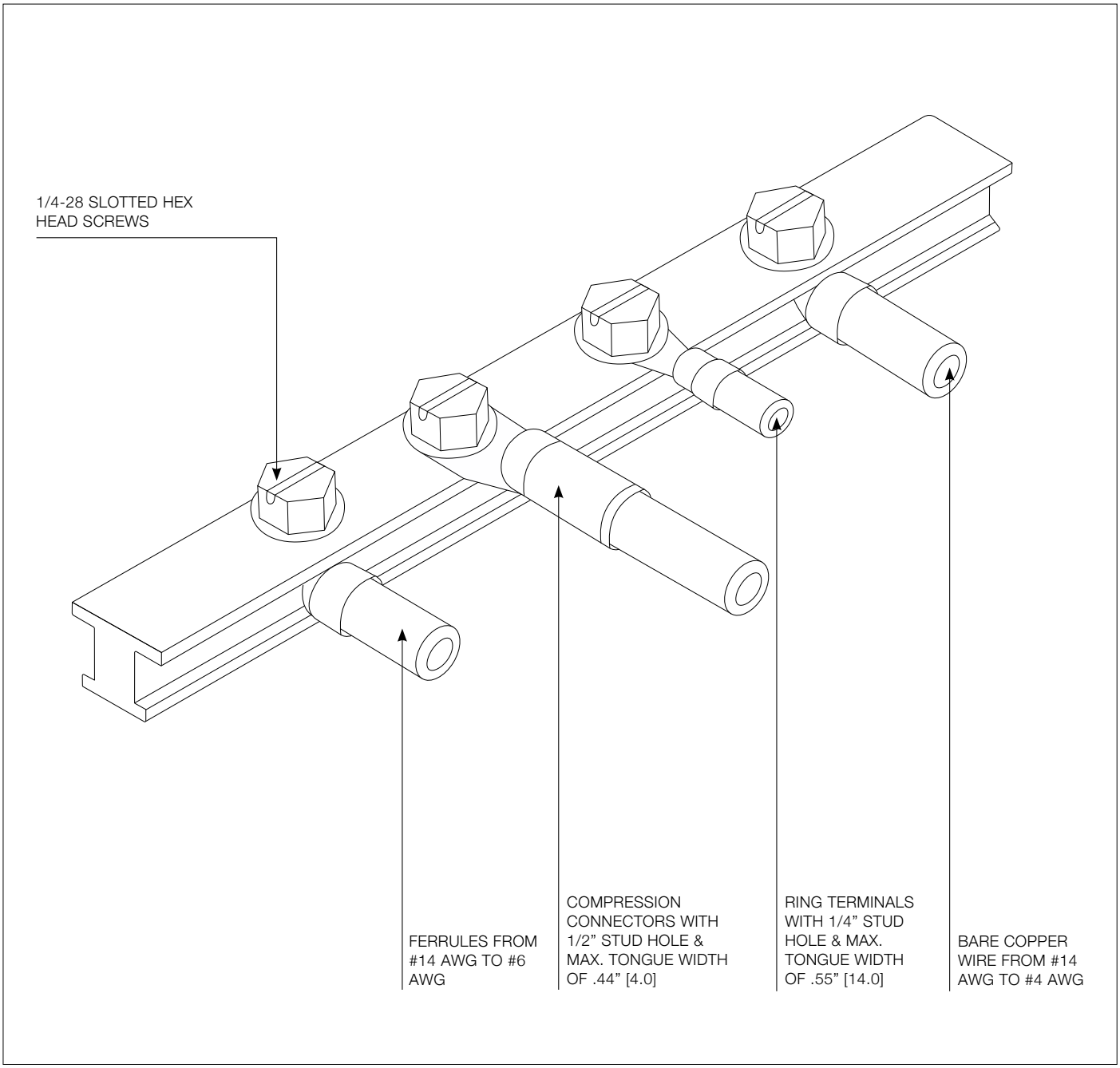


Diagram 2.

Tightening Torque - IN-LBS (N.m)	
Conductor size	Attachment method / Bare wire / Termial / Lug / Ferrule
14 AWG - 10 AWG	35 [4.0]
8 AWG	40 [4.5]
6 AWG - 4 AWG	50 [5.6]

Diagram 3.

Connector options for both Code and Flex wire

2 hole copper compression connectors**, 1/4” stud hole with 5/8” spacing:
Panduit part series: LCD, LCC, LCC-W, LCD-W, LCDX, LCCF, LCCX

1 hole copper compression connectors**, 1/4 stud hole:
Panduit part series: LCAS, LCA, LCB, LCB-W, LCAX, LCAF, LCBX

Panduit anti-rotational copper mechanical connector:
Part #CLMAR/0-14-Q (#14AWG-2/0AWG)

Ferrules type:
FSD, F(12mm pin length recommended)

***2 hole and 1 hole copper compression connectors available with short, standard, and long barrel lengths. Bent tongue and narrow tongue options are available.*

Appendix C – Terminal Block Connection

Connection data	Metric	US
Tightening Torque	3.4Nm	30 lb-in
Conductor Cross Section Stranded	35 mm2	2 AWG
Conductor Cross Section Stranded with Ferrule/Lug	35 mm2	2 AWG
2 Conductors with same Cross Section Stranded min	4 mm2	
2 Conductors with same Cross Section Stranded max	16 mm2	
2 Conductors with same Cross Section Stranded with TWIN Ferrule/Lug min.	4 mm2	
2 Conductors with same Cross Section Stranded with TWIN Ferrule/Lug max.	10 mm2	
Stripping Length	14 mm	
Internal Cylindrical Gauge	A8	

SolShare 100 Product Datasheet

Allume's SolShare is the world's first power division control system (PDCS). Providing functionality to supply the AC energy outputted from a solar inverter to multiple grid-connected units behind-the-meter. The SolShare opens the solar market to multifamily buildings.

The SolShare 100 has a maximum recommended input capacity of 16.4kW AC, and can be connected to 10 units, making it primarily suitable for residential sites in North America.

The behind-the-meter solution requires no change to smart meter infrastructure and is intuitively designed to make the installation process as simple as possible for solar installers.

The SolShare unit is placed between the inverter and the main switchboard. Receiving one single phase (split-phase) AC input from the inverter and outputting up to 10 multifamily units. Outputs are wired on the load side of each unit's meter, at the building's common main switchboard.

- Solar delivery optimization
- Complete solar & usage monitoring
- Integrated billing for Power Purchase Agreements
- 4G for datalogging and firmware updates
- Multiple solar delivery algorithms to suit project requirements

Technical Data

General Specifications

Parameter	Value
Dimensions	36.2″ x 19.1″ x 10.6″ (H x W x D)
Weight	84 lbs
Max number of connections per unit	10 (connected on single line) or 5 (connected to both lines)
Install Environment	Types 3R, 4
Operating temperature range	-4 - 120 F
Metering accuracy	± 0.5%

Electrical Specifications

Parameter	Value (at 25°C)
Max nominal current (per line)	72 A
Voltage Range	228 – 252 VAC (L-L); 114 – 126VAC (L-N)
Max input at 120V L-N (recommended)	16.4 kW
Number of input circuits	1
Number of output circuits	10
Mains frequency range	50 – 60 Hz
Short-circuit current rating	30 kA
Maximum input overcurrent protection	100 A
Maximum output overcurrent protection	100 A
Conductor AWG range for field wiring conductors	2 AWG

Safety Certification

Test	Test House
UL1741	UL

Accessories

20 x Current Transformers (10 meter cable lengths)

Installation Requirements

1. Input must come from a split-phase, grid connected inverter
2. Each unit must have an amperage capacity greater than the per line max solar system output
3. Output connections: 4 or more split phase units
4. Ganged/co-located smart meters and main breakers
5. Cable access between SolShare unit and central main switchboard
6. Installation must be carried out by a licensed electrician
7. System to be installed using National Electrical Code, ANSI/NFPA 70 wiring methods

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This manual is intended for installations in the **USA**.
Specifications are subject to changes without advanced notification.

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