

SolShare Design and Installation Guide UK

Version K1 for SOLSHARE-3P-35A-04
Referred to in the document as 'SolShare'

INTENDED FOR UNITED KINGDOM 

DISCLAIMER

This document is intended to provide guidance on how to design a safe and effective shared solar system using SolShare. This document does not override the local electrical safety standards and wiring rules. It is the responsibility of the installer to ensure the shared solar installation meets the relevant electrical safety and wiring standards in the installation locality.

Please contact Allume if you would like to design outside of the recommendations contained within this document.

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INVERTER TO SOLSHARE INFORMATION

A. POWER INPUT FROM INVERTER TO SOLSHARE

SolShare is a three-phase device. The power input should come from a three-phase, grid-tied inverter. Input supplies outside of this have not been tested or approved for use with SolShare.

SolShare 35 is **rated to 35 amps per phase**. The total input (including from the inverter and any AC-coupled batteries) must not exceed the maximum current rating of SolShare.

WARNING: Oversizing the system will damage the SolShare and void warranty.

Please consult Allume's '[SolShare35_Datasheet](#)' for further technical details.

B. INVERTER GRID CONNECTION

The inverter receives its grid connection **via the SolShare**. It **does not** need an independent connection to the grid, nor does it need to be connected to the Landlord supply.

C. CABLING

The 3-phase, earth and neutral from the inverter should be terminated into the Live - Neutral - Earth connections inside the SolShare.

The cable gauge from the inverter to the SolShare should be sized to carry maximum inverter output and factor in usual factors like voltage drop as per relevant wiring standards.

D. GENERATION METER

The generation meter should be located between the inverter and SolShare.

E. AC ISOLATOR

The AC isolator (the single point of isolation for the entire solar system) should be located between the inverter and the SolShare. The location of this should be detailed in the site pack for safety of isolation.

SOLSHARE TO FLATS INFORMATION

F. MULTI SERVICE DISTRIBUTION BOARD

Flats that are connected to the SolShare must all be supplied from the **SAME** DNO electrical cut out.

Figure 1 below shows an **incorrect** installation scenario where a SolShare is feeding flats that are supplied by different incomers.

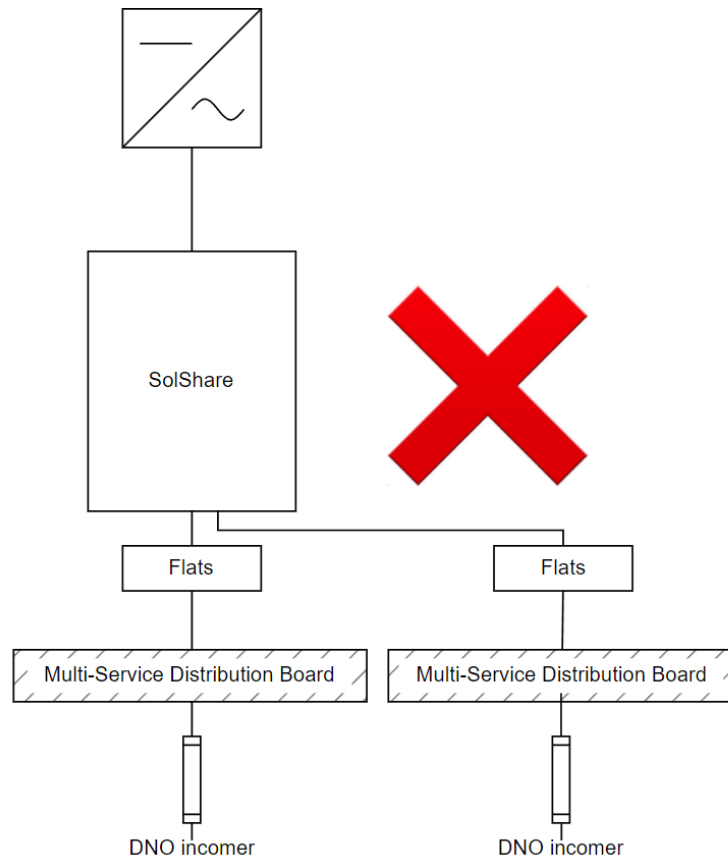


Figure 1: An incorrect installation where SolShare is connected to flats being supplied by different incomers.

If there are multiple incomers as shown in Figure 1, then there must be additional SolShares (at least 1 for each incomer). A correct installation is shown in Figure 2.

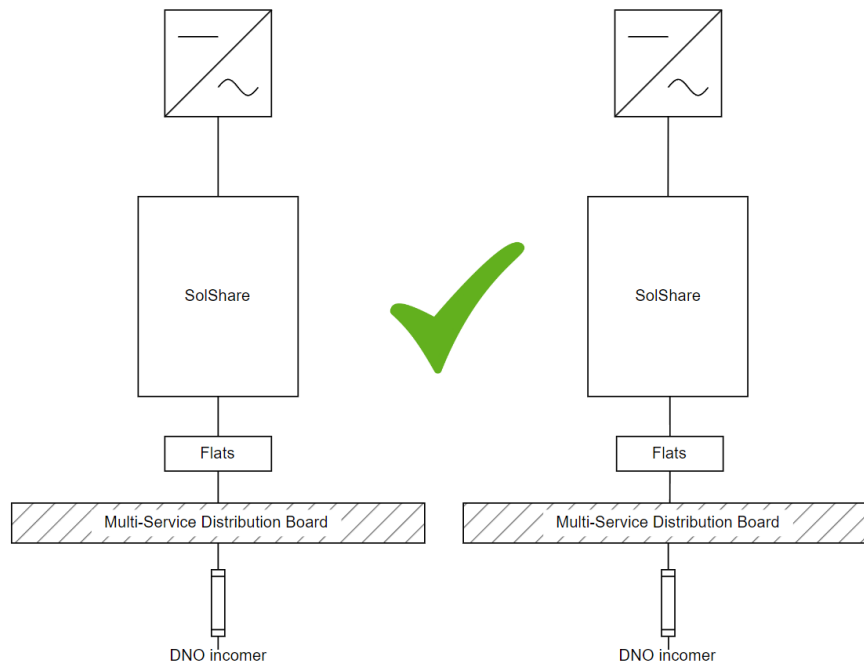


Figure 2: A correct installation where SolShares are connected to flats being supplied by the same incomer

If there are multiple MSDBs, it is recommended to pair a SolShare with each MSDB. If your design requires you to split connections over multiple MSDBs, they MUST be supplied from the same DNO cut out. Figure 3 shows multiple MSDBs being supplied by the same incomer.

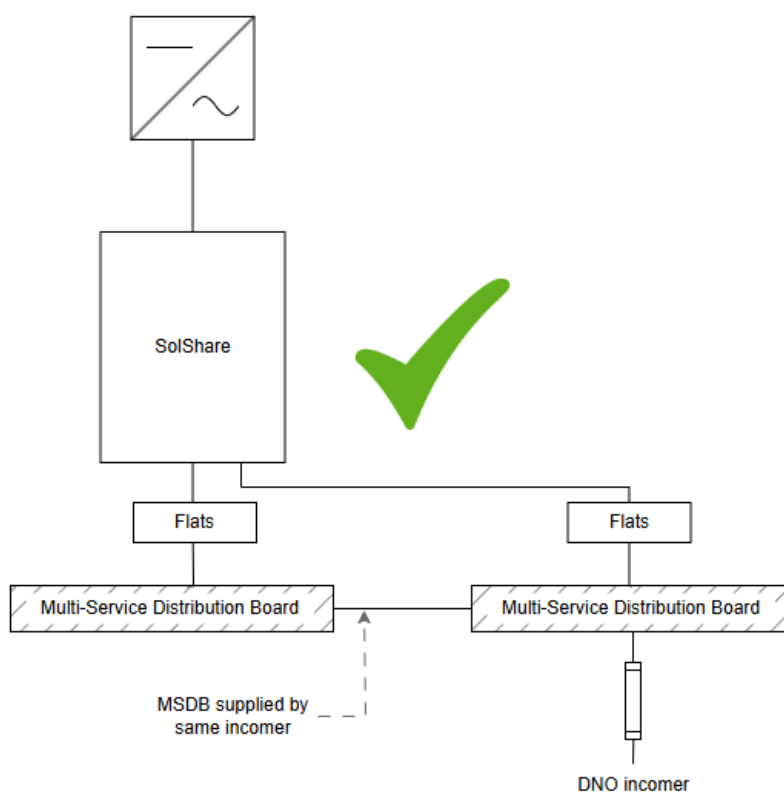


Figure 3: Flats are supplied by different MSDBs, but the same incomer.

G. EARTH CONNECTION

A single earth cable must connect the SolShare earth bar to a common earthing terminal within the building.

The earth cable must be rated appropriately for the inverter.

H. NEUTRAL CONNECTION

SolShare only has **one neutral output** that must be sized to the output capacity of the inverter.

The SolShare neutral must come from the source (i.e. the Multi-Service Distribution Board or DNO cutout) that is supplying the flats that the SolShare is connected to.

It **MUST NOT** be connected to a flat's neutral nor the Landlord neutral.

Refer to F. MULTI SERVICE DISTRIBUTION BOARD section for more info.

If gaining a dedicated neutral connection in the MSDB or DNO cutout is not possible, you can contact the DNO who will come to site to provide you with one. We recommend requesting this when submitting the G99 to reduce the likelihood of delaying project timelines.

I. LIVE CABLE

Single Live

ONLY a single live cable is required to connect from SolShare to each flat's solar point of connection. There is no neutral paired with the live to the flat. There is only a single neutral for the entire system as described in *Section H*.

Max power delivery

SolShare can direct all the power generated on one phase to a single flat. This should be considered while designing cabling and switch gear for a SolShare system.

Eddy currents

SolShare runs a single live cable, without a neutral, to each flat. Care should be taken during design to consider non-ferrous cable protection.

J. SOLSHARE MAINTENANCE ISOLATION

For safe and easy maintenance, SolShare needs dedicated isolation from each flat. We recommend installing a lockable consumer unit directly below the SolShare for convenient access.

The isolation in the maintenance box must be circuit breakers. The circuit breakers must be rated to carry the maximum current of a single phase of the inverter.

Figure 4 below shows SolShare installed with maintenance isolation box directly below.

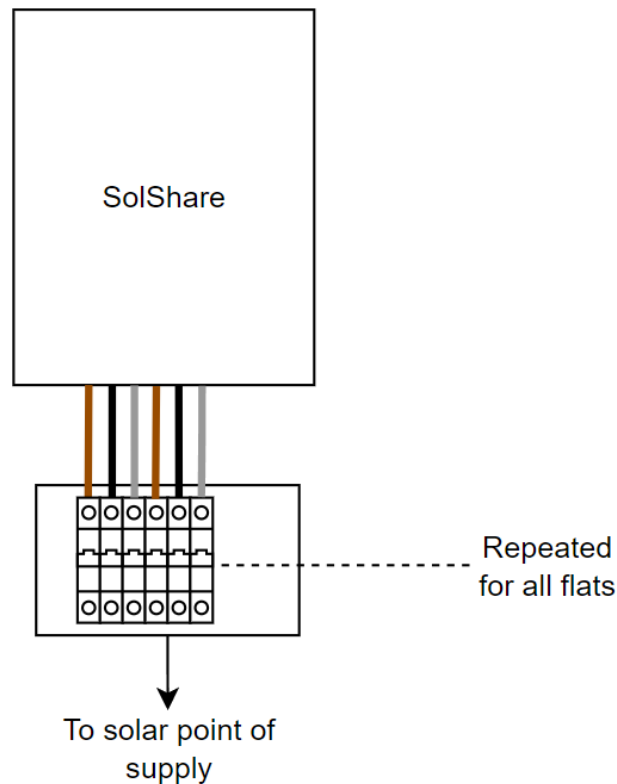


Figure 4: SolShare maintenance isolation.

K. SOLAR POINT OF CONNECTION (POC)

This section contains guidance on how to make the solar point of connection based on the flat's energy meter location. In some situations, the installer may choose to install differently. It is responsibility of the installer to ensure that all relevant wiring standards are met.

Meters co-located or outside of flats

[Sample SLD online link](#)

- **Fused isolator board** – The solar point of connection is recommended to be made using a custom board that contains:
 - A MCB appropriately sized to protect the solar supply cable.
 - A fuse located on the combined solar and grid path to protect the cable carrying dual supplies to the flat.

When isolating the flat, both MCB and main switch must be turned OFF.

- **Cable sizing** – Solar output cable from SolShare to the flat must be rated to carry the full inverter supply. This is because SolShare can direct all available power on one phase to a connection.

Meters in the flats (Sample SLD link)

[Sample SLD online link](#)

- **Consumer unit connection** – Two points of isolation/circuit protection are required for the consumer unit.
 - A rotary isolator must be installed locally as per standard solar regulations. This is shown in Figure 6 by arrow 1.
 - A circuit breaker must be installed for cable protection of the solar output cable. This is shown in Figure 6 by arrow 2.
- **Cable sizing** – Solar output cable from SolShare to the flat must be rated to carry the full inverter supply. This is because SolShare can direct all available power on one phase to a connection.
- **RCDs** - The solar point of connection must be made on the **grid** side of any RCD. If installed incorrectly the single live solar cable from SolShare will cause the RCD to operate.

L. OUTPUT CONNECTIONS

Phase matching

A SolShare unit has 15 single-phase outputs: 5 on L1; 5 on L2; and 5 on L3.

Each flat **must** be on the same phase as the SolShare output phase. For example, if a flat has an L2 supply from the grid, it must connect to an L2 output from the SolShare.

There must be at least one connection made to each of **L1-1**, **L2-1**, and **L3-1**. It is highly recommended to have at least 2 connections per phase.

Three single-phase outputs can be used to connect to a three-phase unit. The most common example of this is if the three-phase Landlord supply is being connected to SolShare.

Not all of the 15 outputs need to be used.

Example configurations:

- 11 single-phase connections. 4 connections not used.
- 9 single-phase & 1 three-phase connections. 4 connections not used.
- 4 three-phase connections. 3 connections not used.

Power Distribution per Phase

A three-phase inverter splits the generated power across its three phases. For example, a 15 kW three-phase inverter will supply 5kW of power on each phase. SolShare distributes the power on each phase separately, with up to: 5 outputs on L1, 5 outputs on L2, and 5 outputs on L3.

The available power generated on a phase can only be shared between flats on that phase. This should be considered when designing the system.

Solar allocation & SAP / EPC contribution

When designing a SolShare solar system, one of the most powerful elements is the ability to allocate a specific proportion of the system to each flat. This allows for maximum benefit from the available kWp and maximise SAP score / EPC uplift.

You must allocate the proportion of the solar system that is to be associated to each connection. You can adjust this to suit the customer's needs.

The most common purpose for this is to allocate the kWp based on the SAP score uplift requirements. It is important to know what the specific kWp requirements are when designing a system for a project, as it will help to determine the optimal system size.

Example

Here's an example of a 22.50 kWp system connected to 11 single-phase flats and a three-phase Landlord supply. The kWp in the penultimate column is what each connection will have associated to it for the SAP assessment.

Note that there are only 4 connections on L2 so they are able to have a higher solar allocation.

Total system size (kWp)	Phase	System size per phase (kWp)	Connections	Connection allocation	kWp associated to the connection	Indicative SAP Uplift
22.50	L1	7.50	Landlord supply	20%	1.50	N/A
			Flat 1	20%	1.50	9
			Flat 4	20%	1.50	9
			Flat 7	20%	1.50	9
			Flat 10	20%	1.50	9
	L2	7.50	Landlord supply	25%	1.88	N/A
			Flat 2	25%	1.88	12
			Flat 5	25%	1.88	12
			Flat 8	25%	1.88	12
			No connection	0%	0.00	N/A
	L3	7.50	Landlord supply	20%	1.50	N/A
			Flat 3	30%	2.25	14
			Flat 6	25%	1.12	7
			Flat 9	15%	1.88	12
			Flat 11	10%	0.75	5

To take some examples for the SAP assessment:

- **Flat 1** will have a **1.50 kWp** system associated to it.
- **Flat 3** will have a **2.25 kWp** system associated to it.
- **Flat 9** will have a **1.88 kWp** system associated to it.

The three-phase **Landlord supply** will have a **4.33 kWp** system associated to it.

MCS Certificates

You must apply for an individual MCS certificate for each flat, **not** a single MCS certificate for the entire system.

GENERAL

M. INSTALLATION LOCATION

There must be a 300 mm clearance both above and below the SolShare enclosure, and 150 mm either side. If not, the SolShare cannot be accessed for service and maintenance. Please consult Allume's '[SolShare35_Datasheet](#)' and '[SolShare_Installation_Manual_UK](#)' for further details on dimensions and clearances.

The SolShare has been tested and certified for IP56, qualifying it for installation in an outdoor, unconditioned environment. However, it should not be installed in direct sunlight or in the path of falling debris, such as under a tree, unless protected by a shade or canopy.

To minimise cabling cost and prevent extension of CT tails being required, it is recommended that the SolShare be installed as close to the location of the solar point of supply as possible.

N. CT PLACEMENT

The SolShare has a CT for each output connection. These must run from the SolShare to each connected flat and placed anywhere on the live cable, upstream (grid side) from the solar point of supply (POS).

The CTs are provided with 10-meter cable lengths and can be extended by up to 100 meter total via 24 AWG gauge cable. Each CT tail comes with an identifier printed on the cable (e.g. L1-1) for ease of installation. It is highly recommended that any CT extension is clearly labelled with the flat number as the CTs must be connected into the SolShare correctly. If not, the SolShare will not be able to be commissioned.

The CT can't be connected around armoured cable.

If the solar POS is within the consumer unit, the CT can also be housed inside the consumer unit.

The CT extension cable shielding must be earthed.

O. MORE THAN 15 CONNECTIONS / MULTIPLE SOLSHARES

When designing a system that requires more than 15 connections, multiple SolShares can be used.

Each SolShare system will be completely separate and require its own set of panels and inverter.

It is possible to connect multiple inverters to one SolShare, as long as the input capacity does not exceed 35A per phase.

Do not connect more than 1 SolShare to 1 inverter as this may cause overloading.

P. WI-FI ACCESS POINT

A Wi-Fi internet network must be made available at the SolShare's installation location.

SolShare cannot be commissioned nor provide ongoing data monitoring and fault notification without an internet connection. The SolShare does not support a wired internet connection.

Wi-Fi Router Requirements

- Frequency = 2.4GHz (SolShare is **not compatible** with 5GHz)
- Data Usage = 250MB/month
- Permanent and stable internet connection

Allume recommend using a wireless cellular router with a fixed IP SIM card.

Q. DNO J TYPE FUSE

SolShare has protection for any J type (building distribution) fuse rated 100A and above (per phase). This protection is automatically applied to SolShare. If fuse is less than 100A (per phase) please contact Allume.

R. BATTERY INTEGRATION

Communal DC-coupled batteries with SolShare may be possible depending on the specific site layout. If you are considering a battery installation, you must inform Allume via uk.info@allumeenergy.com to discuss the project and confirm technical feasibility for the proposed site.

There are many site variables that influence how well-suited a site is for battery storage, and which battery type is best.

Without a discussion with the Allume team, there is a significant risk to the success and functionality of the installation.

S. LABELLING

A label kit is provided with each SolShare. This label kit contains labels specific to SolShare. Other labels for other parts of the solar system should be provided by the installer. Please consult Allume's '[0415 Allume SolShare Labelling Advice UK](#)' document for more information on labelling.

T. OTHER ENERGY MEASURING DEVICES

SolShare systems are compatible with a range of complementary solar technologies, including PV diverters, smart hot water tanks, and storage heaters. These technologies often rely on energy measurement (e.g. using CTs) to function correctly.

Please follow the manufacturer's instructions for CT placement. For instance, if the CT needs to measure exported energy, it should be installed on the grid side of the solar point of connection.

In a SolShare installation, the solar point of connection may be located before the consumer unit, such as in risers or a plant room. Therefore, if an energy-measuring technology's CT needs to measure exported energy, it must be installed to measure grid **before** the SolShare connection.

APPENDIX

On following pages

EXAMPLE SLD (GUIDANCE ONLY) – METERS OUTSIDE FLATS

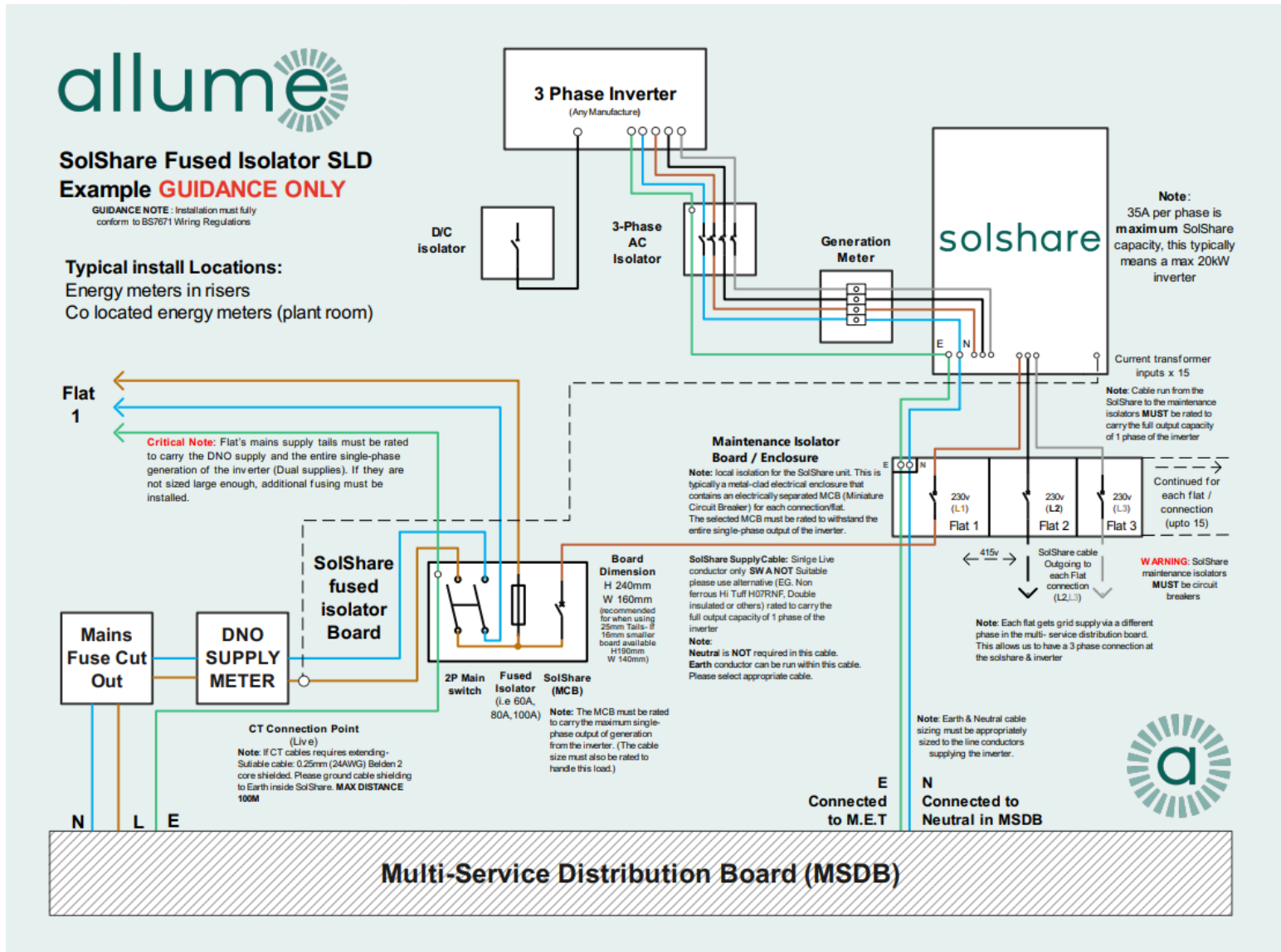


Figure 5: SLD example when energy meters are located outside of the flats.

EXAMPLE SLD (GUIDANCE ONLY) – METERS INSIDE FLATS

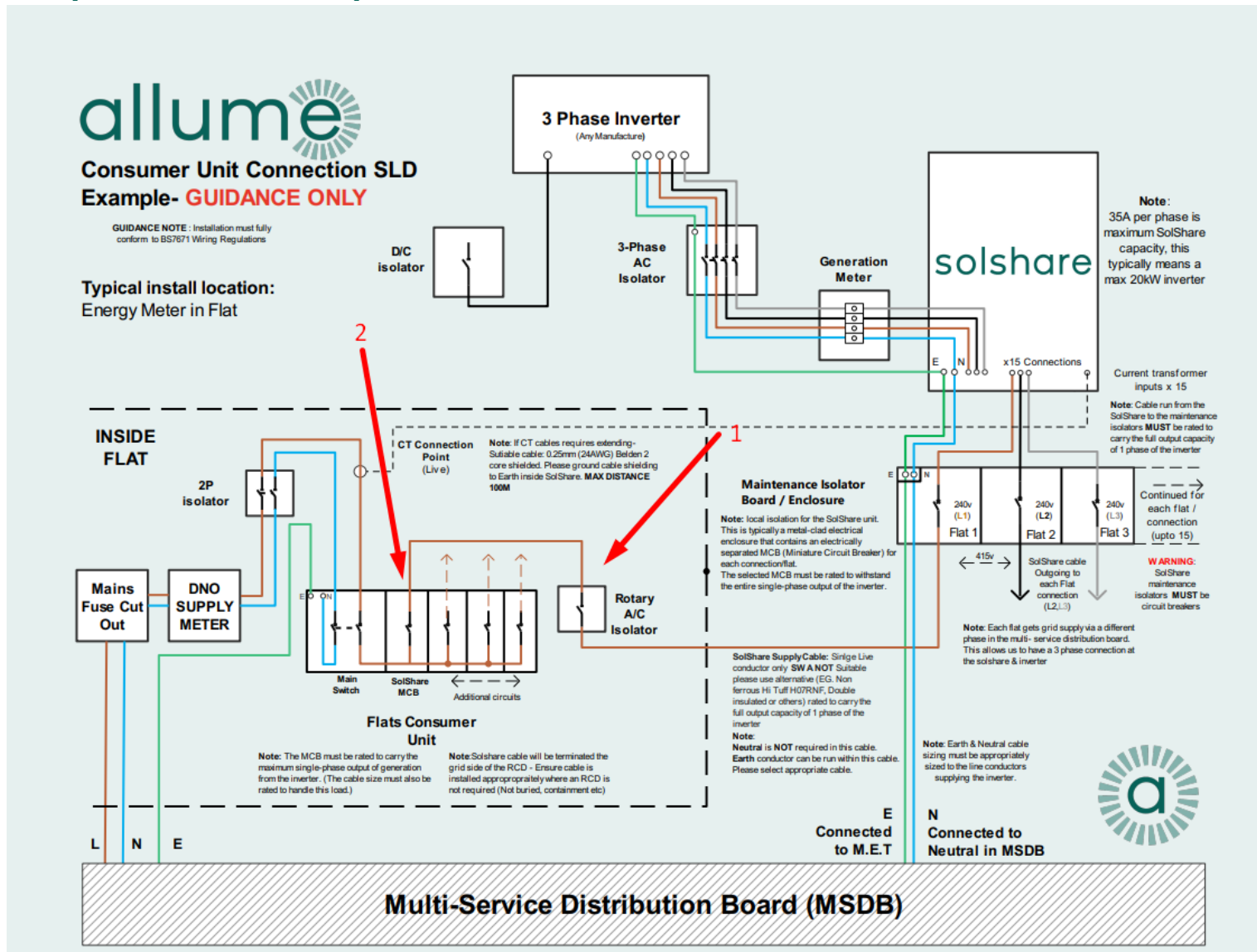


Figure 6: SLD example when energy meters are inside the flats.