



Open Energy For All

Technical Note

Export Management Guide
of Hoymiles Microinverter System

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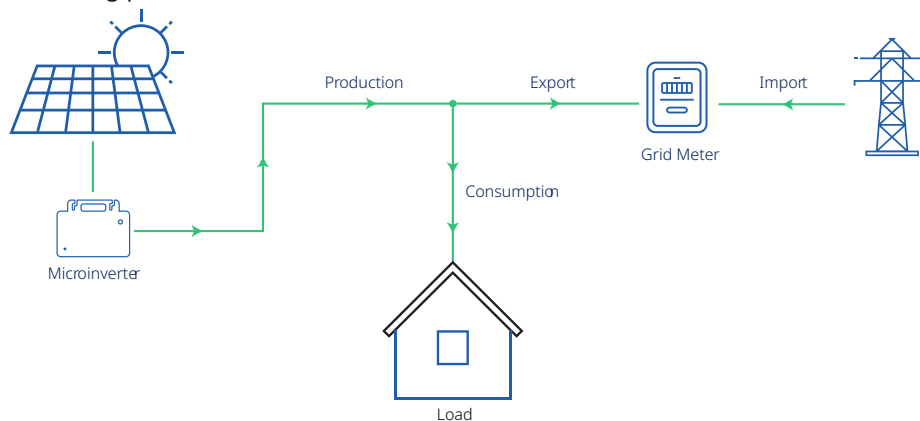
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1 Introduction to Export Management

Local grid authorities in some countries limit the amount of power exported to the grid system in order to prevent power surges, power issues, or a drop in the quality of the electricity. This requirement has led Hoymiles to develop an Export Management Solution, which allows users to install larger PV systems without violating export laws.

Hoymiles Export Management works by installing the Hoymiles gateway DTU-Pro and the smart meter. The meter can be installed on the grid side or the load side to measure consumption or export. With export control enabled, DTU-Pro will adjust PV power generation to ensure that exported power does not exceed a pre-setting limit.

Note that users can also install the meter on the solar side for an accurate PV generation measurement. (Hoymiles export management cannot be enabled by only installing meters on the solar side.) In this case, Hoymiles DTU-Pro will collect the data and you will be able to view your power consumption on the Hoymiles monitoring platform.



2 Terms and Definitions

- **Consumption:** The power consumed by the local loads.
- **Current Transformer (CT):** A transformer fixed on the wiring to detect the current flow.
- **DTU:** DTU is the abbreviation for Data Transfer Unit. DTU receives data from the microinverter and meter, then uploads them to the monitoring platform.
- **Export:** Power exportation from the PV system to the grid.
- **Grid Meter:** A meter installed on the grid connection side that reads the power/energy exported to the grid.
- **Load Meter:** A meter installed on the load consumption side that reads the power/energy consumed by the local load.
- **Meter:** A device that measures the power flow.
- **Production:** The power produced by the PV microinverter system.
- **Solar Meter:** A meter installed at the output of microinverters that reads the power/energy produced by the PV microinverter system.

3 Installing the Export Management System

Please follow the instructions below to install the Hoymiles Export Management system. Before installation, please make sure that the export management function has been enabled on your plant. If it has been disabled, please consult your dealer or the Hoymiles technical support team.

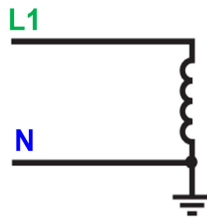
Step 1: Choose an export control type.

- Zero Export: Sets the power export value to zero. The meter can be installed either on the load side or the grid side.
- Export Limit: Limit the export of power within a certain range. The meter can be installed either on the load side or the grid side.
- Production and Consumption Monitoring: Accurate display of the PV production and consumption. A meter should be installed on the load side or the grid side of the system in order to monitor consumption readings. The meter should also be installed on the solar side of the system in order to display PV production readings.

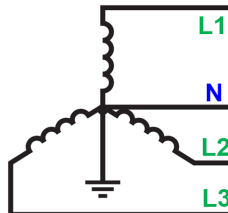
Note: Please refer to Appendix I for further information regarding Export Control.

Step 2: Confirm the Grid type. (The grid type varies in different countries, please choose the right grid type accordingly.)

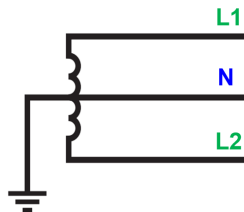
- Single-phase Grid 230 V: This is mainly for residential systems in most regions except North America and Latin America. The phase voltage may vary from 220 V to 240 V. The outputs of microinverters are connected between the live line (L1) and the neutral line (N).



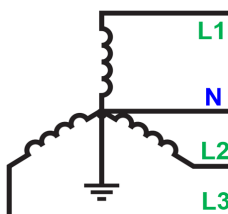
- Three-phase Grid 230 V / 400 V: This is mainly for commercial systems in most regions except North America and Latin America. The phase voltage may vary from 220 V to 240 V. The outputs of microinverters are connected between the live line and neutral line (L1 and N, L2 and N, or L3 and N).



- Split-phase Grid 120 V / 240 V: This is mainly for residential systems in North America and Latin America. The phase voltage may vary from 110 V to 120 V. The outputs of microinverters are connected between two live lines (L1 and L2).



- Three-phase Grid 120 V / 208 V: This is mainly for commercial systems in North America and Latin America. The phase voltage may vary from 110 V to 127 V. The outputs of microinverters are connected between two live lines (L1 and L2, L2 and L3, or L3 and L1).



Step 3: Verify the capacity of the loads before selecting the CT and meter type.

- The maximum load current or the maximum current of the PV system should not exceed the CT/Meter range regardless of where the meter is installed.

Note: Please refer to Appendix I for Meter and CT model selection.

- Before installing the Chint meter, please note down the meter SN (shown in the circles) for further use.



For DDSU666

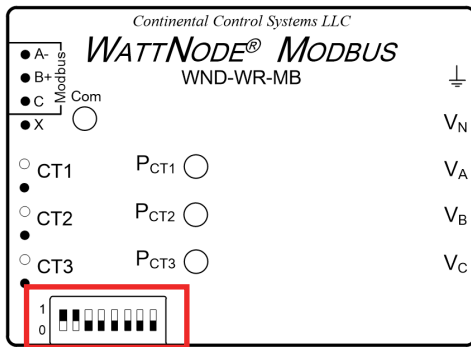


For DTSU666

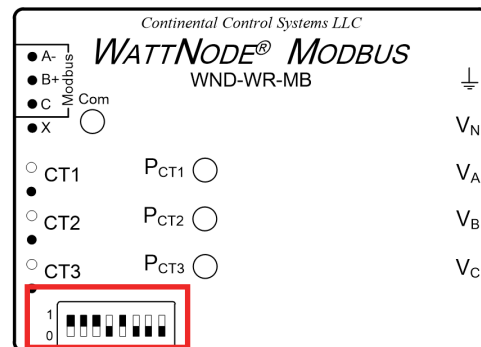
Note: Please make sure the meter SN in one system is not repeated.

- For the export limitation function, only Chint meters purchased from Hoymiles are approved.
- For WattNode meters, the 12-digit SN begins with "10C1" and is followed by eight digits. In the following dip switch of the meter, switching the pin up indicates "1" and down indicates "0".

For example:



Meter SN is: 10C111000000



Meter SN is: 10C111101000

Note:

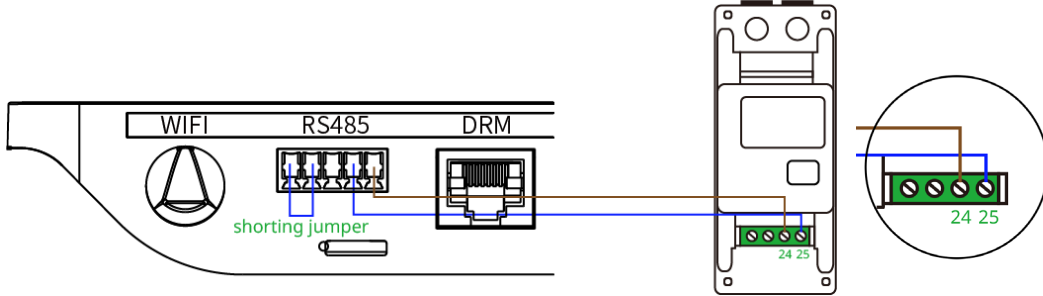
- Please make sure the meter SN is not repeated in one system. You can differentiate the meter SN by re-positioning the dip switch on the meter.
- Please ensure that the last two pins from the right remain down regardless of how you change the dip switch.

Step 4: Prepare the shielded twisted pair RS485 cable with a proper length.



Step 5: Complete the wiring of the meter and CT according to the system requirements (please refer to Appendix III for more details).

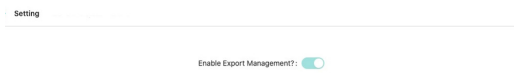
Step 6: Connect the A port of the meter to the A port of the DTU and the B port of the meter to the B port of the DTU by using an RS485 cable (please refer to Appendix III for more details).



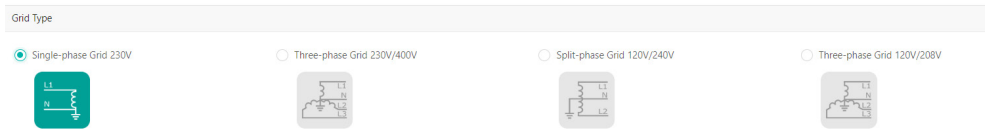
Step 7: Connect the power cable to the DTU and power the DTU on.

Step 8: Complete the settings on the monitoring platform S-Miles Cloud.

- Create a new station on the platform.
- Switch on the slider button of “Enable Export Management”.

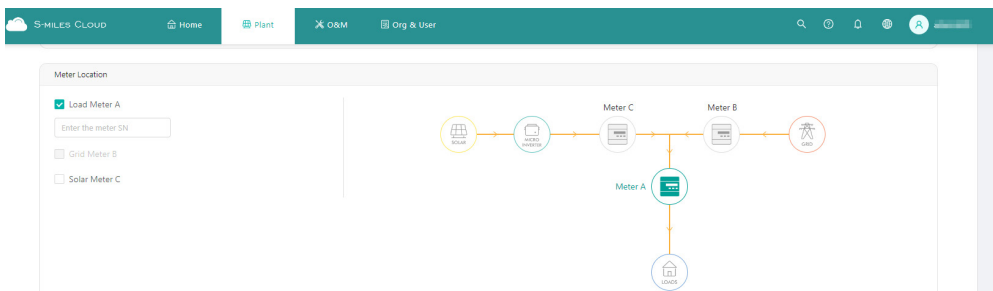


- Select the Grid type.

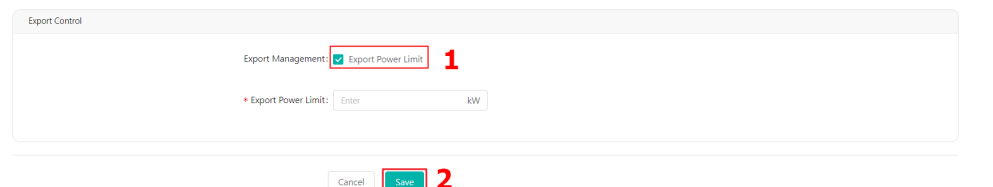


- Choose the installation location of the meter and enter the Meter SN.

Note: Please make sure the meter SN in one system doesn't repeat.



- Enable export management function by ticking the “Export Power Limit” box. Enter the limit value and click on “Save” to complete the station creation.

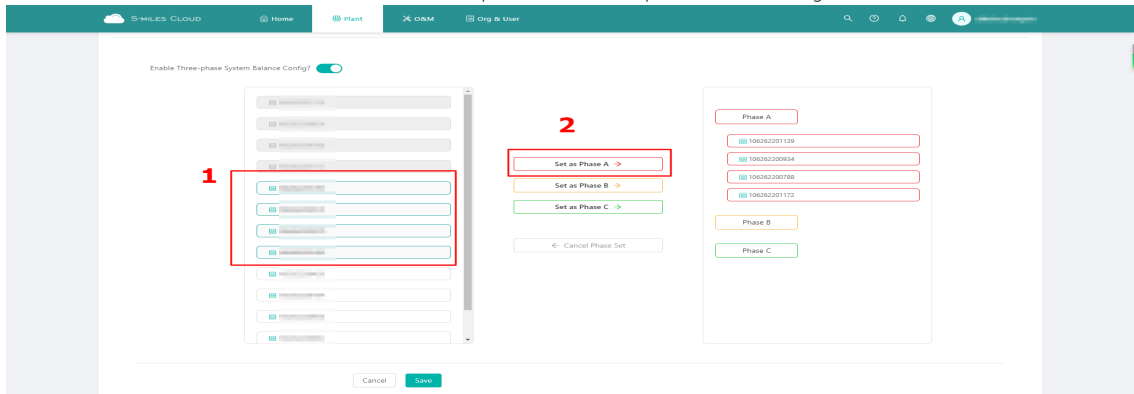


Note: There are two types of export control modes available for a three-phase system:

- **Total:** This applies to most settings. It controls the total export from the three phases. (E.g. Phase A =500 W, Phase B= -300 W, Phase C = -200 W, then the total power export is zero);
- **Per Phase:** Please refer to the grid requirements in your country. This mode means that power export on each phase is controlled. (E.g. Phase A = Phase B = Phase C = 0)

f. For three-phase systems with single-phase microinverters, if the controlled export has been set to **“Per Phase”** mode, you must perform the **“Electrical Phase Separation”** after completing the Export Management setting.

Note: Please make sure the microinverters that are separated into each phase are matching with the actual installation condition.



4 Displaying Web Pages

4.1 Overview of “Power Station” Page



Plant Overview:

- **Power Ratio:** Real-time power of microinverter as a percentage of installed capacity
- **Energy Today:** Total energy generated
- **Energy this Month:** Energy generated in this month
- **Lifetime Energy:** Total energy generated up until now

Production & Consumption:

- **Self-consumption:** Energy consumption as a percentage of production
- **Self-production:** Energy production as a percentage of consumption
- **Export:** Energy exported to the grid

Note: These terms are used when the meter is installed on the grid side.

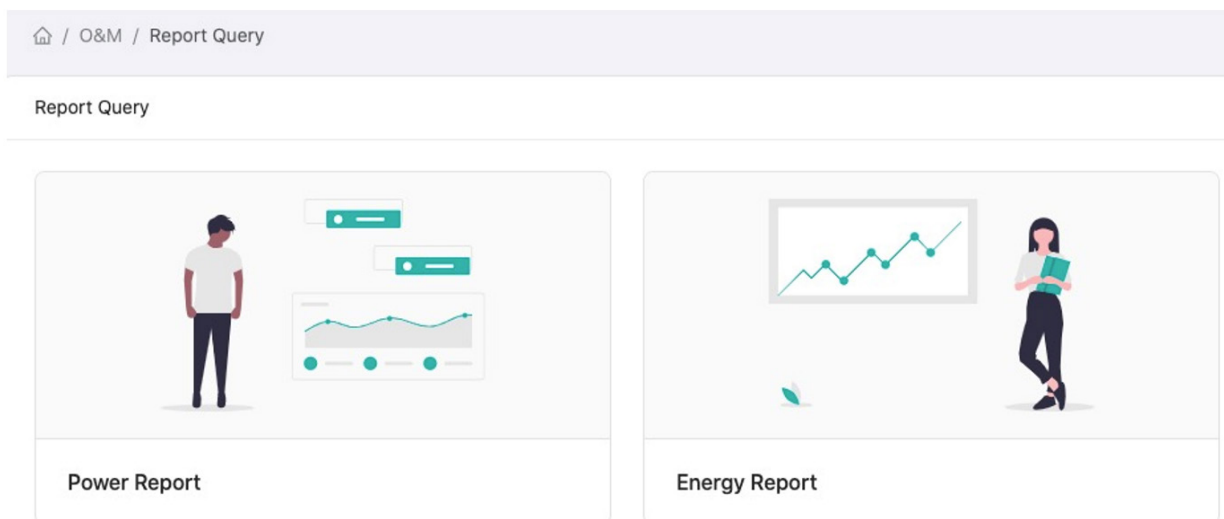
History Data:

- **Production:** Power generated from the PV system
- **Consumption:** Power used by the loads
- **Import:** Power imported from the grid
- **Export:** Power exported to the grid

Note: As a result of inconsistent timings obtained from meters and DTUs, PV-generated power can be higher than consumption. This situation will not affect the actual power limit.

4.2 Generating Report

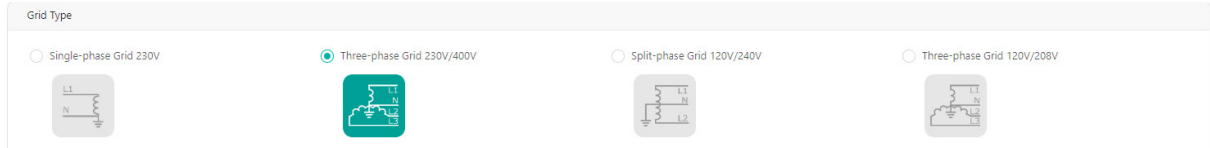
You can generate the report by clicking on “O&M” > “Report Query”.



Appendix I: Examples of Export Control

The following examples illustrate how to use Export Control when you create an Export Management Station.

Before enabling the Export Management function, you must select a type of power distribution network from “**Single-phase 230 V**”, “**Three-phase 230 V / 400 V**”, “**Split-phase 120 V / 240 V**” and “**Three-phase 120 V / 208 V**”. These four types generally cover major power grid types in most countries around the world. However, if there are three-phase microinverters installed at one site, only “**Three-phase 230 V / 400 V**” is available.

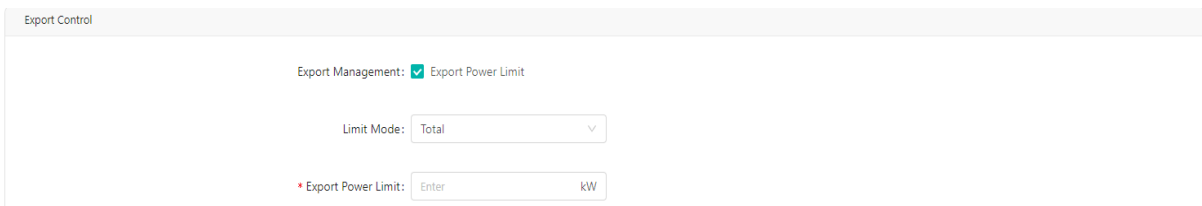


Note that there are two Limit Modes available for “**Three-phase 230 V / 400 V**” in **Export Control** tab, namely **Total** and **Per Phase** limit mode, whereas only **Total** limit mode is available for the other three types.

Note: If there are three-phase microinverters installed at one site, only the Total Limit Mode will be available.

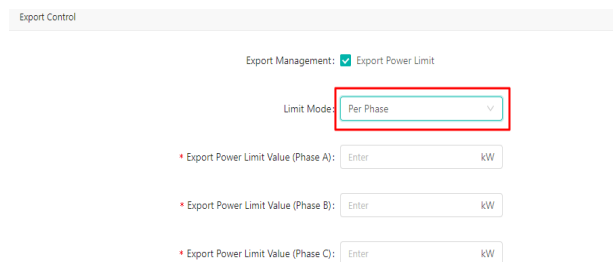
- **Total:**

The total export power is calculated by subtracting the combined load consumption from the combined PV production. Export power in one phase can compensate for import power in another phase.



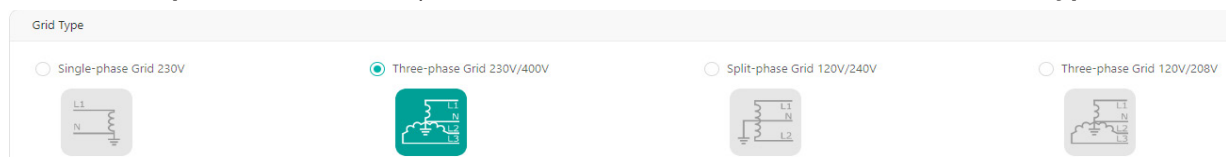
- **Per Phase** (Only for three-phase 230 V / 400 V PV system):

If you choose “**Three-phase Grid 230 V / 400 V**” as your grid type, the outputs of PV microinverters are connected to phase voltage. In this case, you should select **Per Phase** as your limit mode and specify a limit value for each phase. Each phase’s export power will be limited to the pre-setting value shown in the following figure. The total export power is the sum of the production minus the consumption of each phase.



In the following examples, twelve Hoymiles HM-1500 4-in-1 microinverters are connected to a three-phase system. As part of this system, the phase voltage is 230 V, the maximum continuous AC output power is 18 kW, the total output power of all PV modules is 20 kW, and each phase is equipped with four microinverters with a maximum AC power of 6 kW each. Each example shows how exported power and solar power are affected under different conditions.

Here, a “**Three-phase 230 V / 400 V**” power distribution network is selected under the **Grid Type** tab.



Example 1: Zero Export Power Limit, Total Limit Mode

This example sets the export power limit of the entire PV system to zero and enables Total Limit Mode.

Case 1

If the total PV production is lower than the load consumption, all loads are powered from the PV production and the grid. There is no power export to the grid in this case, so PV production will not be limited.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	2	2	2	6
Load Consumption	4	3	2	9
Actual PV Production	2	2	2	6
Export	-2	-1	0	-3

Note: The "-2" indicates that 2kW of power is imported from the grid and no energy is fed into the grid.

Case 2

If the PV production exceeds load consumption in one phase, but is lower in the other two phases, and the total PV production is lower than the total load consumption, then the PV production will not be limited in the Total Limit Mode.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	3	3	3	9
Load Consumption	4	3	2	9
Actual PV Production	3	3	3	9
Export	-1	0	1	0 (zero export)

Case 3

If total PV Production is higher than the total load consumption, all the phases' PV production will be limited.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	4	4	4	12
Load Consumption	4	3	2	9
Actual PV Production	3	3	3	9
Export	-1	0	1	0 (zero export)

Example 2: Zero Export Power Limit, Per Phase Limit Mode

In this example, the export power limit of the whole PV system is set to zero and the Per Phase Limit Mode is enabled.

Case 1

When PV production of all phases is lower than load consumption, all phases' loads are powered from PV production and the grid. No power will be exported to the grid, therefore PV production will not be restricted.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	2	2	2	6
Load Consumption	4	3	2	9
Actual PV Production	2	2	2	3
Export	-2	-1	0	-3 (zero export)

Note: The "-3" indicates that 3kW of power is imported from the grid and no energy is fed into the grid.

Case 2

If the PV production of one phase is higher than the load consumption, the PV production of this phase will be limited in the Per Phase Limit Mode.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	3	3	3	9
Load Consumption	4	3	2	9
Actual PV Production	3	3	2	8
Export	-1	0	0	-1 (zero export)

Case 3

In the event that the PV production of any phase exceeds the corresponding load consumption, the PV production will be limited.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	4	4	4	12
Load Consumption	4	3	2	9
Actual PV Production	4	3	2	9
Export	0	0	0	0 (zero export)

Example 3: 70% Export Power Limit, Total Limit Mode

In Germany, based on the Renewable Energy Sources Act (EEG) 2012, PV systems with a capacity from 0.8 kW to 30 kW are limited to feeding a maximum of 70% of their installed capacity into the grid in the total limit mode at the point of common coupling.

For example, if the output power of a PV system is 20 kW, then the export power limit should be $20 \text{ kW} \times 70\% = 14 \text{ kW}$.

Case 1

If the total PV production is lower than the load consumption, or higher than the load consumption but no more than 70% of its installed capacity, the PV production will not be limited.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	5	4	3	12
Load Consumption	4	3	2	9
Actual PV Production	5	4	3	12
Export	1	1	1	3

Note: 3 kW is lower than 70% of 12 kW, so the PV production will not be limited.

Case 2

If the total load consumption is too low, and the Actual PV Production exceeds 70% of the Ideal PV Production, then the PV production will be limited.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	5	5	5	15
Load Consumption	3	0	0	3
Actual PV Production	4.5	4.5	4.5	13.5
Export	1.5	4.5	4.5	10.5

Note:

Given the above situation, the export management function has been operating, so the power export is limited to 10.5 kW, which is 70% of 15 kW.

Example 4: 6 kW Export Power Limit, Per Phase Limit Mode

In this example, the export power limit is set to 6 kW, and the phase power limit is set to 2 kW.

Case 1

In the case that the PV production of every phase is lower than the corresponding load consumption or higher than the load consumption but the excess power is not greater than 2 kW, the PV production will not be limited.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	5	4	3	12
Load Consumption	4	3	2	9
Actual PV Production	5	4	3	12
Export	1	1	1	3

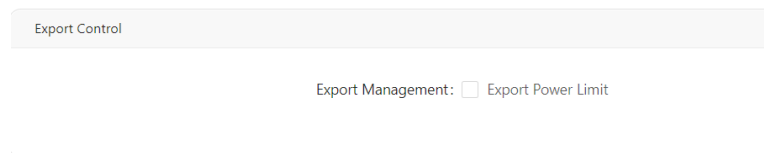
Case 2

In the **Per Phase, Total Limit** mode, PV production will be limited if the PV production of any phase exceeds the load consumption by 2 kW or more.

	Phase 1 (kW)	Phase 2 (kW)	Phase 3 (kW)	Total (kW)
Ideal PV Production	3	4	5	12
Load Consumption	2	2	2	6
Actual PV Production	3	4	4	11
Export	1	2	2	5

Example 5: No Export Control, Displaying the PV Production and Load Consumption

There are some users who do not require the export management function, but only wish to view the PV production and load consumption on the Hoymiles Monitoring Platform. It is the same procedure as setting up the export management function, except that the “Export Power Limit” should be disabled in the module “Export Control”.



Appendix II: How to Choose Meter for Your Export Management Station

Based on the actual installation requirements, users can choose from three types of combination meters.

1 Meter Type

Meter Model	Type	SN	Description
DDSU666 (CT-100 A)	Single Phase	10C015XXXXXX	With 1 x 100 A CT
DTSU666 (CT-3 × 100 A)	Three Phase	10C016XXXXXX	With 3 x 100 A CT
DTSU666 (CT-3 × 250 A)	Three Phase	10C017XXXXXX	With 3 x 250 A CT

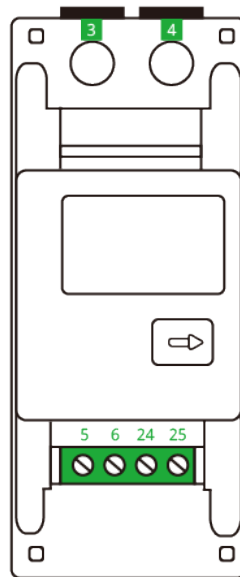
2 Meter Application Under Different Grid Types

Grid Type	Applicable Meter Type
Single Phase System (230 V)	DDSU666 (100 A)
Three Phase System (230 V / 400 V)	DTSU666 (3 × 100 A) DTSU666 (3 × 250 A)
Split Phase System (120 V / 240 V)	DTSU666 (3 × 100 A) DTSU666 (3 × 250 A)
Three Phase System (120 V / 208 V)	DTSU666 (3 × 100 A) DTSU666 (3 × 250 A)

Appendix III: Meter installation

1 Chint DDSU666 (100 A) Single-phase Meter

1.1 Meter Port Description

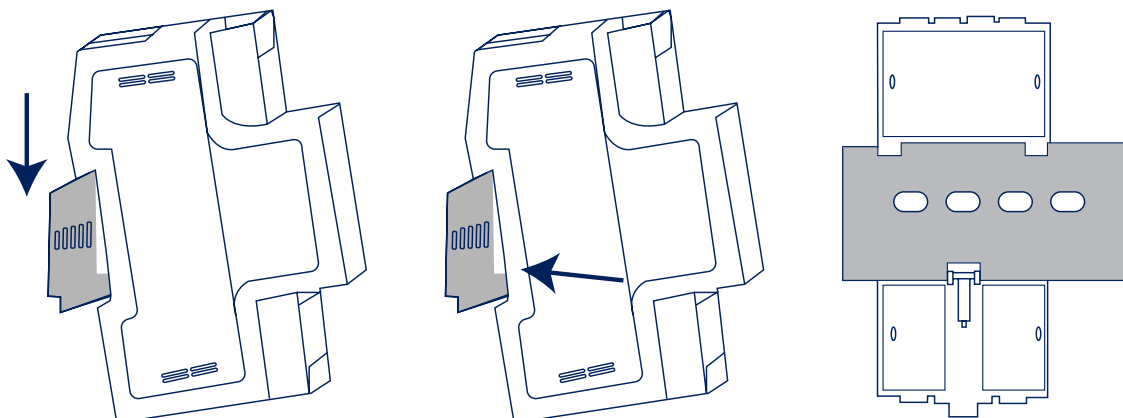


- Port 3: connect to the L line
- Port 4: connect to the N line
- Port 5: connect to the white wire (I *) from CT
- Port 6: connect to the blue wire (I) from CT
- Port 24: connect to the RS485A of the DTU
- Port 25: connect to the RS485B of the DTU

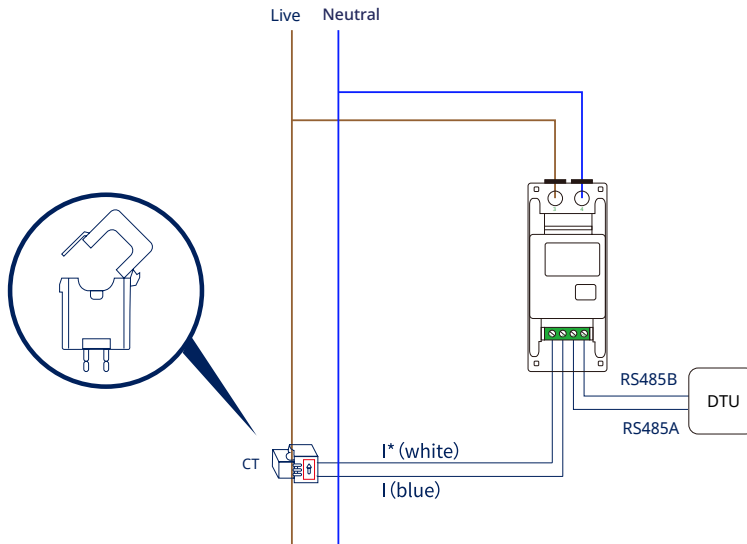
1.2 Meter Installation

Please follow the steps listed below to fit the meter on the standard din rail of DIN35mm:

1. Attach the meter to the standard din rail from the top to the bottom.
2. Press the meter onto the din rail from the bottom to the front part.



1.3 Cable Connection (Single-Phase 220 V)



1. Wire the L and N cable to the corresponding port 3 and port 4 of the meter respectively.

Note:

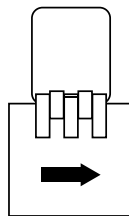
The selected cable shall meet local cable standards for the minimum wire diameter.

2. Wire the CT outlets I* and I to the corresponding port 5 and port 6 of the CT respectively.

3. Install the CT in place with consideration of the wiring diagram.

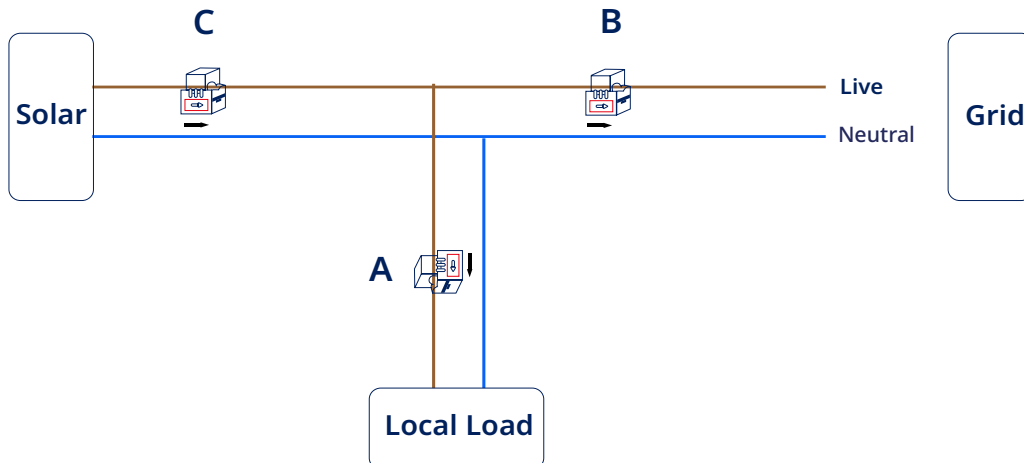
Note:

- CTs are directional. Check I* and I connections are correct as per wiring diagram. If the I* (white) and I (blue) are swapped at the meter, the measured power will be negative.
- Be sure to install the CT with the arrow (printed on the shell of the CT) facing towards the current source. Otherwise, there will be incorrect power measurements and meter problems.

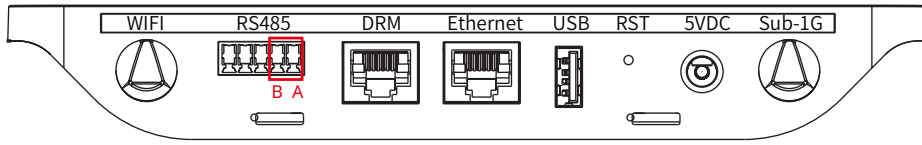


The following diagram illustrates different types of CT installation:

- Position A: Meter has been installed on the Load side and the CT arrow is pointed to the Loads.
- Position B: Meter has been installed on the Grid side and the CT arrow is pointed to the Grid.
- Position C: Meter has been installed on the PV side and the CT arrow is pointed to the Grid.

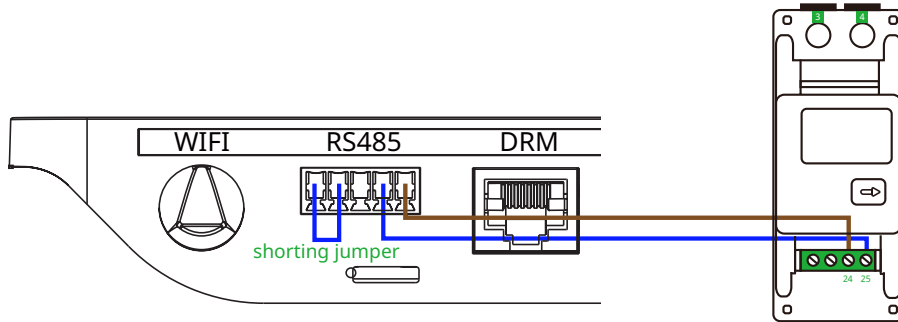


4. Connect RS485A and RS485B to DTU. The picture below shows the RS485A and RS485B on DTU.



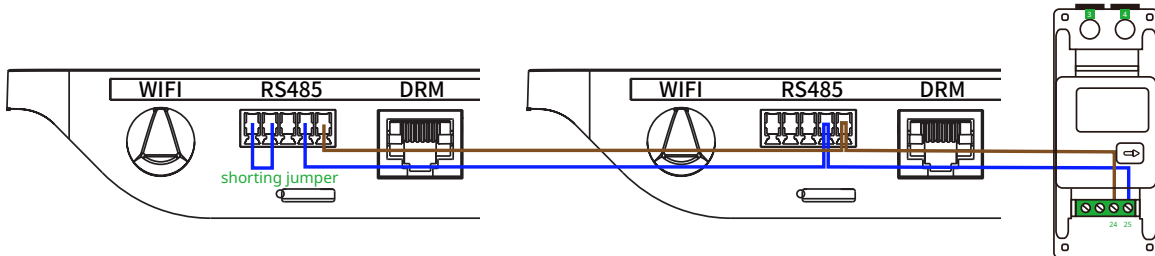
Scenario 1:

When there is only one DTU in a system, and the RS485 cable length exceeds 200 meters, Hoymiles recommends shorting jumpers on the two Ports on the left of the RS485 port.



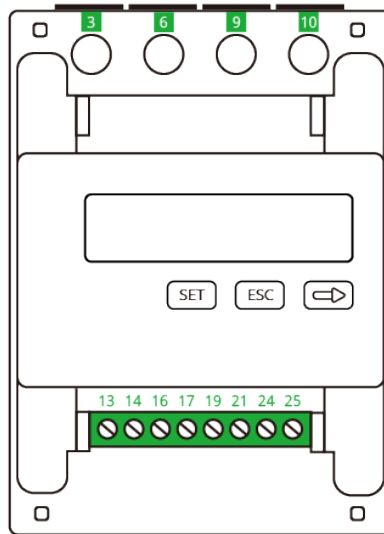
Scenario 2:

When there are multiple DTUs in one system, please connect the DTUs one by one (as shown in the diagram below). If the distance between the microinverter and the last DTU exceeds 200 meters, a short jumper will be recommended for the last two RS485 ports on the last DTU.



2 Chint DTSU666 (100/250 A) Three-Phase Meter

2.1 Meter Port Description

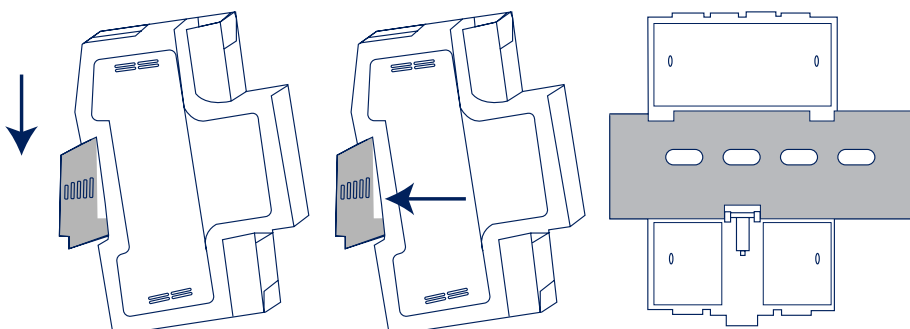


- Port 3: connect to the L line from Phase A
- Port 6: connect to the L line from Phase B
- Port 9: connect to the L line from Phase C
- Port 10: connect to the N line from Grid
- Port 13: connect to the white wire from CT for IA*
- Port 14: connect to the blue wire from CT for IA
- Port 16: connect to the white wire from CT for IB*
- Port 17: connect to the blue wire from CT for IB
- Port 19: connect to the white wire from CT for IC*
- Port 21: connect to the blue wire from CT for IC
- Port 24: connect to the RS485A of the DTU
- Port 25: connect to the RS485B of the DTU

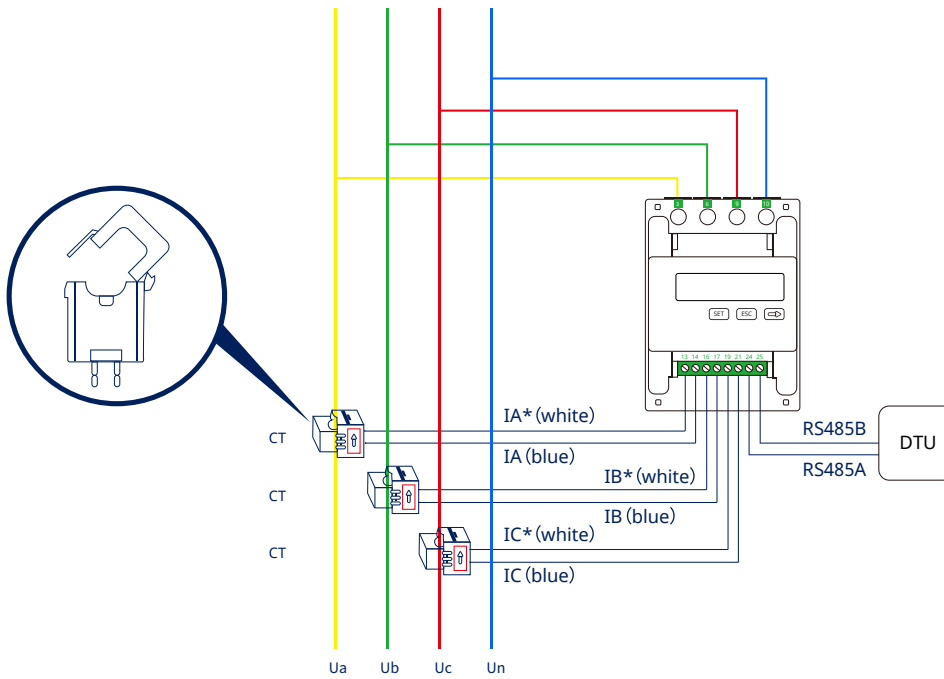
2.2 Meter Installation

Please follow the steps listed below to fit the meter on the standard din rail of DIN35mm:

1. Attach the meter to the standard din rail from the top to the bottom.
2. Press the meter onto the din rail from the bottom to the front part.



2.3 Cable Connection (230/400 V or 120/208 V Three-Phase Four-Wire System)



1. Wire the Ua, Ub, Uc, Un cable to the corresponding port 3, port 6, port 9, and port 10 of the meter respectively.

Note:

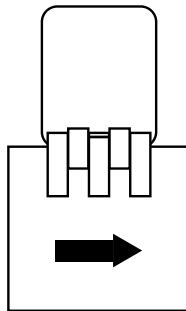
The selected cable shall meet local cable standards for the minimum wire diameter.

2. Wire the CT outlets IA*, IA, IB*, IB, IC*, IC cable to the corresponding port 13, port 14, port 16, port 17, port 19, and port 21 of the CT respectively.

3. Install the CT in place with consideration of the wiring diagram.

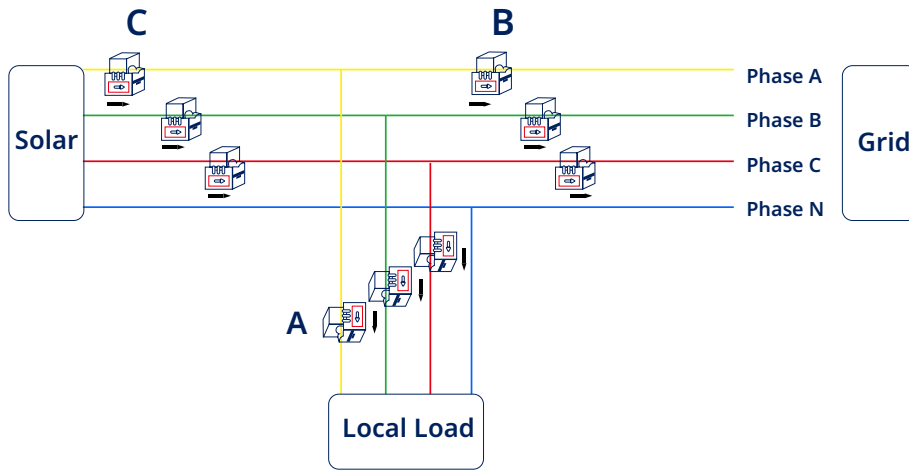
Note:

- *CTs are directional. Check I* and I connections are correct as per wiring diagram. If the I* (white) and I (blue) are swapped at the meter, the measured power will be negative.*
- *Be sure to install the CT with the arrow (printed on the shell of the CT) facing towards the current source. Otherwise, there will be incorrect power measurements and meter problems.*

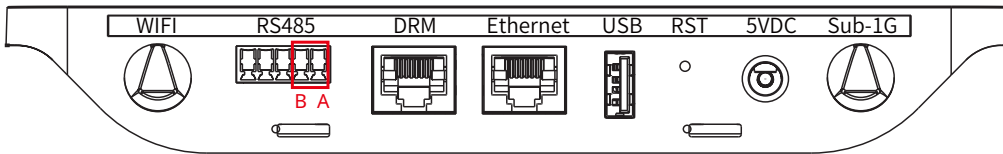


The following diagram illustrates different types of CT installation:

- **Position A:** Meter has been installed on the Load side and the CT arrow is pointed to the Loads.
- **Position B:** Meter has been installed on the Grid side and the CT arrow is pointed to the Grid.
- **Position C:** Meter has been installed on the PV side and the CT arrow is pointed to the Grid.

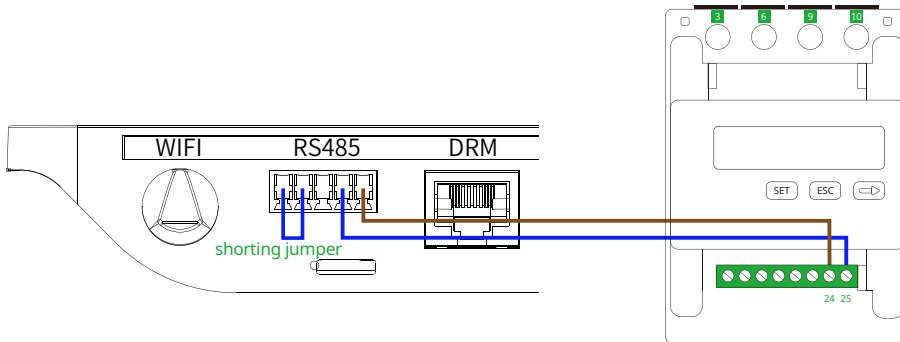


4. Connect RS485A and RS485B to DTU. The picture below shows the RS485A and RS485B on DTU.



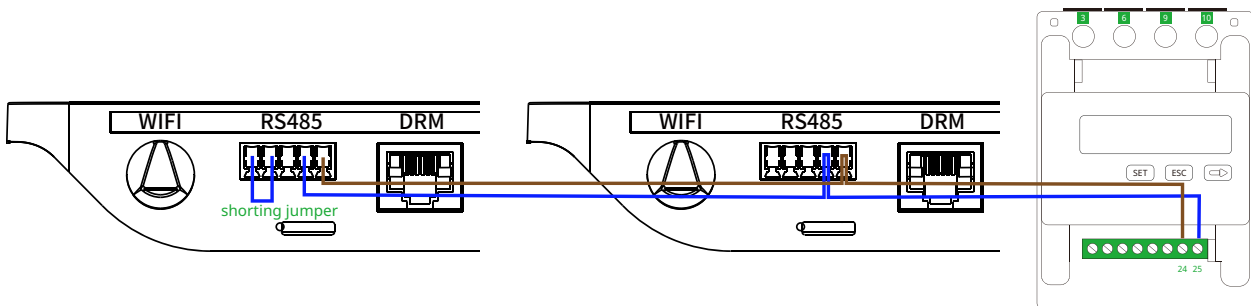
Scenario 1:

When there is only one DTU in a system, and the RS485 cable length exceeds 200 meters, Hoymiles recommends shorting jumpers on the two Ports on the left of the RS485 port.

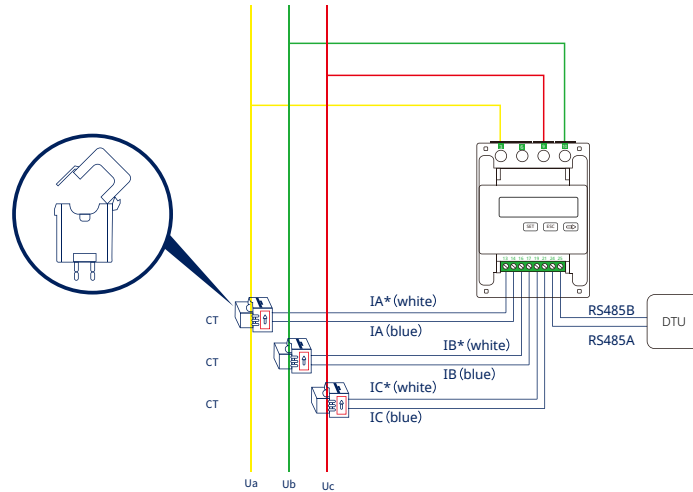


Scenario 2:

When there are multiple DTUs in one system, please connect the DTUs one by one (as shown in the diagram below). If the distance between the microinverter and the last DTU exceeds 200 meters, a short jumper will be recommended for the last two RS485 ports on the last DTU.



2.4 Cable Connection (Three-Phase Three-Wire)



1. Wire the Ua, Ub, Uc cables to the corresponding port 3, port 10, and port 9 of the meter respectively.

Note:

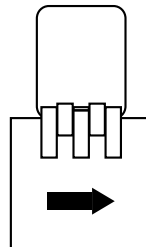
The selected cable shall meet local cable standards for the minimum wire diameter.

2. Wire the CT outlets IA*, IA, IB*, IB, IC*, IC cable to the corresponding port 13, port 14, port 16, port 17, port 19, and port 21 of the CT respectively.

3. Install the CT in place with consideration of the wiring diagram.

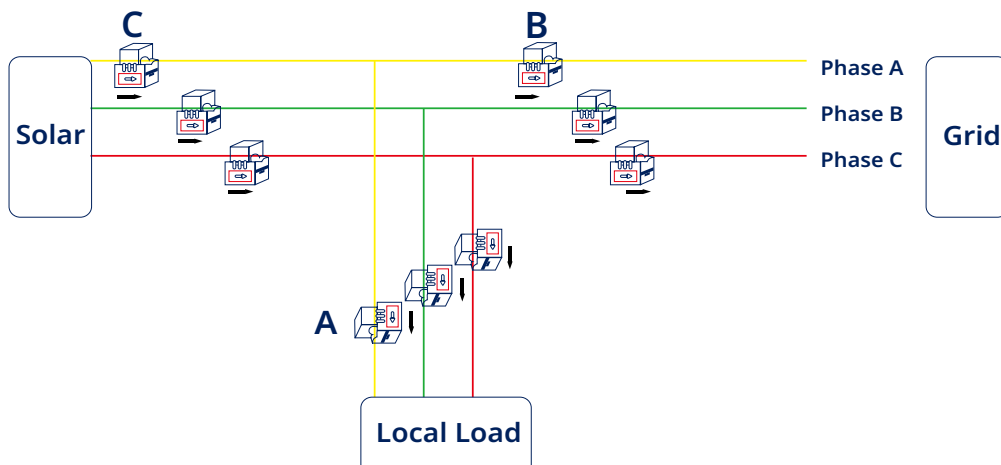
Note:

- CTs are directional. Check I* and I connections are correct as per wiring diagram. If the I* (white) and I (blue) are swapped at the meter, the measured power will be negative.
- Be sure to install the CT with the arrow (printed on the shell of the CT) facing towards the current source. Otherwise, there will be incorrect power measurements and meter problems.

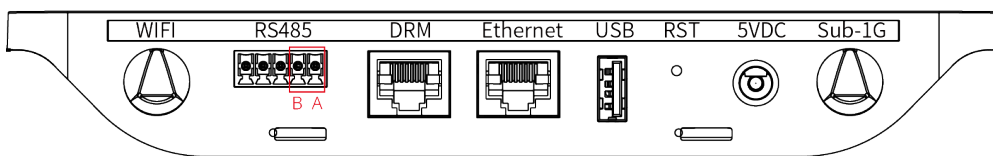


Please refer to the following diagram for different types of CT installation:

- Position A: Meter has been installed on the Load side and the CT arrow is pointed to the Loads.
- Position B: Meter has been installed on the Grid side and the CT arrow is pointed to the Grid.
- Position C: Meter has been installed on the PV side and the CT arrow is pointed to the Grid.

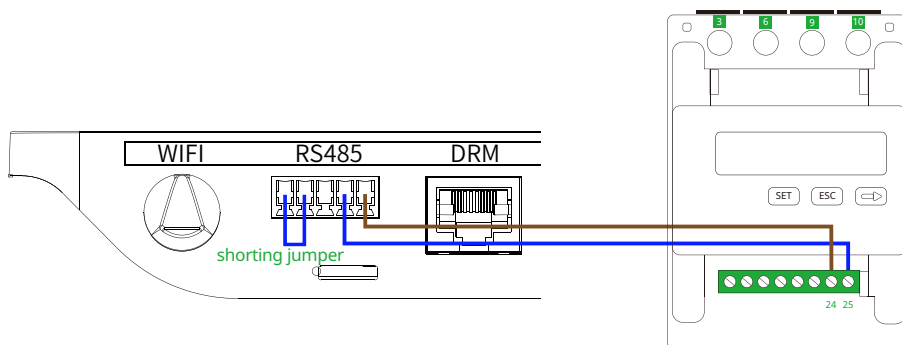


4. Connect RS485A and RS485B to DTU. The picture below shows the RS485A and B on DTU.



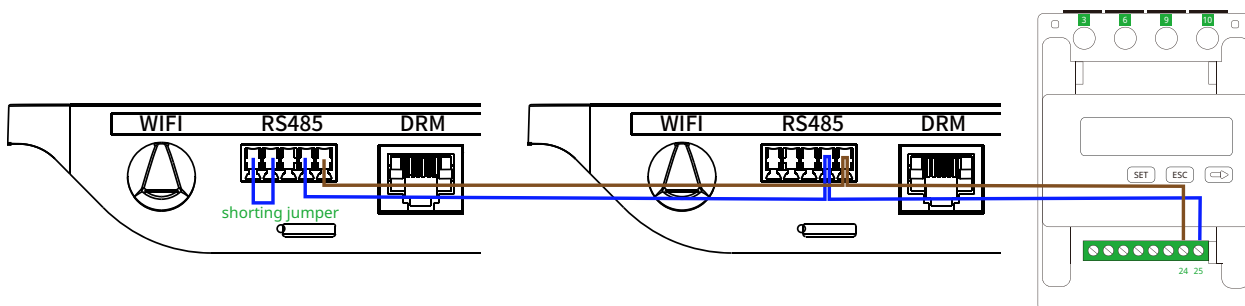
Scenario 1:

When there is only one DTU in a system, and the RS485 cable length exceeds 200 meters, Hoymiles recommends shorting jumpers on the two Ports on the left of the RS485 port.

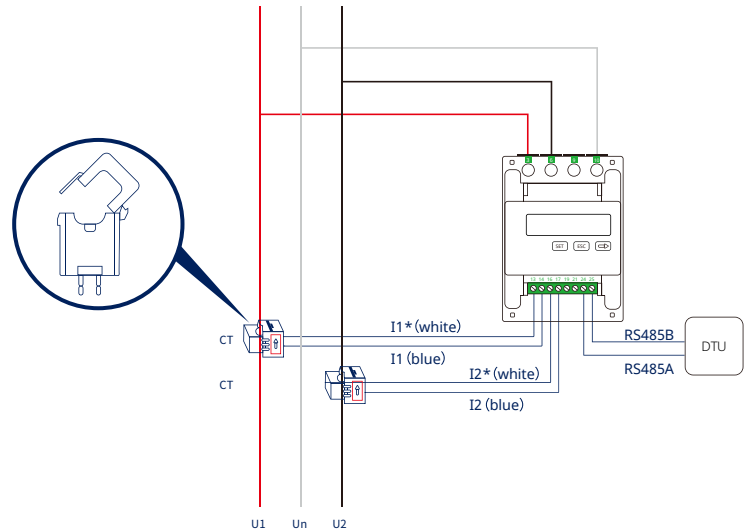


Scenario 2:

When there are multiple DTUs in one system, please connect the DTUs one by one (as shown in the diagram below). If the distance between the microinverter and the last DTU exceeds 200 meters, a short jumper will be recommended for the last two RS485 ports on the last DTU.



2.5 Cable Connection (Split-Phase 220-240 V)



1. Wire the U1, U2, Un cables to the corresponding port 3, port 6, and port 10 of the meter respectively.

Note:

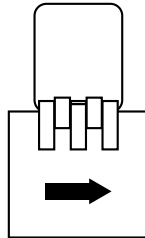
The selected cable shall meet local cable standards for the minimum wire diameter.

2. Wire the CT outlets I1*, I1, I2*, and I2 cable to the corresponding port 13, port 14, port 16, and port 17 of the CT respectively.

3. Install the CT in place with consideration of the wiring diagram.

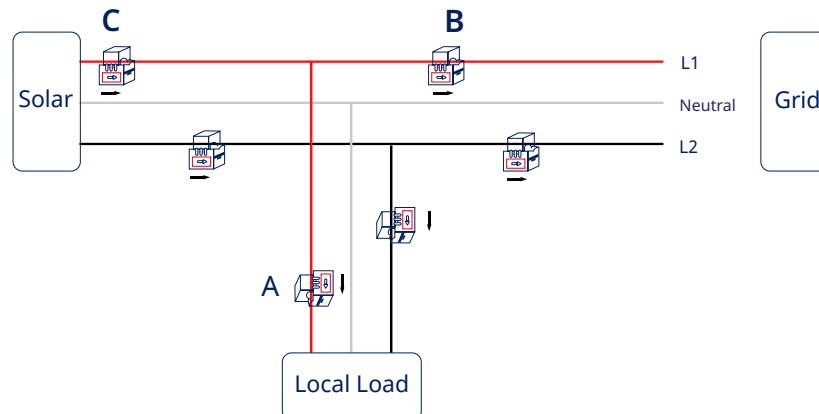
Note:

- CTs are directional. Check I* and I connections are correct as per wiring diagram. If the I* (white) and I (blue) are swapped at the meter, the measured power will be negative.
- Be sure to install the CT with the arrow (printed on the shell of the CT) facing towards the current source. Otherwise, there will be incorrect power measurements and meter problems.

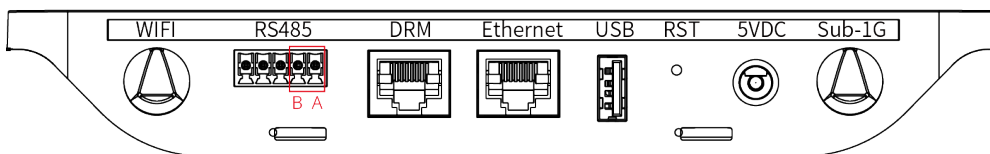


Please refer to the following diagram for different types of CT installation:

- **Position A:** Meter has been installed on the Load side and the CT arrow is pointed to the Loads.
- **Position B:** Meter has been installed on the Grid side and the CT arrow is pointed to the Grid.
- **Position C:** Meter has been installed on the PV side and the CT arrow is pointed to the Grid.

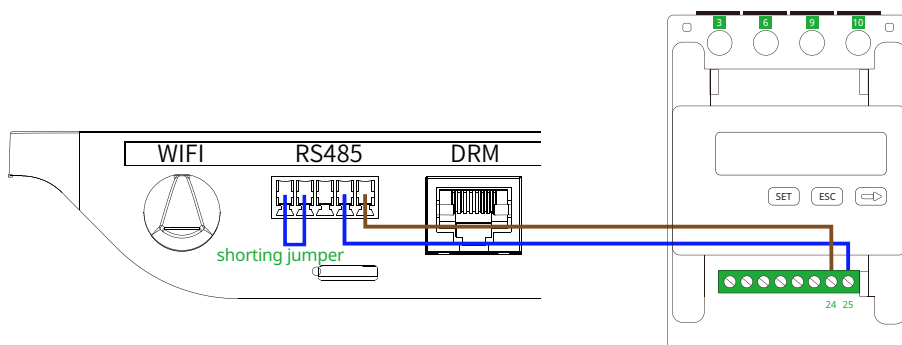


4. Connect RS485A and RS485B to DTU. The picture below shows the RS485A and RS485B on DTU.



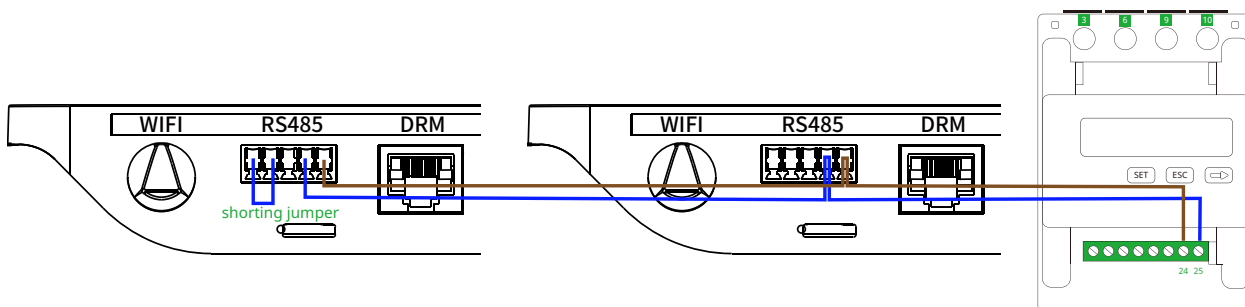
Scenario 1:

When there is only one DTU in a system, and the RS485 cable length exceeds 200 meters, Hoymiles recommends shorting jumpers on the two Ports on the left of the RS485 port.



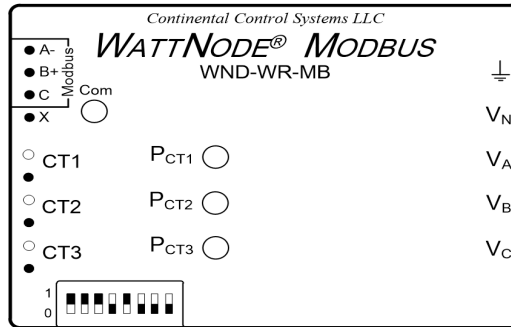
Scenario 2:

When there are multiple DTUs in one system, please connect the DTUs one by one (as shown in the diagram below). If the distance between the microinverter and the last DTU exceeds 200 meters, a short jumper will be recommended for the last two RS485 ports on the last DTU.



3 CCS WattNode Three-Phase Meter (Via CT)

3.1 Meter Port Description



Port 1: connect to the RS485A of the DTU;

Port 2: connect to the RS485B of the DTU;

Port 3: connect to the white wire of the CT for Phase A;

Port 4: connect to the black wire of the CT for Phase A;

Port 5: connect to the white wire of the CT for Phase B;

Port 6: connect to the black wire of the CT for Phase B;

Port 7: connect to the white wire of the CT for Phase C;

Port 8: connect to the black wire of the CT for Phase C;

Port 9: connect to the Ground line;

Port 10: connect to the N line;

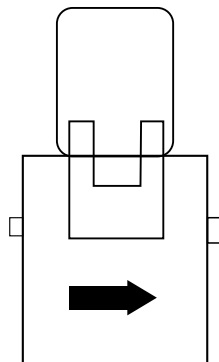
Port 11: connect to the L line from phase A;

Port 12: connect to the L line from phase B;

Port 13: connect to the L line from phase C.

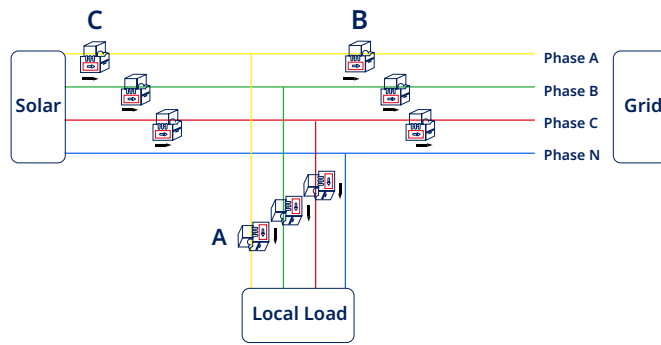
3.2 CT Installation Direction

Be sure to install the CT with the arrow (printed on the shell of the CT) facing towards the current source. Otherwise, there will be incorrect power measurements and meter problems.



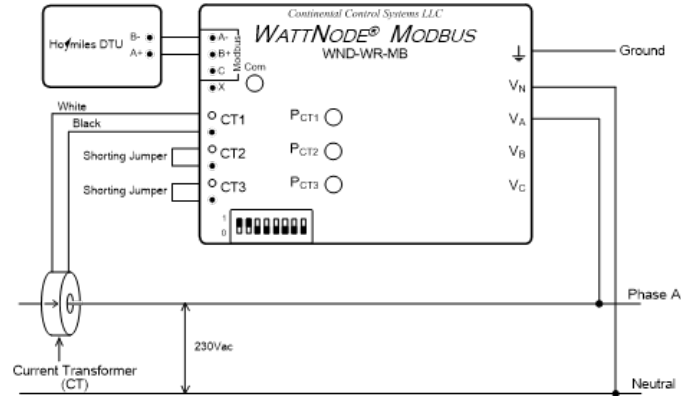
Please refer to the following diagram for different types of CT installation:

- **Position A:** Meter has been installed on the Load side and the CT arrow is pointed to the Loads.
- **Position B:** Meter has been installed on the Grid side and the CT arrow is pointed to the Grid.
- **Position C:** Meter has been installed on the PV side and the CT arrow is pointed to the Grid.

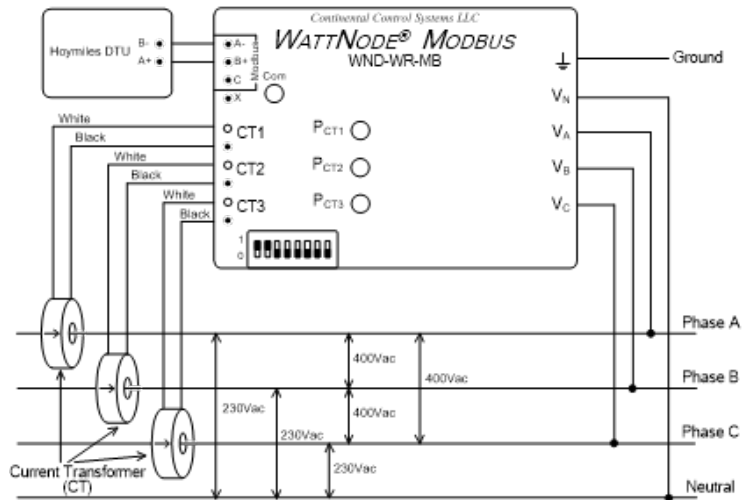


3.3 Installation Diagram for Meter (Via CT)

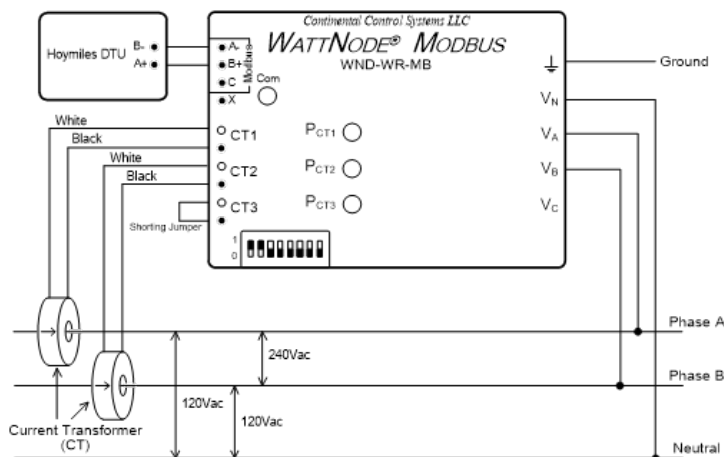
With Single-Phase System (230 V):



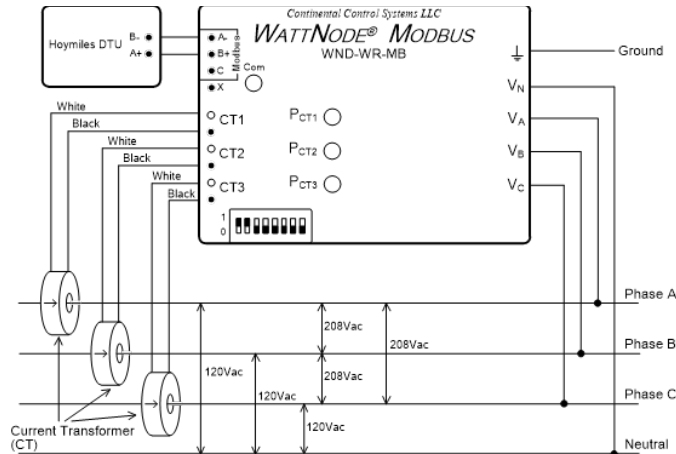
With Three-Phase System (230 V / 400 V):



With Split-Phase System (120 V / 240 V):

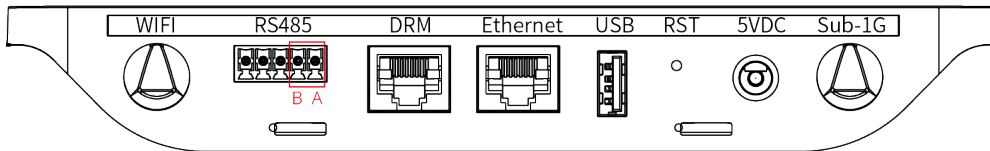


With Three-Phase System (120 V / 208V):



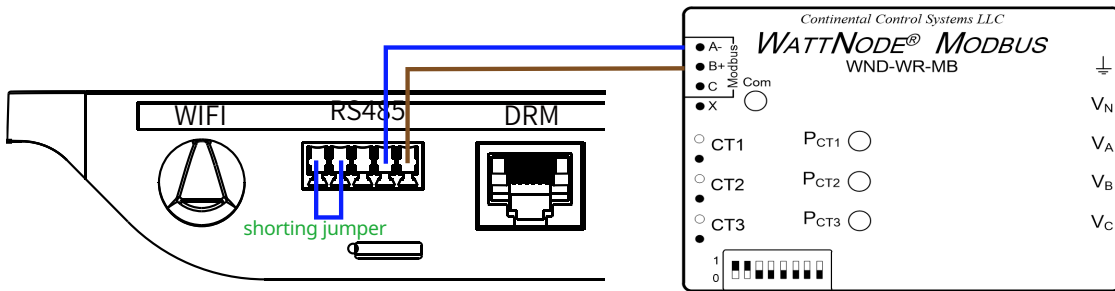
3.4 DTU RS485 Connection

The picture below shows the RS485A and RS485B on DTU.



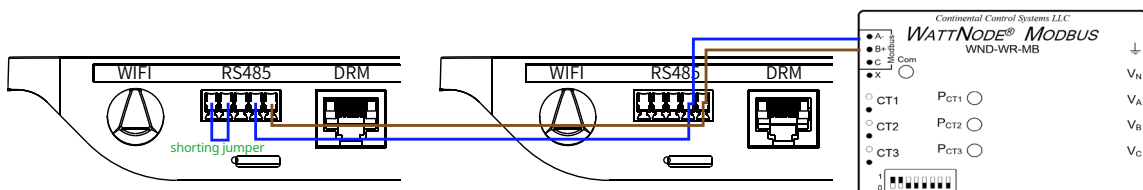
Scenario 1:

When there is only one DTU in a system, and the RS485 cable length exceeds 200 meters, Hoymiles recommends shorting jumpers on the two Ports on the left of the RS485 port.



Scenario 2:

When there are multiple DTUs in one system, please connect the DTUs one by one (as shown in the diagram below). If the distance between the microinverter and the last DTU exceeds 200 meters, a short jumper will be recommended for the last two RS485 ports on the last DTU.



Appendix IV: Troubleshooting

Fault phenomenon	Reason analysis	Elimination
No display when powered on	<ol style="list-style-type: none"> 1. Incorrect wiring. 2. Abnormal voltage for the instrument. 	<ol style="list-style-type: none"> 1. If it is wrongly connected, please reconnect based on the correct wiring mode (see the wiring diagram). 2. If the supplied voltage is abnormal, please choose the specified voltage. 3. If not the above problems, please contact with the local supplier.
Abnormal RS485 communication	<ol style="list-style-type: none"> 1. RS485 communication cable is opened, short circuit or reversely connected. 2. Address, baud rate, data bit and check bit are not in accordance with the host computer. 3. The end of RS485 communication cable has not been matched with resistance (when the distance is over 100 meters) 4. Not matched with the communication protocol order of the host computer. 	<ol style="list-style-type: none"> 1. If there is any problem with the communication cable, please change it. 2. Set the address, baud rate, data bit and check bit through buttons and confirm it is the same as the host computer, then set the operation to "parameter settings". 3. If the communication distance is over 100 meters, and the communication parameter settings are the same as the host computer, but cannot be communicated, then please lower the baud rate or add a resistance of 120Ω at the start Port and ending Port
Inaccurate for energy metering	<ol style="list-style-type: none"> 1. Incorrect wiring, please check whether the corresponding phase sequence of voltage and current is correct. 2. Check whether the high & low end of current transformer inlet is reversely connected. Please observe the power of Pa, Pb, Pc, to be abnormal if there are any negative values. 	<p>If the wiring mode is incorrect, please connect based on the correct wiring mode (see the wiring diagram).</p>
Abnormal data for the electrical parameter (voltage, current, power, etc.)	<ol style="list-style-type: none"> 1. The transformer's ratio hasn't been set, and the instrument displays the secondary side data. 2. Wrong wiring. 	<ol style="list-style-type: none"> 1. If setting the transformer ratio, please set the voltage and current ratios based on "parameter setting." 2. If wrongly connected, please connect the voltage and current of phase A, B and C to the wiring Port of the instrument.
Abnormal data for the electrical parameter read by communication (voltage, current, power, etc.)	<ol style="list-style-type: none"> 1. Data read by communication is secondary side data without transformer ratio. 2. Wrong analysis for data frame. 	<ol style="list-style-type: none"> 1. Multiply the data read by communication with the voltage and current ratios. 2. Analyze the data frame based on the communication protocol format; please pay attention to the mode of the big and small ends of data.

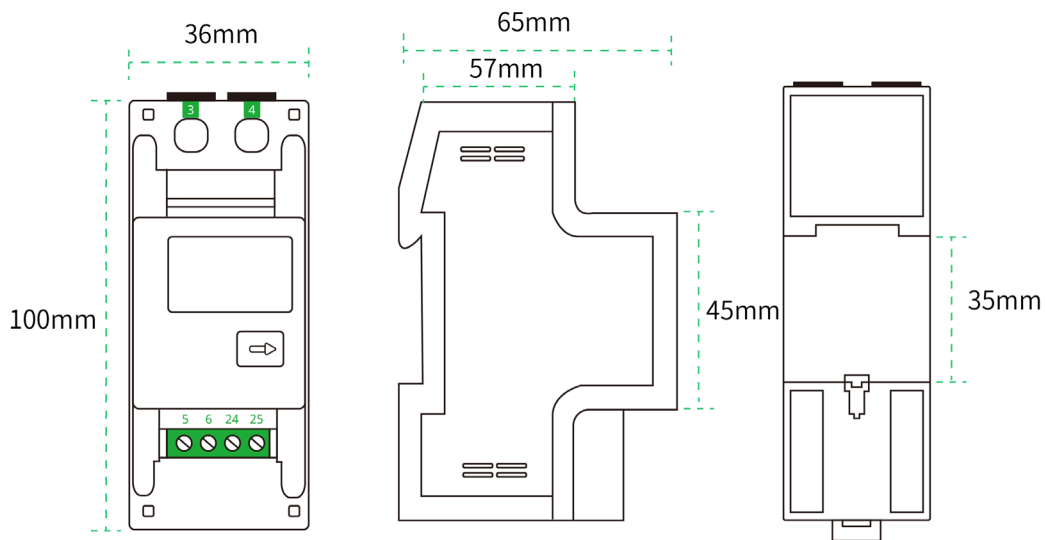
Appendix V: Meter Datasheets

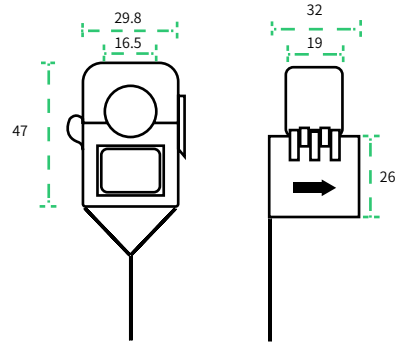
1 DDSU666 (CT-100 A) Datasheet

Electrical Data		
Model	DDSU666 New-Via-CT-100 A	
Referenced Voltage	230 V	
Limiting operating voltage range	0.7 Un to 1.3 Un	
Current Specification	100 A / 40 mA	
Rated temperature	-25°C to +55°C	
Type	Transformer Access	
Mechanical Data		
Dimensions (W x H x D)	36 × 100 × 65 mm	
DIN Type	35 mm	
Power factor	Current value	Percent error limit of Each level meter
1	$0.02 I_n \leq I \leq 0.05 I_n$	±1.5
	$0.05 I_n \leq I \leq I_{max}$	±1.0
0.5L	$0.05 I_n \leq I \leq 0.1 I_n$	±1.5
0.8C	$0.1 I_n \leq I \leq I_{max}$	±1.0

Note:

- I_n : secondary rated current of the current transformer
- L: inductive
- C: capacitive



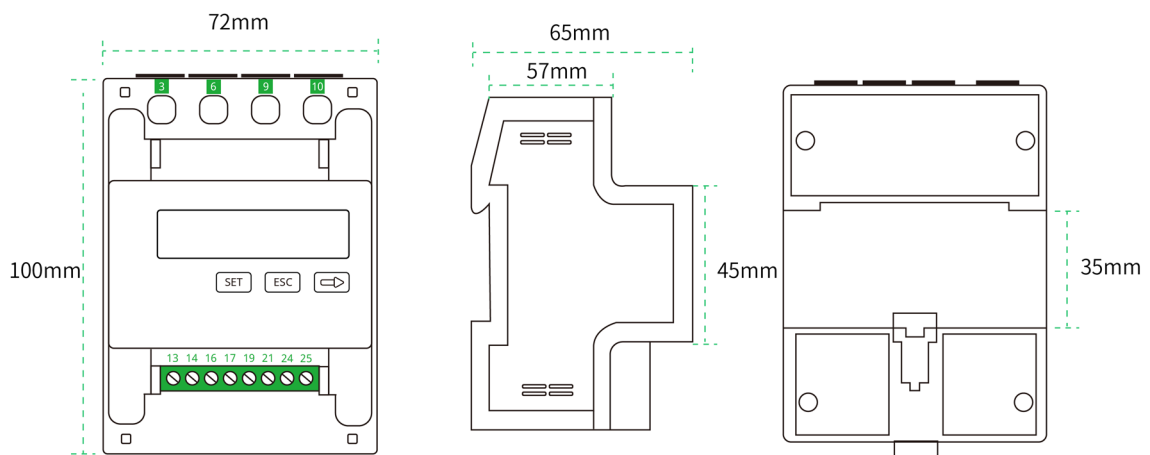


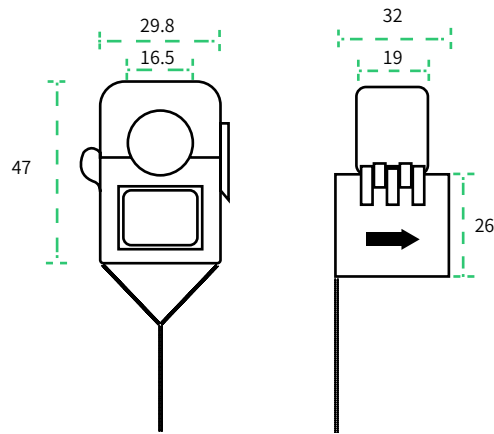
2 DTSU666 (CT-3 × 100 A) Datasheet

Electrical Data		
Model	DTSU666New-Via-CT-3 ×100A	
Referenced Voltage	3 × 230/400 V or 3 × 400 V	
Limiting operating voltage range	0.7 Un to 1.15 Un	
Current Specification	100 A / 40 mA	
Rated temperature	-25°C to +70°C	
Type	Transformer Access	
Mechanical Data		
Dimensions (W × H × D)	72 × 100 × 65 mm	
DIN Type	35 mm	
Power factor	Current value	Percent error limit of Each level meter
1	0.01 In ≤ I < 0.05 In	±1.5
	0.05 In ≤ I ≤ I max	±1.0
0.5 L	0.02 In ≤ I < 0.1 In	±1.5
0.8 C	0.1 In ≤ I ≤ I max	±1.0

Note:

- In: secondary rated current of the current transformer
- L: inductive
- C: capacitive





3 DTSU666 (CT-3 × 250 A) Datasheet

Electrical Data		
Model	DTSU666New-Via-CT-3 × 250 A	
Referenced Voltage	3 × 230/400 V or 3 × 400 V	
Limiting operating voltage range	0.7 Un to 1.15 Un	
Current Specification	250 A / 50 mA	
Rated temperature	-25°C to +70°C	
Type	Transformer Access	
Mechanical Data		
Dimensions (W x H x D)	72 × 100 × 65 mm	
DIN Type	35 mm	
Power factor	Current value	Percent error limit of Each level meter
1	0.01 In ≤ I < 0.05 In	±1.5
	0.05 In ≤ I ≤ I max	±1.0
0.5L	0.02 In ≤ I < 0.1 In	±1.5
0.8C	0.1 In ≤ I ≤ I max	±1.0

Note:

- In: secondary rated current of the current transformer
- L: inductive
- C: capacitive

