FIMER

SmartMeter

Product Manual

About This Document

Purpose

This document describes the installation, electrical connections, commissioning and troubleshooting of the following SmartMeter models. Before installing and operating the SmartMeter, read this document carefully to understand the safety information as well as functions and features of the SmartMeter.

- DHSU10790-ZT
- DTSU71C
- DTSU666/HW
- YDS60-80

Intended Audience

This document is intended for:

- Technical support engineers
- Installation engineers
- Commissioning engineers
- Maintenance engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows:

Symbol	Description
	**WARNING** Indicates a hazard with a **high level** of risk which, if not avoided, will result in death or serious injury.
	**ATTENTION** Indicates a hazard with a **medium/ low** level of risk which, if not avoided, could result in serious or moderate injury.
	Supplements the important information in the main text. **NOTE** is used to address information not related to personal injury, equipment damage, and environment deterioration.

EN

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1. DHSU1079-ZT Meter

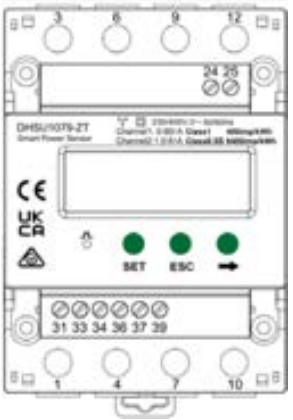
1.1 Overview

1.1.1 Dimensions

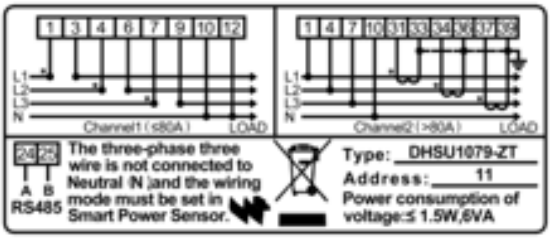


NOTE – The dimensional tolerance is 1 mm.

1.1.2 Front Panel Specification



1.1.3 Nameplate



1.2 Key Specifications

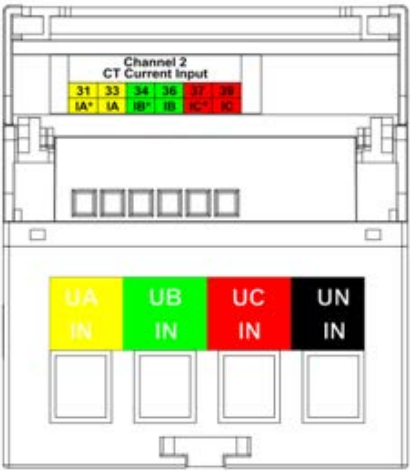
Category	DHSU1079-ZT
Rated voltage	AC 230 V/AC 400 V, 50 Hz/60 Hz
Current measurement range	Direct connection: 0–80 A Connected via current transformers: > 80 A
Voltage measuring range	90–1000 V (line voltage; potential) transformers are required if the voltage is greater than 500 V)
Accuracy of electricity measurement	Class 1 (error within ±1%)
Electric grid system	Four-wire three-phase or three-wire three-phase
Baud speed	4800/9600/19200/115200 bps (default 9600 bps)
Operation temperature	-25°C to +60°C
Installation Mode	Mounted on a guide rail
Certifications	EC, RCM and UKCA

1.3 Port definition

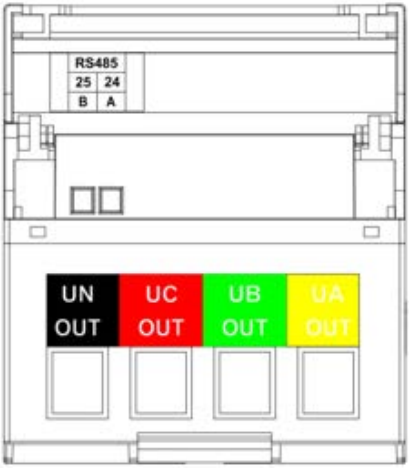
Input voltage: When the line voltage is less than or equal to 500 V, connect the meter directly. When the line voltage is greater than 500 V, connect the meter through potential transformers.

Input current: When the input current is between 0 A and 80 A, connect the meter directly (channel 1). When the input current is greater than or equal to 80 A, connect the meter via current transformers (channel 2).

Cable Input



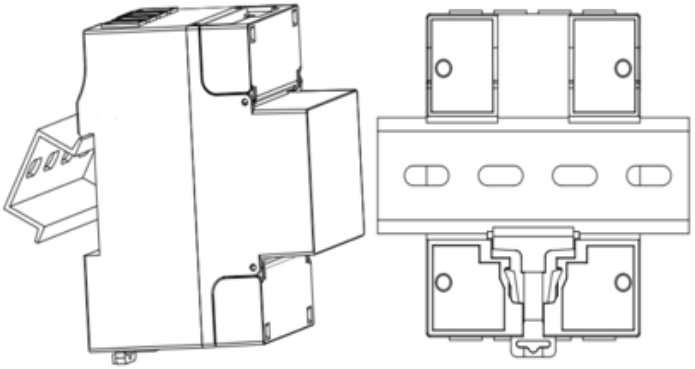
Cable Output



1.3.1 Installing

STEP 1 Install the Meter on the standard DIN35 mm rail.

STEP 2 Press the Meter down on the rail, then push it into position along the rail.

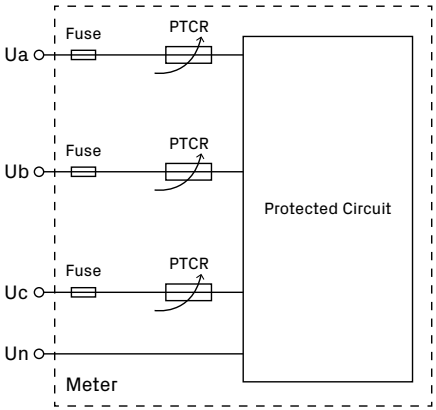


NOTE – The maximum torque of 1, 3, 4, 6, 7, 9, 10 and 12 end screws is 0.9 N·m and the recommended torque is 0.7 N·m. The maximum torque of 31, 33, 34, 36, 37, 39, 24 and 25 end screws is 0.5 N·m and the recommended torque is 0.3–0.4 N·m.

1.4 Preparing cables

Cable	Port	Types	Cross conductor sectional Surface range	Exterior Diameter	Source
Channel 1 Voltage cable	UA-1 and 3 UB-4 and 6 UC-7 and 9 UN 10 and 12	Single core outdoor copper cable	1.5~4 mm^2	9~14 mm	Prepared by the customer
Channel 2 Voltage cable	UA-1 UB-4 UC-7 UN-10	Single core outdoor copper cable	1.5~4 mm^2	9~14 mm	Prepared by the customer
Channel 2 current transformer cable	IA*-31 IA-33 IB*-34 IB-36 IC*-37 IC-39	Single nucleus outdoor copper cable	/	/	Prepared by the customer or supplied with current transformers
Communication cable	RS485A-24 RS485B-25	Two cores external shielded twisted pair copper cable	0.5 mm^2	6~8 mm	Provided by the manufacturer

NOTE – Each UA, UB, and UC phase in the Meter is connected with a fuse and thermistor to prevent damage caused by external short circuits. UA, UB, and UC do not require external fuses to be protected.



1.5 Wiring Scenarios

Current	Line Voltage	Connection Modes	Setting up the connection	Current transformed on the repor	Potential transformed on the report	Cabling Mode
· 80 A	Less than 500 V	Current vs voltage direct connection	Direct connection: SPEC = 1 (default)	CT = 1 (default)	PT = 1.0 (default)	3P4W: net = #34 (default)
						3P3W: net = #33
> 80A		Connecting via current and direct voltage transformers connection	Transformer connection: SPEC = 0	CT = Ratio of the installed current transformer		3P4W: net = n.34 (default
						3P3W: net = #33
· 0 A	> 500 V	Connecting via current and potential transformers			PT = Installed potential transformer ratio	3P4W: net = #34 (default)
						3P3W: net = #33

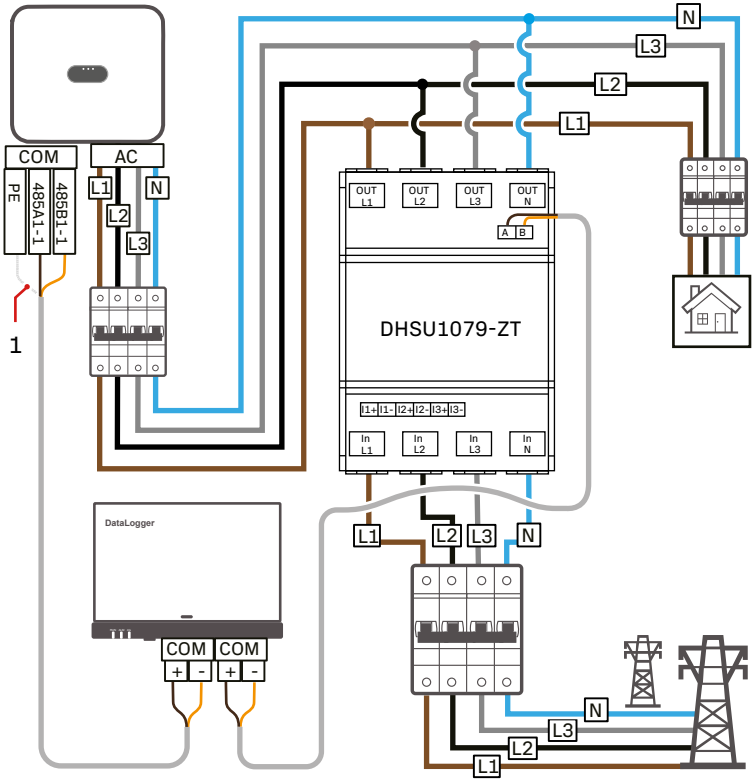
NOTE – CT and TP must be purchased separately.

– Parameters must be set after cable connections are completed. For details, see section “Parameter Settings”.

1.6 Direct connection of current and voltage (current = 80 A, line voltage = 500 V)

1.6.1 DataLogger network

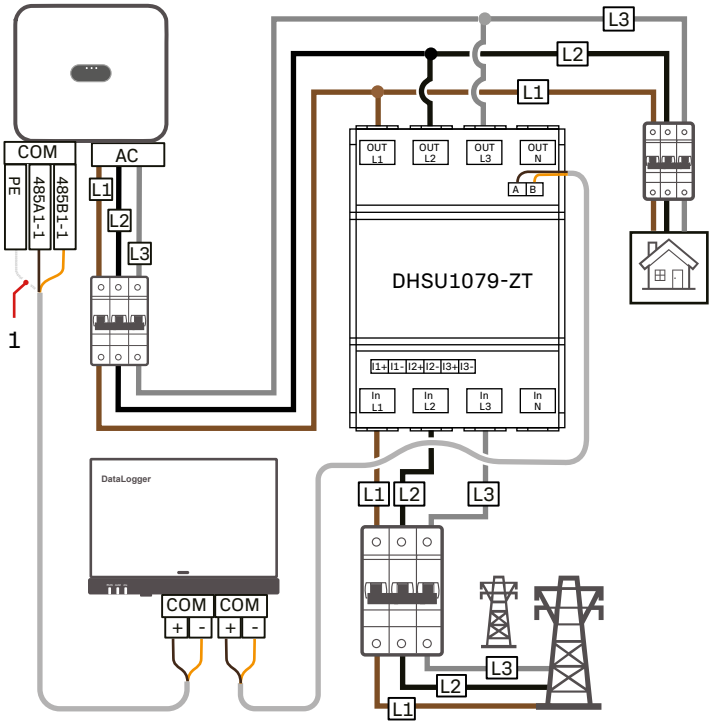
- **Four-wire three-phase connection.**



(1) Signal cable shielding layer

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger In the grid not DataLogger scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection.**



(1) Signal cable shielding layer

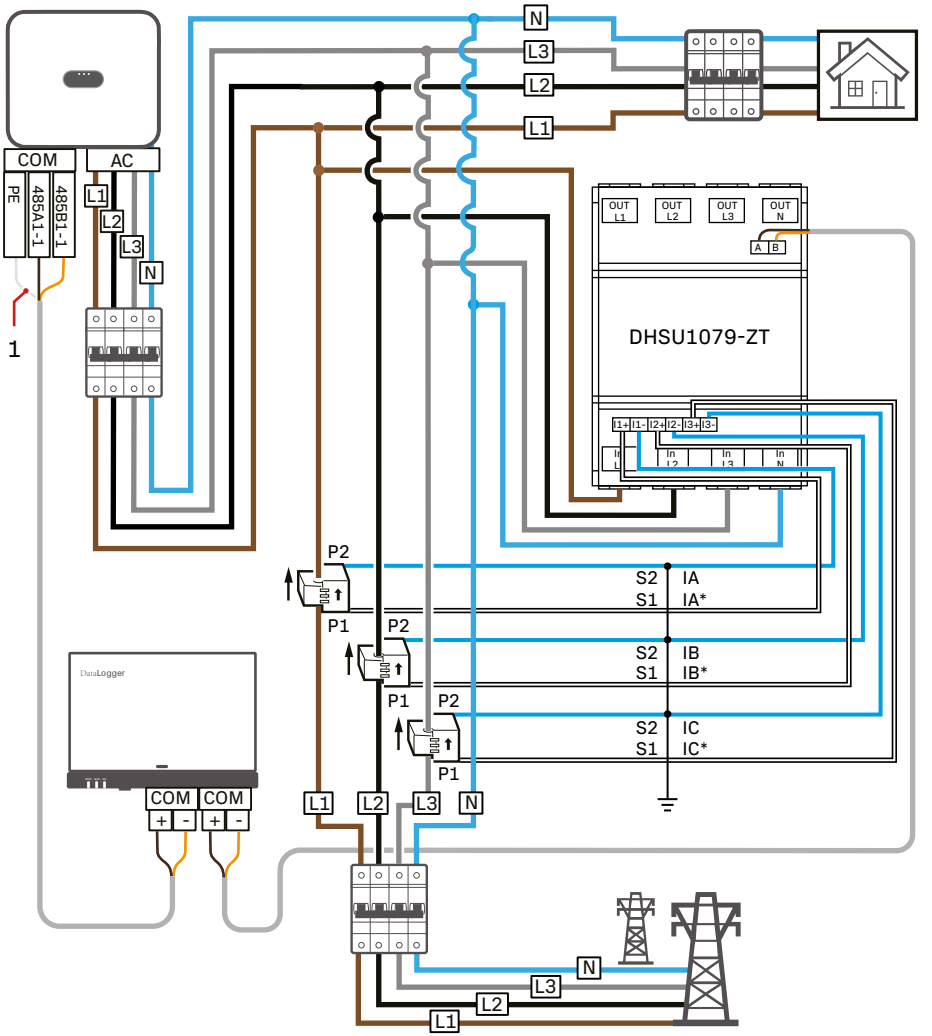
NOTE – Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”.

1.7 Connection via current transformer and direct voltage connection (current > 80 A, line voltage = 500 V)

Current transformer specifications: The recommended accuracy class is 0.5 and the current on the secondary side is 1 A or 5 A.

1.7.1 DataLogger network

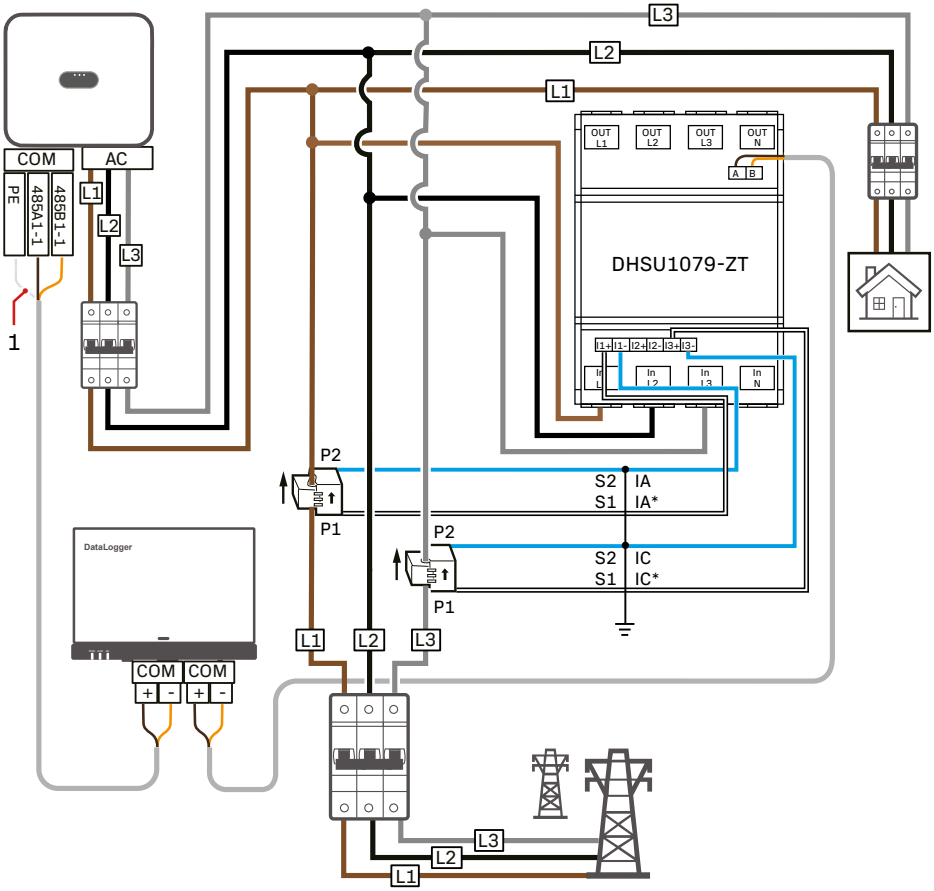
- **Four-wire three-phase connection**



(1) Shield layer of the signal cable

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger. In the non-DataLogger network scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection**



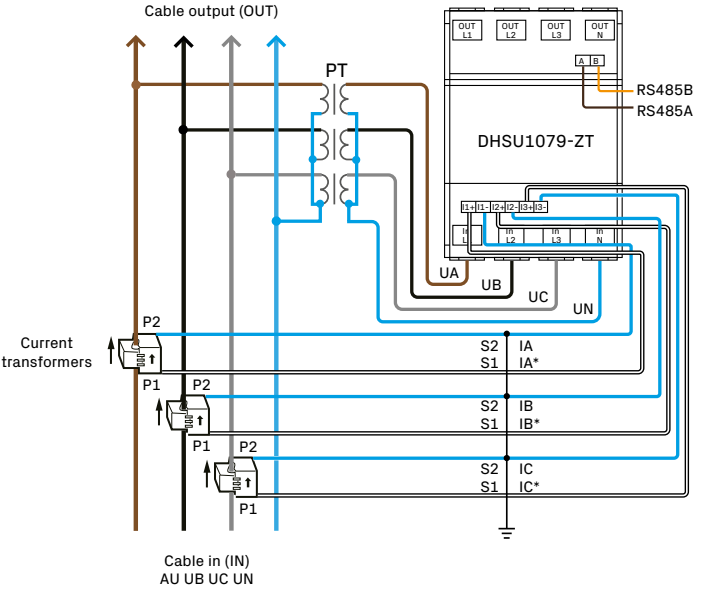
⚠ **ATTENTION –** Make sure the ground cable is safely installed. Inadequate grounding can cause electric shock.

NOTE – Once the cable connections are complete, the parameters must be set. For more details, see section “Parameter Settings”.
– For the three-phase three-wire connection, Phase B must not be connected to a current transformer.

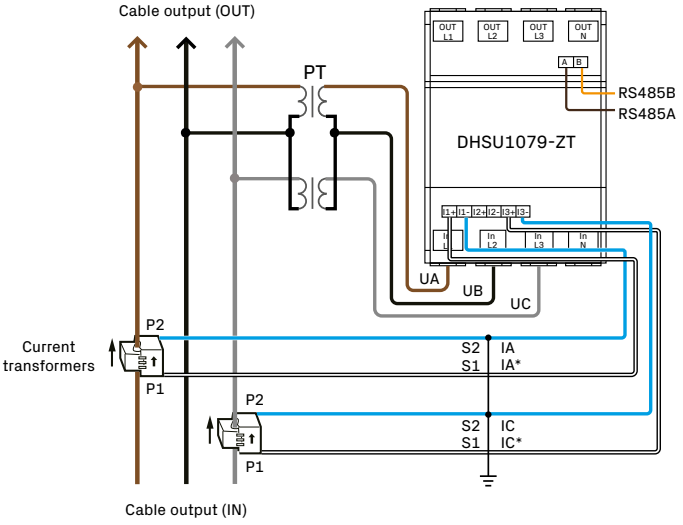
1.8 Connection via current transformer and potential transformer (current = 0 A, line voltage > 500 V)

Transformer potential specifications: The recommended accuracy class is 0.2 and the voltage on the secondary side is 100 V-380 V.

- **Drift Four-wire three-phase connection**



- **Three-phase three-wire connection**



⚠ **ATTENTION –** Make sure the ground cable is securely installed. Inadequate grounding can cause electric shock.

NOTE – The CT direction must be consistent with the arrow direction, as shown in figure above.

– Parameters must be set after the cable connections are complete. For details, see section “Parameter Settings”.

EN

1.9 Display

The ● button is used to change displays. Set the disp parameter to enable the rotation display function.

NOTE
- The status bar will display "r" when the sensor is in communication.
- The icon does not blink during communication.
- The status bar will show "1" when the sensor is in direct connection mode.
- In a three-phase three-wire system, the voltages Ua, Ub, and Uc represent the line voltages Uab, Ubc, and Uca, respectively.

- Nope.	Display	Description	- Nope.	Display	Description
1		Positive active energy = 1,000.00 kWh	2		Negative active energy = 2345.67 kWh
3		No parity, 8 data bits, and 1 stop bit; baud rate = 9600	4		011 is the address (default)
			18		Phase C power factor PFc = -0.50

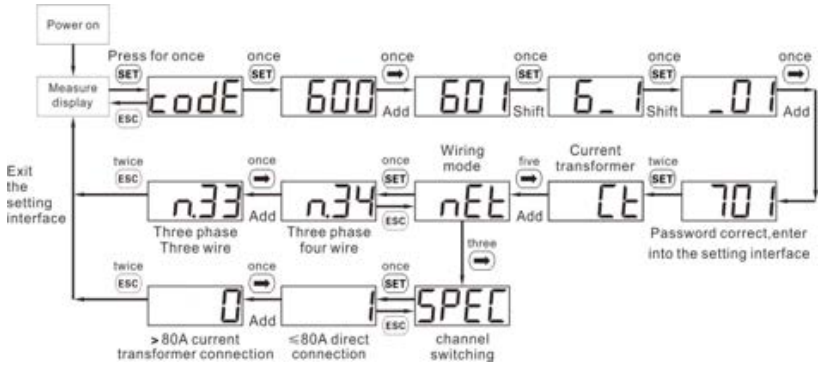
1.10 Parameter Settings

- Nope.	Parameter	Range of values	Description
1		1–6553	Current transformer ratio
2		0.1–999.9	Transformer potential ratio
3		2: No.2 3: No.1 4: E.1 5: 0.1	Communication protocol switchover: 2: No parity, 2 stop bits, #2 3: No parity, 1 stop bit, #1 4: Even parity, 1 stop bit, E.1 5: Odd Parity, 1 stop bit, 0.1
4		1–247	Modbus communication address
5		0: 1.200 1: 2,400 2: 4,800 3: 9,600 4: 7:20 pm 5: 115.2	Communication baud rate: 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 115200 bps
6		0: #34 1: #33	Cabling mode: 0: #34, four-wire three-phase 1: #33, three-wire three-phase
7		0–30	Rotation display time (s): 0: Fixed display 1–30: Rotate display time interval
8		0–30	Backlight time control (minutes): 0: Stationary 1–30: Backlit illumination hour without key operation
9		0: ct 1: DC	Channel switchover: 0: Transformer Connection 1: Direct Connection

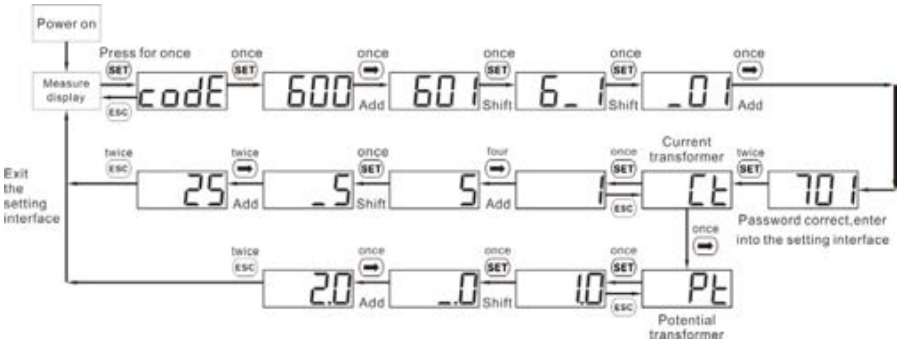
1.11 Parameter Setting Operations

Button description: **SET** means "confirm" or "cursor movement" (when entering numbers or parameters), **ESC** means "exit" and "add". The default user password is 701.

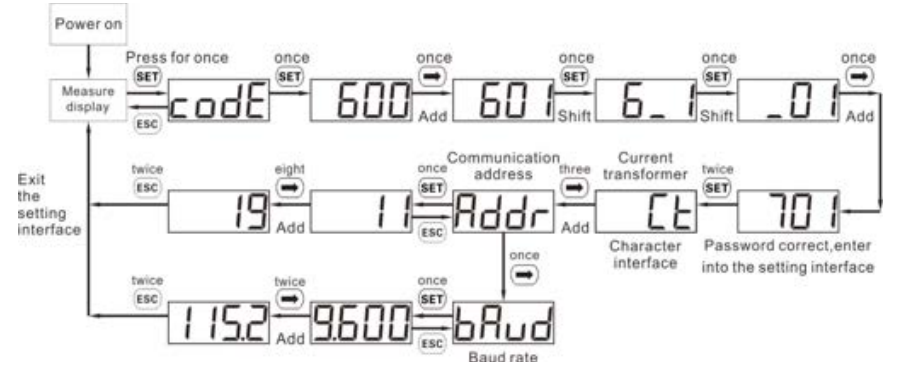
STEP 1 Set cabling mode (four-wire three-phase or three-wire three-phase) and channel switching (direct connection or current transformer connection):



STEP 2 Set the current transformation ratio or the potential transformation ratio:

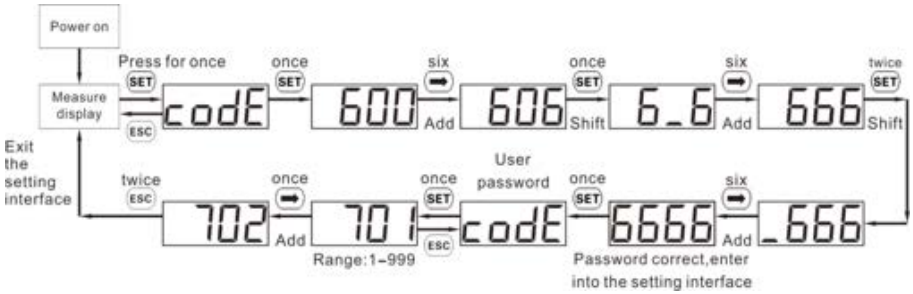


STEP 3 Set the communication address or bit rate:



NOTE – Communication parameters for the Meter are set prior to delivery. If communication is abnormal, check and set the parameters.

STEP 4 Change the user password:



1.11.1 Troubleshooting

Symptoms	Cause analysis	Troubleshooting method
No display after positive ignition	1. The cable connection is incorrect. 2. The voltage supplied to the meter is abnormal.	1. Connect the cables properly (see wiring diagrams). 2. Provide the correct voltage according to specifications.
Abnormal RS485 communication between people	1. The RS485 communication cable is disconnected, short-circuited or connected in reverse. 2. Communication the address, baud rate, data bit, and parity bit of the counter do not match those of the inverter.	1. If the communication cable is defective, replace it. 2. Set up communication the address, baud rate, data bit, and parity bit of the counter must be equal to those of the inverter by pressing buttons. For more details, see "Parameter Settings".
Inaccurate measurement	1. The cable connection is incorrect. Check whether the corresponding phase sequence of voltage and current is correct. 2. Check whether the high and low ends of the input of the current transformer are connected in reverse. If the Pa, Pb, and Pc values are negative, the high and low ends are not connected properly.	1. Connect the cables properly (see wiring diagrams). 2. If a negative value is, change the cable connection for the current transformer to ensure that the high and low ends are connected correctly.

1.11.2 Verifying Installation

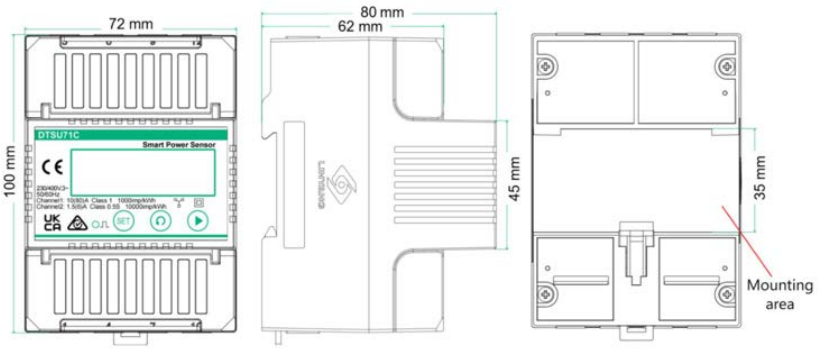
STEP 1 Check that all mounting brackets are securely installed and that all screws are tightened.

STEP 2 Check that all cables are reliably connected in the correct polarity without short-circuiting.

2. DTSU71C Meter

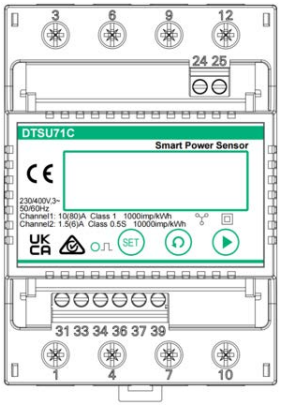
2.1 Overview

2.1.1 Dimensions

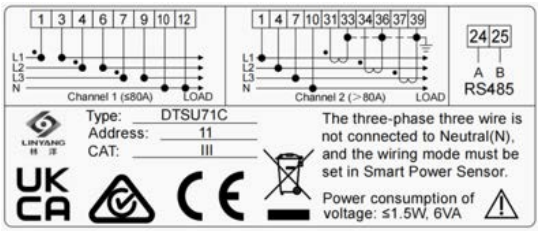


NOTE – The dimensional tolerance is 1 mm.

2.1.2 Front Panel Specification



2.1.3 Nameplate



2.2 Key Specifications

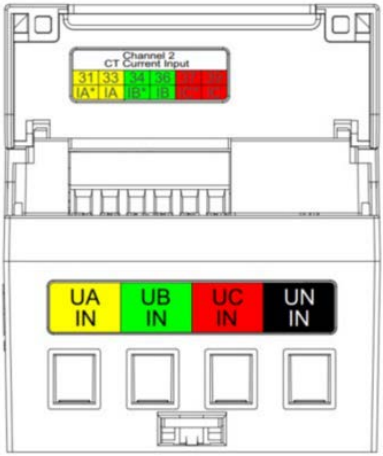
Category	DTSU71C
Rated voltage	AC 230 V/AC 400 V, 50 Hz/60 Hz
Current measurement range	Direct connection: 0–80 A Connected via current transformers: > 80 A
Voltage measuring range	90–1000 V (line voltage; potential) transformers are required if the voltage is greater than 500 V)
Accuracy of electricity measurement	Class 1 (error within ±1%)
Electric grid system	Four-wire three-phase or three-wire three-phase
Baud speed	4800/9600/19200/115200 bps (default 9600 bps)
Operation temperature	-25°C to +60°C
Installation Mode	Mounted on a guide rail
Certifications	EC, RCM and UKCA

2.3 Port definition

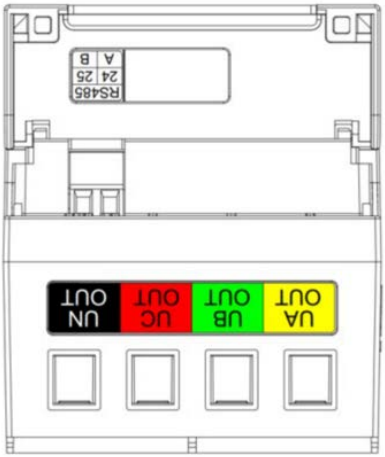
Input voltage: When the line voltage is less than or equal to 500 V, connect the meter directly. When the line voltage is greater than 500 V, connect the meter through potential transformers.

Input current: When the input current is between 0 A and 80 A, connect the meter directly (channel 1). When the input current is greater than or equal to 80 A, connect the meter via current transformers (channel 2).

Cable Input



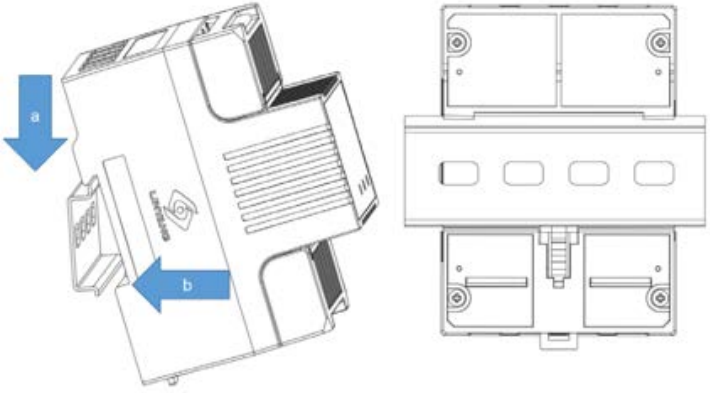
Cable Output



2.3.1 Installing

STEP 1 Install the Meter on the standard DIN35mm rail.

STEP 2 Push the Meter down on the rail, then push it into position along the rail.

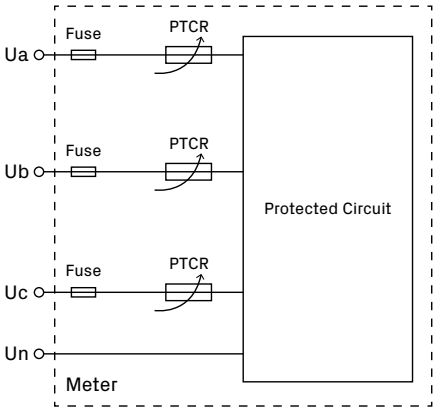


2.4 Preparing cables

Cable	Port	Types	Conductor cross-sectional area range	Exterior Diameter	Source
Channel 1 Voltage cable	UA-1 and 3 UB-4 and 6 UC-7 and 9 UN 10 and 12	Single core outdoor copper cable	25 mm^2	10 mm	Prepared by the customer
Channel 2 Voltage cable	UA-1 UB-4 UC-7 UN-10	Single core outdoor copper cable	4~25 mm^2	5~10 mm	Prepared by the customer
Channel 2 current transformer cable	IA*-31 IA-33 IB*-34 IB-36 IC*-37 IC-39	Single core outdoor copper cable	2~4 mm^2	3~5 mm	Prepared by the customer or supplied with current transformers
Communication cable	RS485A-24 RS485B-25	Two intertwined external shielded cores copper cable pair	0.25~1.5 mm^2	4~11 mm	Provided by the manufacturer

NOTE – The maximum torque for 1, 3, 4, 6, 7, 9, 10 and 12 end screws is 1.7 N·m and the recommended torque is 0.9-1.1 N·m. The maximum torque of 31, 33, 34, 36, 37, 39, 24 and 25 end screws is 0.4 N·m and the recommended torque is 0.15–0.25 N·m.

NOTE – Each UA, UB and UC phase in the Meter is connected with a fuse and thermistor to prevent damage caused by external short circuits. UA, UB, and UC do not require external fuses to be protected.



2.5 Wiring Scenarios

Current	Line Voltage	Connection Modes	Setting up the connection	Current transformation ratio	Potential transformation ratio	Wiring harness mode
· 80 A	Less than 500 V	Direct connection of current and voltage	Direct connection: SPEC = 1 (default)	CT = 1 (default)	PT = 1.0 (default)	3P4W: net = #34 (default)
						3P3W: net = #33
> 80A		Connecting via Current transformers and direct voltage connection	Transformer connection: SPEC = 0	CT = Ratio of the installed current transformer		3P4W: net = n.34 (default
						3P3W: net = #33
· 0 A	> 500 V	Connection via current transformers and potential transformers			PT = Installed potential transformer ratio	3P4W: net = #34 (default)
						3P3W: net = #33

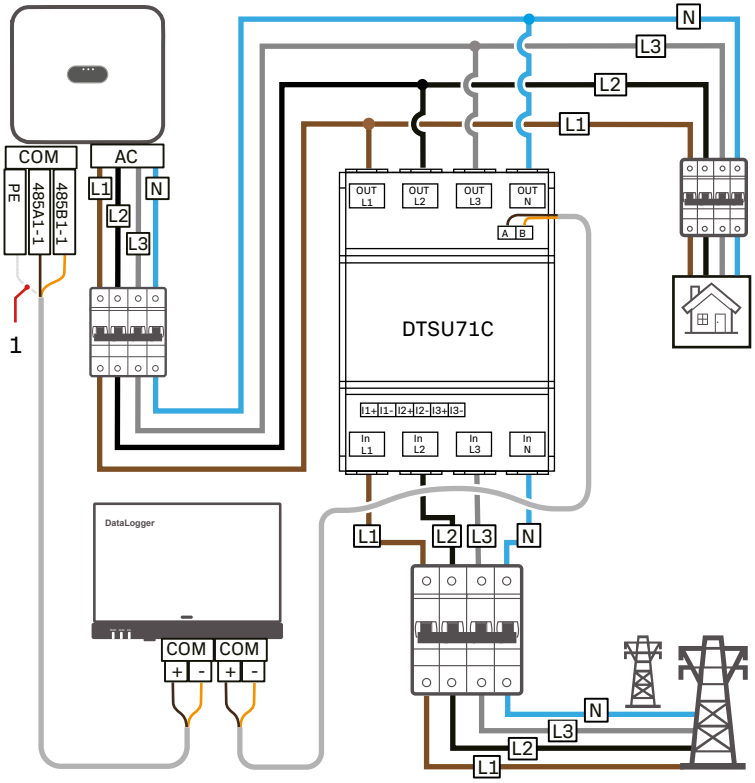
NOTE – CT and TP must be purchased separately.

– Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”.

2.6 Direct connection of current and voltage (current voltage > 80 A, line voltage 3.3 500 V)

2.6.1 DataLogger network

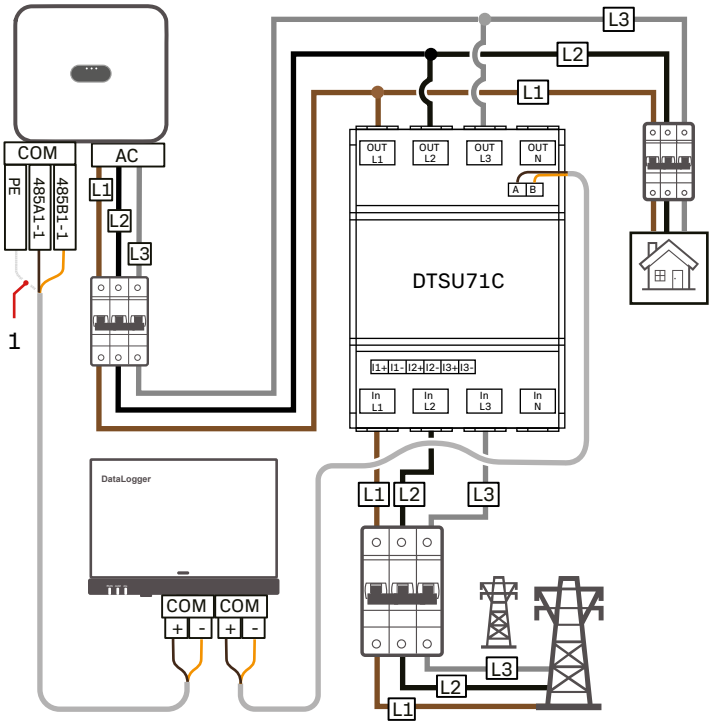
- **Drift Four-wire three-phase connection**



(1) Signal cable shielding layer

NOTE – In the DataLogger grid scenario, the power meter is connected to the DataLogger. In the non-DataLogger network scenario, the power meter is connected to the inverter.

- **Drift Three-phase three-wire connection**



(1) Signal cable shielding layer

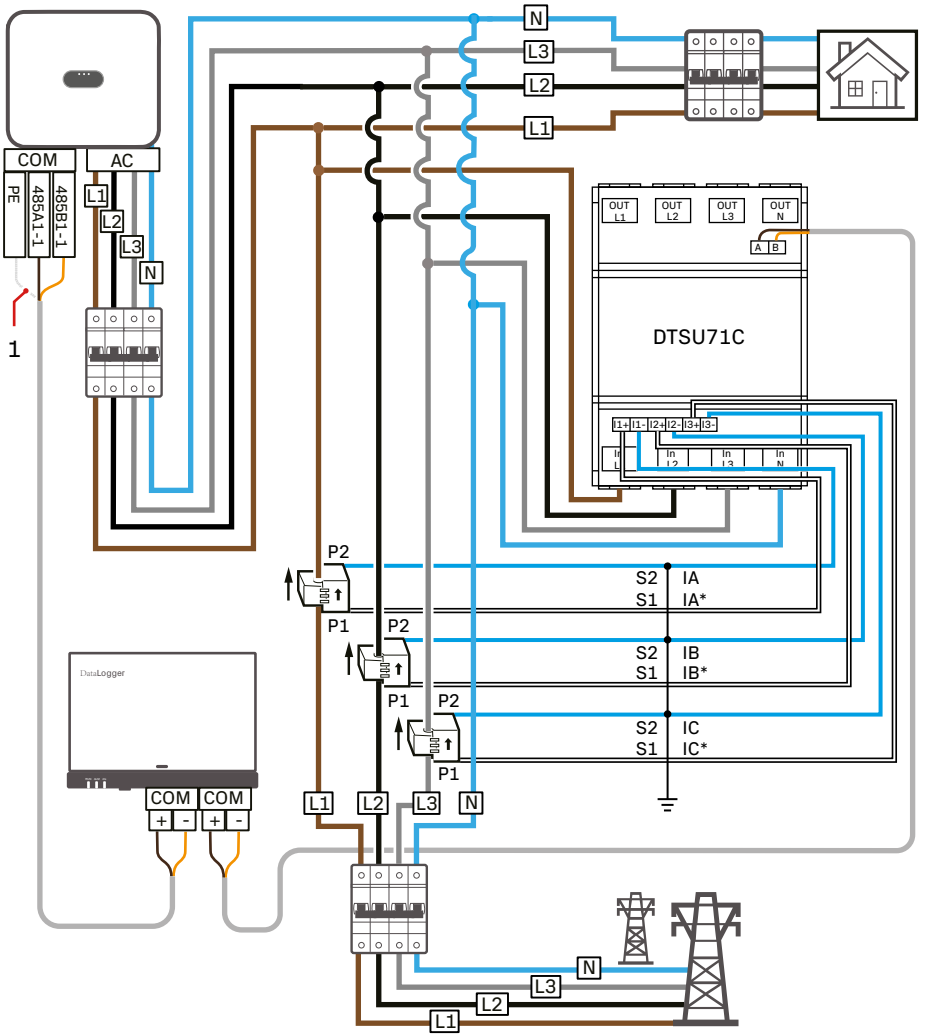
NOTE – Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”.

2.7 Connection via current transformer and direct voltage connection (current > 80 A, line voltage = 500 V)

Current transformer specifications: The recommended accuracy class is 0.5 and the current on the secondary side is 1 A or 5 A.

2.7.1 DataLogger network

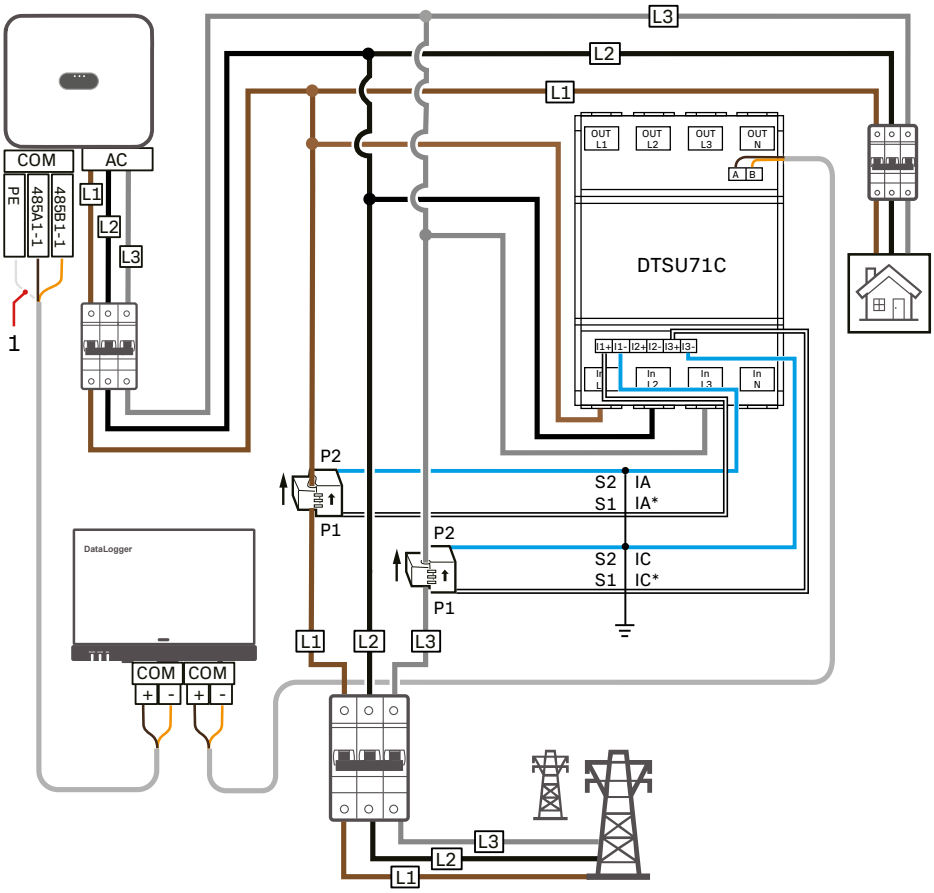
- **Drift Four-wire three-phase connection**



(1) Signal cable shielding layer

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger. In the grid not DataLogger scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection**



(1) Signal cable shielding layer

⚠ **ATTENTION –** Make sure the ground cable is securely installed. Inadequate grounding can cause electric shock.

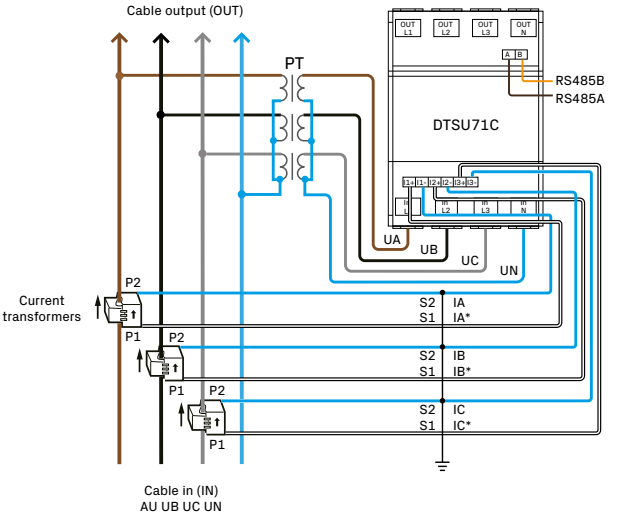
NOTE – Once the cable connections are complete, the parameters must be set. For more details, see section “Parameter Settings”.

– For three-phase three-wire connection, phase B does not need to connect to a current transformer.

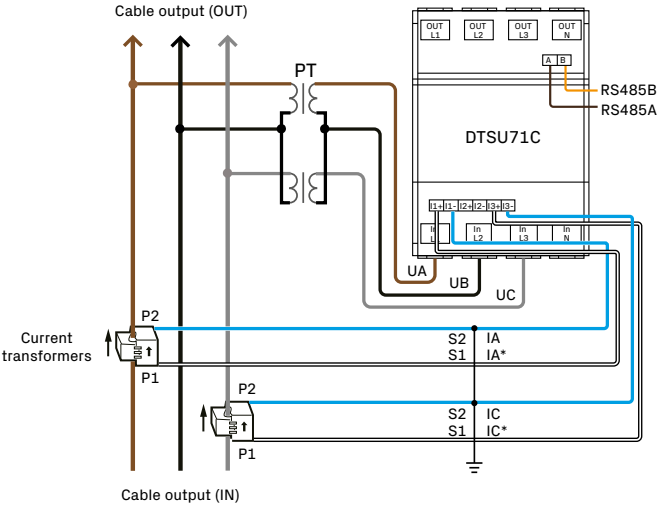
2.8 Connection via current transformer and potential transformer 3.5 (current = 0 A, line voltage > 500 V)

Transformer potential specifications: The recommended accuracy class is 0.2 and the voltage on the secondary side is 100 V-380 V.

- **Drift Four-wire three-phase connection**



- **Three-phase three-wire connection**



⚠ **ATTENTION –** Make sure that safely installed. Poor grounding may cause electric shock.

NOTE – The CT direction must be consistent with the direction of the arrow as shown in the previous figure.

– You need set the parameters after the cable connections are complete. For more details, see section “Parameter Settings”.

2.9 Display

The ● button is used to change displays. Set the disp parameter to enable the rotation display function.

NOTE – The status bar will display "r" when the sensor is in communication.
– The icon does not blink during communication.
– The status bar will show "1" when the sensor is in direct connection mode.
– In a three-phase three-wire system, the voltages Ua, Ub, and Uc represent the line voltages Uab, Ubc, and Uca, respectively.

- Nope.	Display	Description	- Nope.	Display	Description
1		Positive active energy = 1,000.00 kWh	2		Negative active energy = 2345.67 kWh
3		No parity, 8 data bits, and 1 stop bit; baud rate = 9600 bps (default)	4		011 is the address (default)
5		Phase A voltage = 220.0 V	6		Phase B voltage = 220.1 V
7		Phase C voltage = 220.2 V	8		Phase A current = 5,000 A
9		Phase B current = 5.001A	10		Phase C current = 5.002 A
11		Total power in active phase = 3.291 kW	12		Active Phase A power = 1.090 kW
13		Active Phase B power = 1,101 kW	14		Phase C active power = 1.100 kW
15		Total phase power factor PFt = 0.500	16		Phase A power factor PFa = 1,000
17		Phase B power factor PFb = 0.500	18		Phase C power factor PFc = -0.50

2.10 Parameter Settings

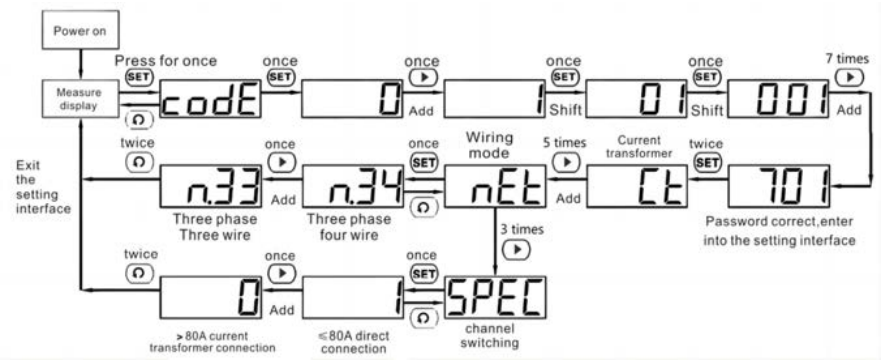
- Nope.	Parameter	Range of values	Description
1		1–6553	Current transformer ratio
2		0.1–999.9	Transformer potential ratio
3		1: 645 2: No.2 3: No.1 4: E.1 5: 0.1	Communication protocol switchover: 1: Factory mode 2: No parity, 2 stop bits, #2 3: No parity, 1 stop bit, #1 4: Even parity, 1 stop bit, E.1 5: Odd Parity, 1 stop bit, 0.1
4		1–247	Modbus communication address
5		0: 1.200 1: 2,400 2: 4,800 3: 9,600 4: 7:20 pm 5: 115.2	Communication baud rate: 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 115200 bps

6	nEt	0: #34 1: #33	Cabling mode: 0: #34, four-wire three-phase 1: #33, three-wire three-phase
7	dISP	0–30	Rotation display time (s): 0: Fixed display 1–30: Rotate display time interval
8	bLCd	0–30	Backlight time control (minutes): 0: Stationary 1–30: Backlit illumination hour without key operation
9	SPEC	0: ct 1: DC	Channel switchover: 0: Transformer Connection 1: Direct Connection

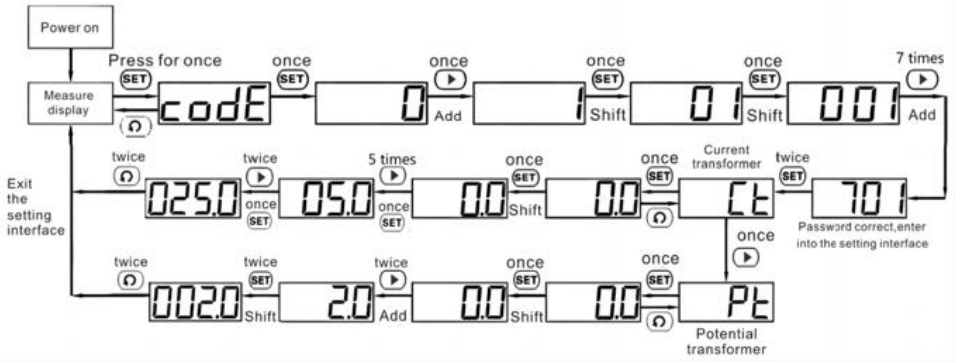
2.11 Parameter Setting Operations

Button description: **SET** means "confirmation" or "cursor movement" (when entering numbers or parameters), **ESC** means “exit” and means “add.” The default user password is 701.

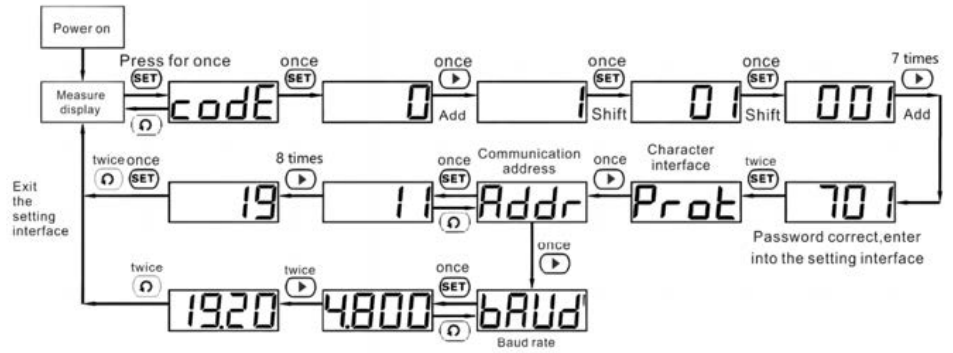
STEP 1 Set cabling mode (four-wire three-phase or three-phase three-wire) and channel switching (direct connection or connection to the current transformer):



STEP 2 Set the current transformation ratio or the potential transformation ratio:

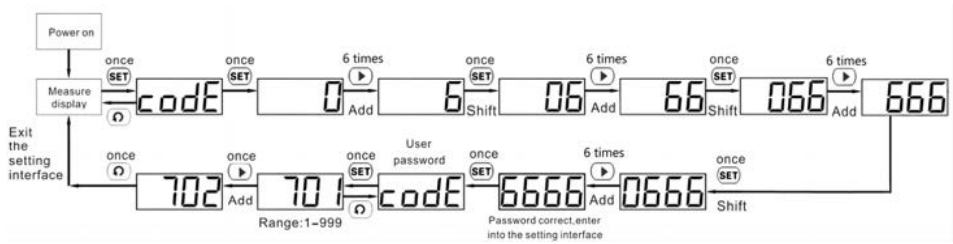


STEP 3 Set the communication address or bit rate:



NOTE – Communication parameters for the Meter are set prior to delivery. If communication is abnormal, check and set the parameters.

STEP 4 Change the user password:



2.11.1 Troubleshooting

Symptoms	Cause analysis	Troubleshooting method
No display after power on	**1.** The cable connection is incorrect. **2.** The voltage supplied to the meter is abnormal.	**1.** Connect the cables properly (see wiring diagrams). **2.** Provide the correct voltage according to specifications.
Abnormal RS485 communication	**1.** The RS485 communication cable is disconnected, short-circuited, or connected in reverse. **2.** The communication address, transmission rate, data bit and parity bit of the counter do not match those of the inverter.	**1.** If the communication cable is defective, replace it. **2.** Set up communication the address, baud rate, data bit, and parity bit of the counter must be the same as those of the inverter when pressing the buttons. Refer to "Parameter Settings" for details.
Inaccurate measurement	**1.** The cable connection is incorrect. Check whether the corresponding phase sequence of voltage and current is correct. **2.** Check whether the high and low ends of the input of the current transformer are connected in reverse. If the Pa, Pb, and Pc values are negative, the high and low ends are connected incorrectly.	**1.** Connect the cables properly (see wiring diagrams). **2.** If a negative value is displayed, change the cable connection for the current transformer to ensure that the high and low the ends are connected properly.

2.11.2 Verifying Installation

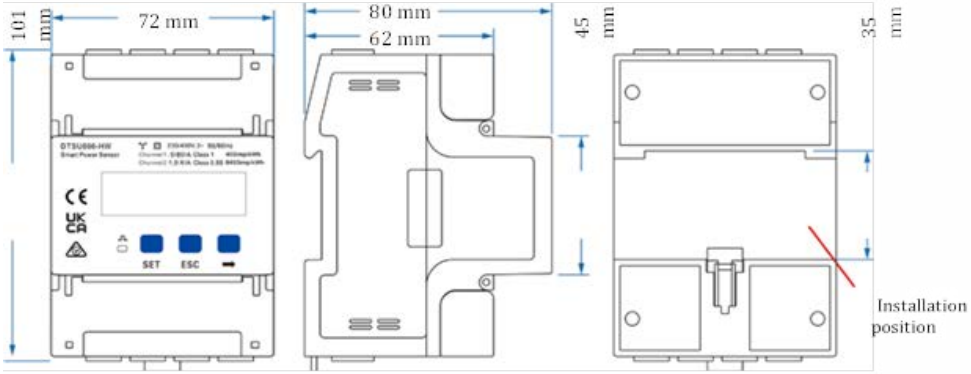
STEP 1 Check that all mounting brackets are securely installed and that all screws are tightened.

STEP 2 Check that all cables are reliably connected in the correct polarity without short-circuiting.

3. DTSU666-HW Meter

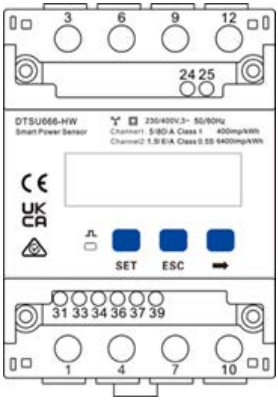
3.1 Overview

3.1.1 Dimensions

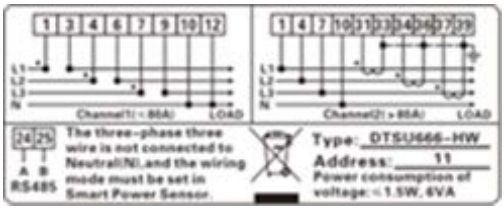


NOTE – The dimensional tolerance is 1 mm.

3.1.2 Front Panel Specification



3.1.3 Nameplate



3.2 Key Specifications

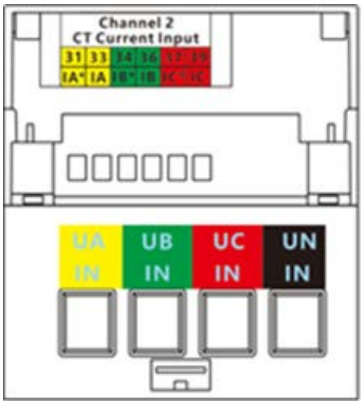
Category	DTSU666-HW
Rated voltage	AC 230 V/AC 400 V, 50 Hz/60 Hz
Current measurement range	Direct connection: 0–80 A Connected via current transformers: > 80 A
Voltage measuring range	90–1000 V (line voltage; potential) transformers are required if the voltage is greater than 500 V)
Accuracy of electricity measurement	Class 1 (error within ±1%)
Electric grid system	Four-wire three-phase or three-wire three-phase
Baud speed	4800/9600/19200/115200 bps (default 9600 bps)
Operation temperature	-25°C to +60°C
Installation Mode	Mounted on a guide rail
Certifications	EC, RCM and UKCA

3.3 Port definition

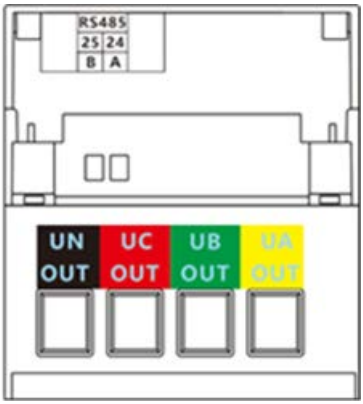
Input voltage: When the line voltage is less than or equal to 500 V, connect the meter directly. When the line voltage is greater than 500 V, connect the meter through potential transformers.

Input current: When the input current is between 0 A and 80 A, connect the meter directly (channel 1). When the input current is greater than or equal to 80 A, connect the meter via current transformers (channel 2).

Cable Input



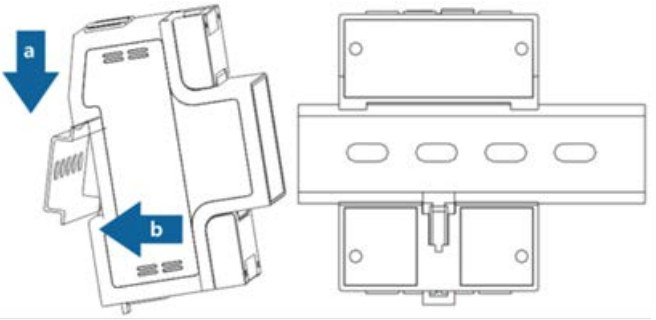
Cable Output



3.3.1 Installing

STEP 1 Install the Meter on the standard DIN35 mm rail.

STEP 2 Push the Meter down on the rail, then push it into position along the guide rail.

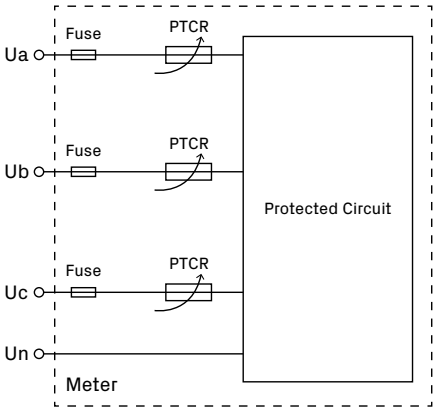


3.4 Preparing cables

Cable	Port	Types	Conductor cross-sectional area range	Exterior Diameter	Source
Channel 1 Voltage cable	UA-1 and 3 UB-4 and 6 UC-7 and 9 UN 10 and 12	Single core outdoor copper cable	25 mm^2	10 mm	Prepared by the customer
Channel 2 Voltage cable	UA-1 UB-4 UC-7 UN-10	Single core outdoor copper cable	4~25 mm^2	5~10 mm	Prepared by the customer
Channel 2 current transformer cable	IA*-31 IA-33 IB*-34 IB-36 IC*-37 IC-39	Single core outdoor copper cable	2~4 mm^2	3~5 mm	Prepared by the customer or supplied with current transformers
Communication cable	RS485A-24 RS485B-25	Two intertwined external shielded cores copper cable pair	0.25~1.5mm^2	4~11 mm	Provided by the manufacturer

NOTE – The maximum torque for 1, 3, 4, 6, 7, 9, 10 and 12 end screws is 1.7 N·m and the recommended torque is 0.9-1.1 N·m. The maximum torque of 31, 33, 34, 36, 37, 39, 24 and 25 end screws is 0.4 N·m and the recommended torque is 0.15–0.25 N·m.

NOTE – Each UA, UB and UC phase in the Meter is connected with a fuse and thermistor to prevent damage caused by external short circuits. UA, UB, and UC do not require external fuses to be protected.



3.5 Wiring Scenarios

Current	Line Voltage	Connection Modes	Setting up the connection	Current transformation ratio	Potential transformation ratio	Wiring harness mode
· 80 A	Less than 500 V	Direct connection of current and voltage	Direct connection: SPEC = 1 (default)	CT = 1 (default)	PT = 1.0 (default)	3P4W: net = #34 (default)
						3P3W: net = #33
> 80A		Connecting via Current transformers and direct voltage connection	Transformer connection: SPEC = 0	CT = Ratio of the installed current transformer		3P4W: net = n.34 (default
						3P3W: net = #33
· 0 A	> 500 V	Connection via current transformers and potential transformers			PT = Installed potential transformer ratio	3P4W: net = #34 (default)
						3P3W: net = #33

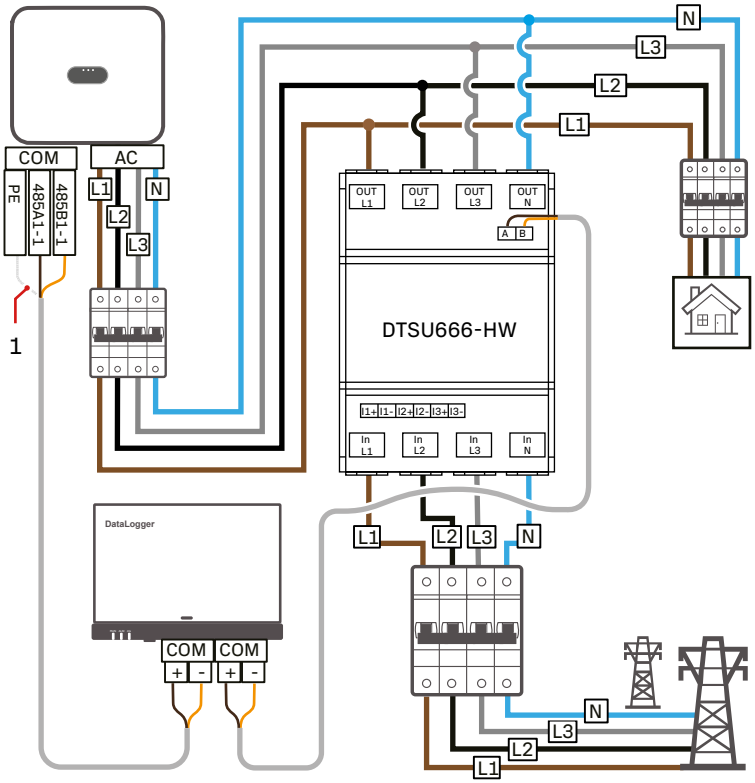
NOTE – Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”.

– This meter is generally used in high-current commercial and industrial scenarios. In outdoor CT scenarios, the current accuracy on the secondary side is ±5 mA. For example, if you select a CT with a transformer ratio of 400/1, the error is ±2 A. This gauge is not recommended in scenarios where the power of the plant is low or the control accuracy of the grid connection point is high. Instead, use a meter with more precision.

3.6 Direct connection of current and voltage (current = 80 A, line voltage = 500 V)

3.6.1 DataLogger network

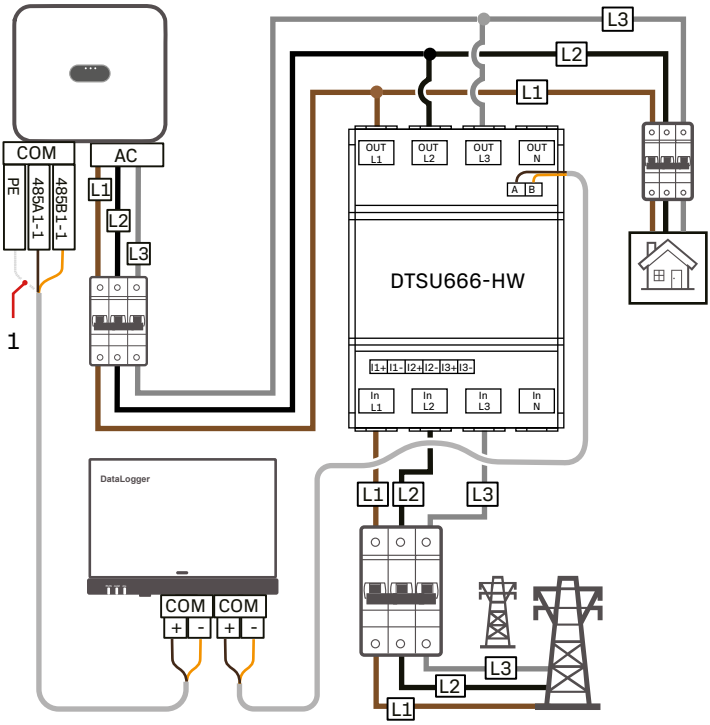
- **Four-wire three-phase connection**



(1) Signal cable shielding layer

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger In the grid not DataLogger scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection**



(1) Signal cable shielding layer

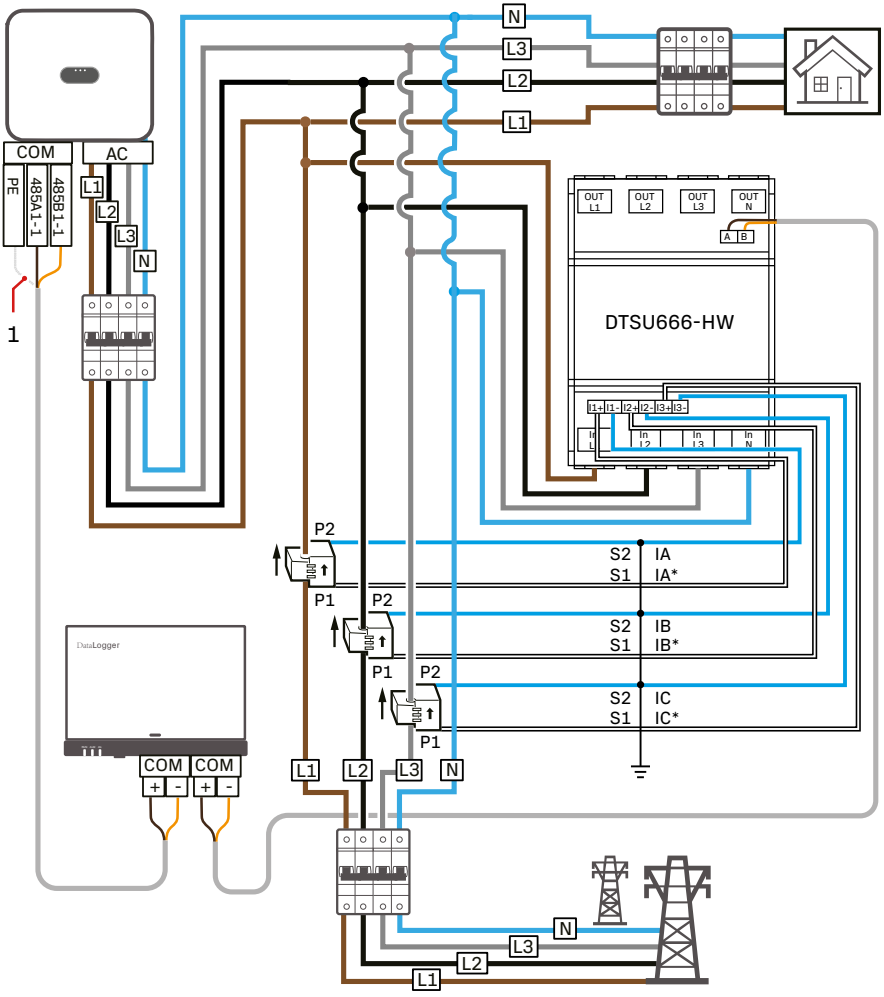
NOTE – Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”.

3.7 Connection via current transformer and direct voltage connection (current > 80 A, line voltage = 500 V)

Current transformer specifications: the accuracy class is 0.5 and the current on the secondary the side is 1 A or 5

3.7.1 DataLogger network

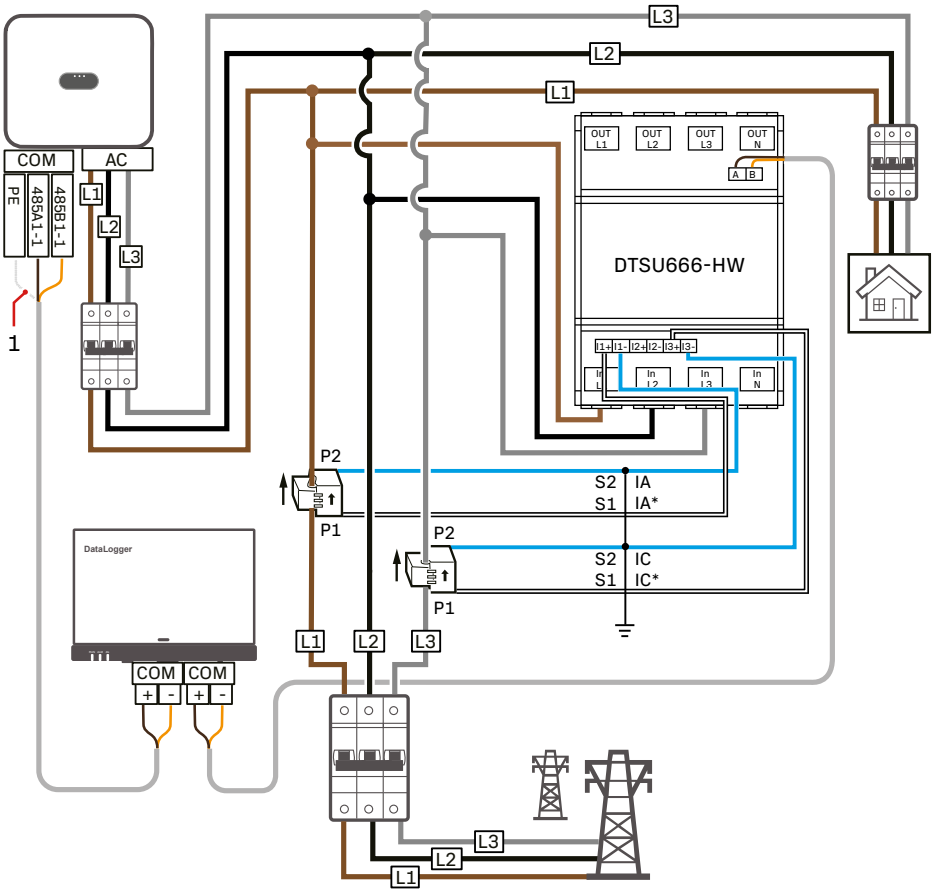
- **Four-wire three-phase connection**



(1) Signal cable shielding layer

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger In the grid not DataLogger scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection**



(1) Signal cable shielding layer

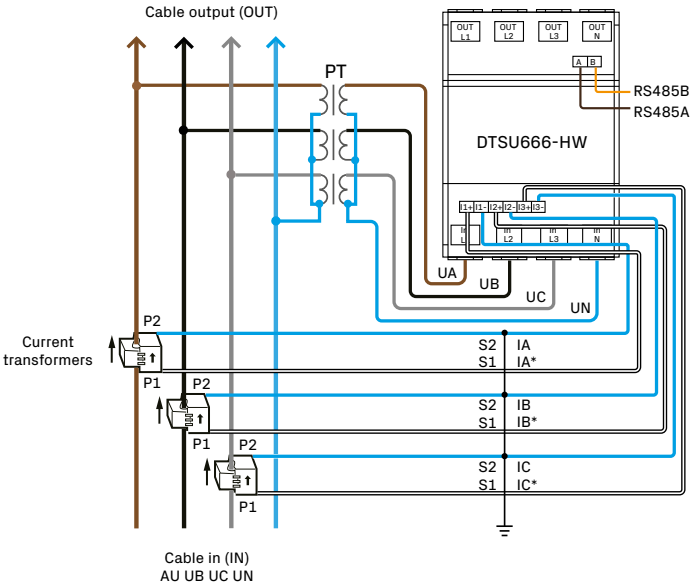
⚠ **ATTENTION –** Make sure that the ground cable is securely installed. Inadequate grounding can cause electric

NOTE – You must set parameters after cable connections are complete. For details, see section “Parameter Settings”.

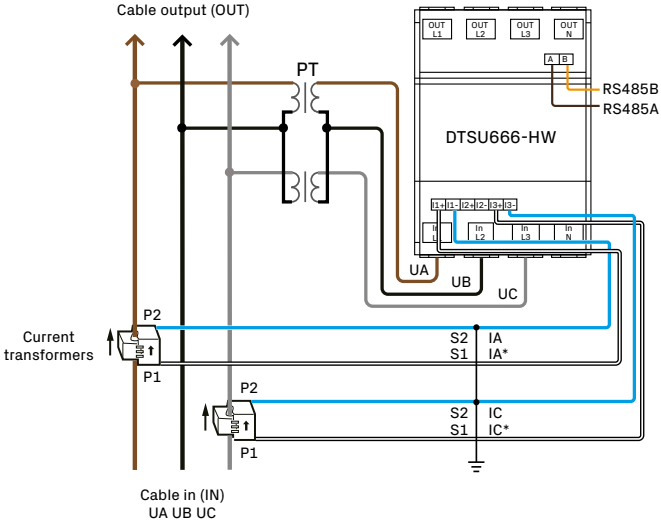
– For the three-phase triphile connection, phase B does not need to connect to a current transformer.

3.8 Connection via current transformer and potential transformer 3.5 (current = 0 A, line voltage > 500 V)

- **Drift Four-wire three-phase connection**



- **Three-phase three-wire connection**



⚠ **ATTENTION –** Make sure the ground cable is securely installed. Poor grounding may cause electric shock.

NOTE – You must set after the cable connections are completed. For more details, see section “Displays and Parameters settings”.

3.9 Display

The ● button is used to change displays. Set the disp parameter to enable the rotation display function.

NOTE – The status bar will display" ᴛ" when the sensor is in communication.
– The ""icon does not blink during communication.
– The status bar will show "1" when the sensor is in direct connection mode.
– In a three-phase three-wire system, the voltages Ua, Ub, and Uc represent the line voltages Uab, Ubc, and Uca, respectively.

- Nope.	Display	Description	- Nope.	Display	Description
1		Positive active energy = 1,000.00 kWh	2		Negative active energy = 2345.67 kWh
3		No parity, 8 data bits, and 1 stop bit; baud rate = 9600 bps (default)	4		011 is the address (default)
5			6		Phase B voltage = 220.1 V
7			8		Phase A current = 5,000 A
9			10		Phase C current = 5.002 A
11			12		Active Phase A power = 1.090 kW
13			14		Phase C active power = 1.100 kW
15			16		Phase A power factor PFa = 1,000
17		Phase B power factor PFb = 0.500	18		Phase C power factor PFc = -0.50

3.10 Parameter Settings

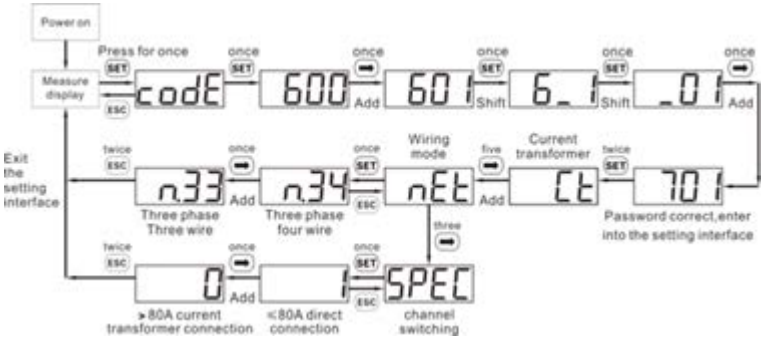
- Nope.	Parameter	Range of values	Description
1		1–6553	Current transformer ratio
2		0.1–999.9	Transformer potential ratio
3		1: 645 2: No.2 3: No.1 4: E.1 5: 0.1	Communication protocol switchove: 1: Factory mode 2: No parity, 2 stop bits, #2 3: No parity, 1 stop bit, #1 4: Even parity, 1 stop bit, E.1 5: Odd Parity, 1 stop bit, 0.1
4		1–247	Modbus communication address

5	bAud	0: 1.200 1: 2,400 2: 4,800 3: 9,600 4: 7:20 pm 5: 115.2	Communication baud rate: 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 115200 bps
6	nEt	0: #34 1: #33	Cabling mode: 0: #34, four-wire three-phase 1: #33, three-wire three-phase
7	dISP	0–30	Rotation display time (s): 0: Fixed display 1–30: Rotate display time interval
8	bLCd	0–30	Backlight time control (minutes): 0: Stationary 1–30: Backlit illumination hour without key operation
9	SPEC	0: ct 1: DC	Channel switchover: 0: Transformer Connection 1: Direct Connection

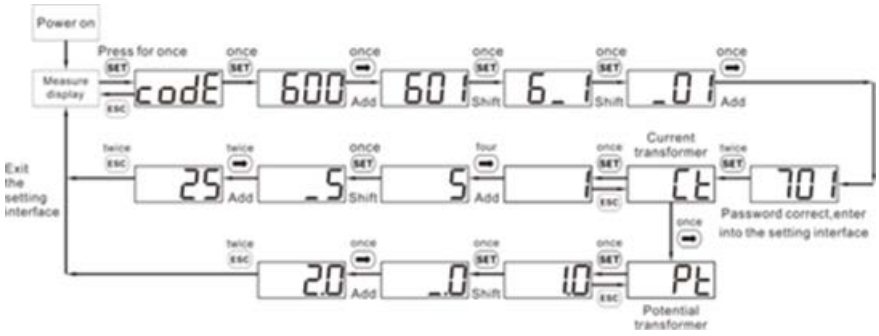
3.11 Parameter Setting Operations

Button description: **SET** means "confirm" or "cursor movement" (when entering numbers or parameters), **ESC** means "exit" and "add". The default user password is 701.

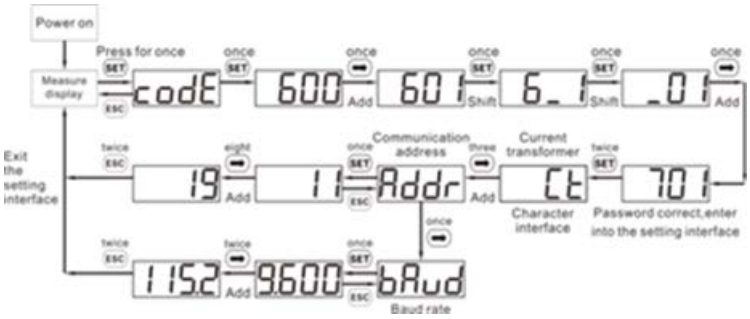
STEP 1 Set cabling mode (four-wire three-phase or three-phase three-wire) and channel switching (direct connection or connection to the current transformer):



STEP 2 Set the current transformation ratio or the potential transformation ratio:

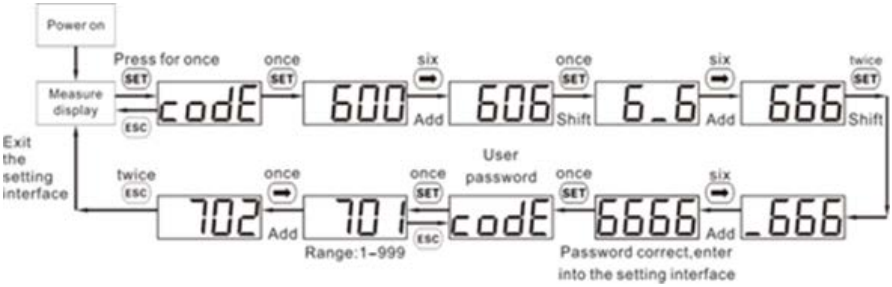


STEP 3 Set the communication address or bit rate:



NOTE – Communication parameters for the Meter are set prior to delivery. If communication is abnormal, check and set the parameters.

STEP 4 Change the user password:



3.11.1 Troubleshooting

Symptoms	Cause analysis	Troubleshooting method
No display after power on	1. The cable connection is incorrect. 2. The voltage supplied to the meter is abnormal.	1. Connect the cables properly (see wiring diagrams). 2. Provide the correct voltage according to specifications.
Abnormal RS485 communication	1. The RS485 communication cable is disconnected, short-circuited, or connected in reverse. 2. The communication address, transmission rate, data bit and parity bit of the counter do not match those of the inverter.	1. If the communication cable is defective, replace it. 2. Set up communication the address, baud rate, data bit, and parity bit of the counter must be the same as those of the inverter when pressing the buttons. Refer to "Parameter Settings" for details.
Inaccurate measurement	1. The cable connection is incorrect. Check whether the corresponding phase sequence of voltage and current is correct. 2. Check whether the high and low ends of the input of the current transformer are connected in reverse. If the values Pa, Pb, and Pc are negative, the high and low ends are connected incorrectly.	1. Connect the cables properly (see wiring diagrams). 2. If a negative value is displayed, change the cable connection for the current transformer to ensure that the high and low the ends are connected properly.

3.11.2 Verifying Installation

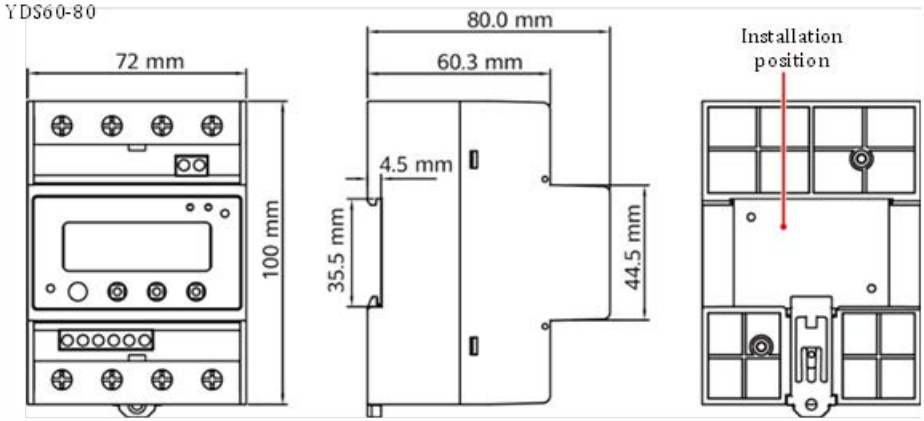
STEP 1 Check that all mounting brackets are securely installed and that all screws are tightened.

STEP 2 Check that all cables are reliably connected in the correct polarity without short-circuiting.

4. YDS60-80 Meter

4.1 Overview

4.1.1 Dimensions

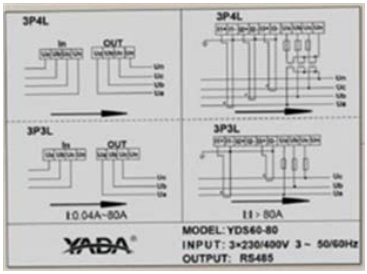


NOTE – The dimensional tolerance is 1 mm.

4.1.2 Front Panel Specification



4.1.3 Nameplate



4.2 Key Specifications

Category	YDS60-80
Rated voltage	AC 230 V/AC 400 V, 50 Hz/60 Hz
Current measurement range	Direct connection: 0–80 A Connected via current transformers: > 80 A
Voltage measuring range	90–1000 V (line voltage; potential transformers are required if the voltage is greater than 500 V)
Accuracy of electricity measurement	Class 1 (error within ±1%)
Electric grid system	Four-wire three-phase or three-wire three-phase
Baud speed	4800/9600/19200/115200 bps (default 9600 bps)
Operation temperature	-25°C to +60°C
Installation Mode	Mounted on a guide rail
Certifications	EC, RCM and UKCA

4.3 Port definition

Input voltage: When the line voltage is less than or equal to 500 V, connect the meter directly. When the line voltage is greater than 500 V, connect the meter through potential transformers.

Input current: When the input current is between 0 A and 80 A, connect the meter directly (channel 1). When the input current is greater than or equal to 80 A, connect the meter via current transformers (channel 2).

Cable Input



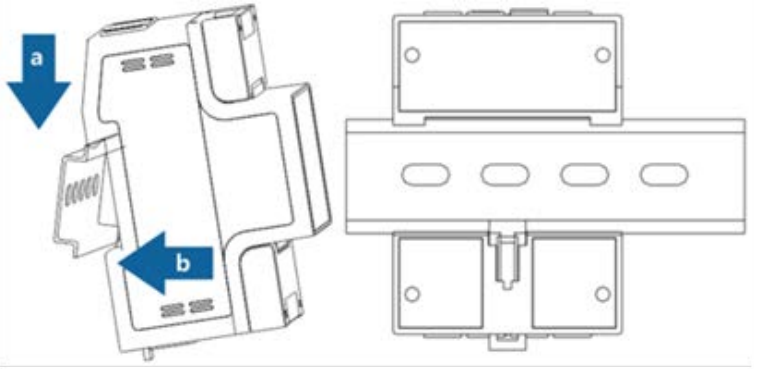
Cable Output



4.3.1 Installing

STEP 1 Install the Meter on the standard DIN35 mm rail.

STEP 2 Press the Meter down on the rail, then push it into the long position the guide rail.



4.4 Preparing cables

Cable	Port	Types	Conductor cross-sectional area range	Exterior Diameter	Source
Channel 1 Voltage cable	Ua input and output Ub IN and OUT Uc IN and OUT A IN AND OUT	Single core outdoor copper cable	25 mm^2	10 mm	Prepared by the customer
Channel 2 Voltage cable	Ua IN UB IN Uc IN AN IN	Single core outdoor copper cable	4~25 mm^2	5~10 mm	Prepared by the customer
Channel 2 current transformer cable	ia* Ia Ib* Ib Ic* Ic	Single core outdoor copper cable	2~4 mm^2	3~5 mm	Prepared by the customer or supplied with current transformers
Communication cable	RS485A RS485B	Two intertwined external shielded cores copper cable pair	0.25~1.5 mm^2	4~11 mm	Provided by the manufacturer

NOTE – The maximum torque of the end screws Ua, Ub, Uc and Un is 1.7 N·m and the recommended torque is 0.9-1.1 N·m. The maximum torque of end screws Ia*, Ia, Ib*, Ib, Ic*, Ic, RS485A and RS485B is 0.4 N·m, and the recommended torque is 0.15–0.25 N·m.

4.5 Wiring Scenarios

<table>
<tr><th>Current</th><th>Line Voltage</th><th>Connection Modes</th><th>Setting up the connection</th><th>Current transformation ratio</th><th>Potential transformation ratio</th><th>Wiring harness mode</th></tr>
<tr><td rowspan="2">· 80 A</td><td rowspan="3">Less than 500 V</td><td rowspan="2">Direct connection of current and voltage</td><td rowspan="2">Direct connection: SPEC = 1 (default)</td><td rowspan="2">CT = 1 (default)</td><td rowspan="4">PT = 1.0 (default)</td><td>3P4W: net = #34 (default)</td></tr>
<tr><td>3P3W: net = #33</td></tr>
<tr><td rowspan="2">> 80A</td><td rowspan="3">Connecting via Current transformers and direct voltage connection</td><td rowspan="4">Transformer connection: SPEC = 0</td><td rowspan="4">CT = Ratio of the installed current transformer</td><td>3P4W: net = n.34 (default</td></tr>
<tr><td>3P3W: net = #33</td></tr>
<tr><td rowspan="2">· 0 A</td><td rowspan="2">> 500 V</td><td rowspan="2">Connection via current transformers and potential transformers</td><td rowspan="2">PT = Installed potential transformer ratio</td><td>3P4W: net = #34 (default)</td></tr>
<tr><td>3P3W: net = #33</td></tr>
</table>

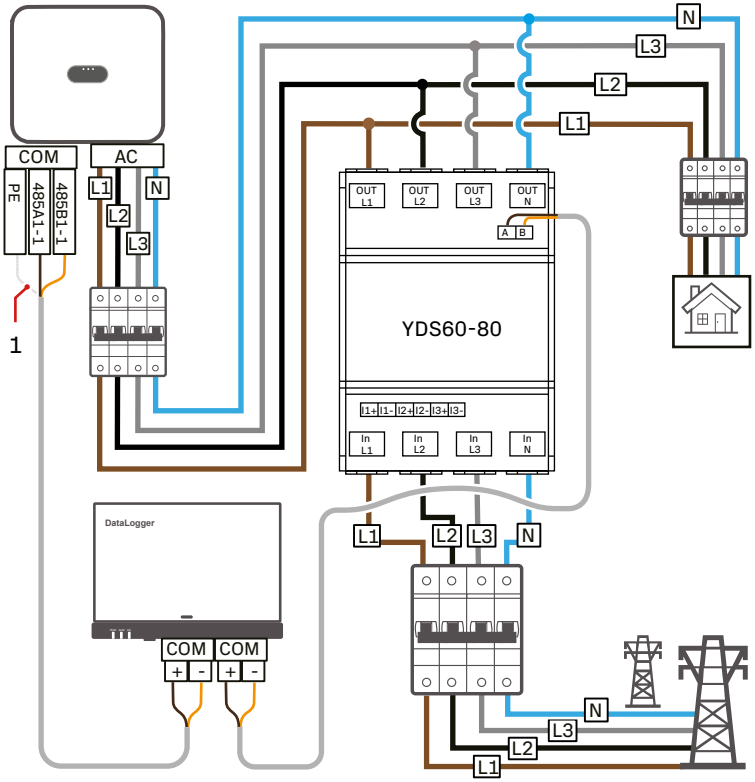
NOTE – Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”.

– This meter is generally used in high-current commercial and industrial scenarios. In outdoor CT scenarios, the current accuracy on the secondary side is ±5 mA. For example, if you select a CT with a transformer ratio of 400/1, the error is ±2 A. This gauge is not recommended in scenarios where the power of the plant is low or the control accuracy of the grid connection point is high. Instead, use a meter with more precision.

4.6 Direct connection of current and voltage (current = 80 A, line voltage = 500 V)

4.6.1 DataLogger network

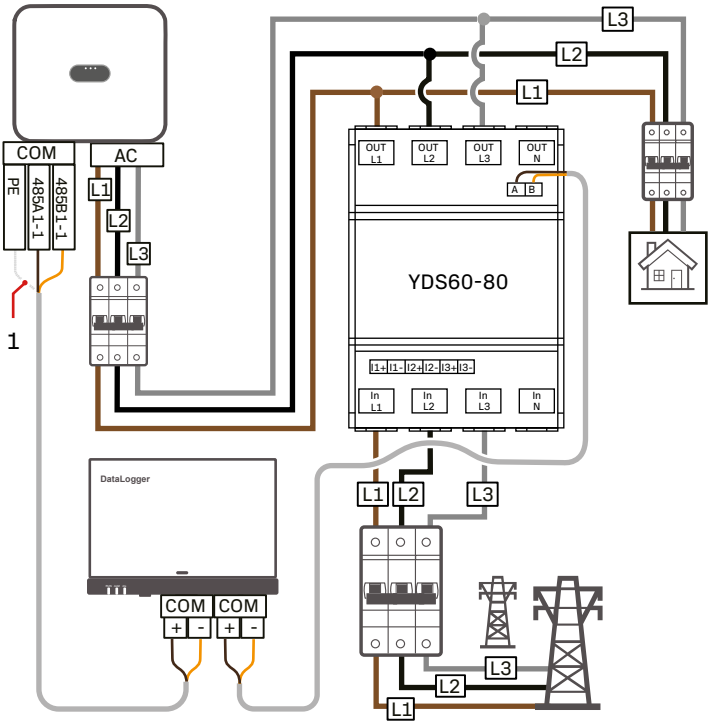
- **Four-wire three-phase connection**



(1) Signal cable shielding layer

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger In the grid not DataLogger scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection**



(1) Signal cable shielding layer

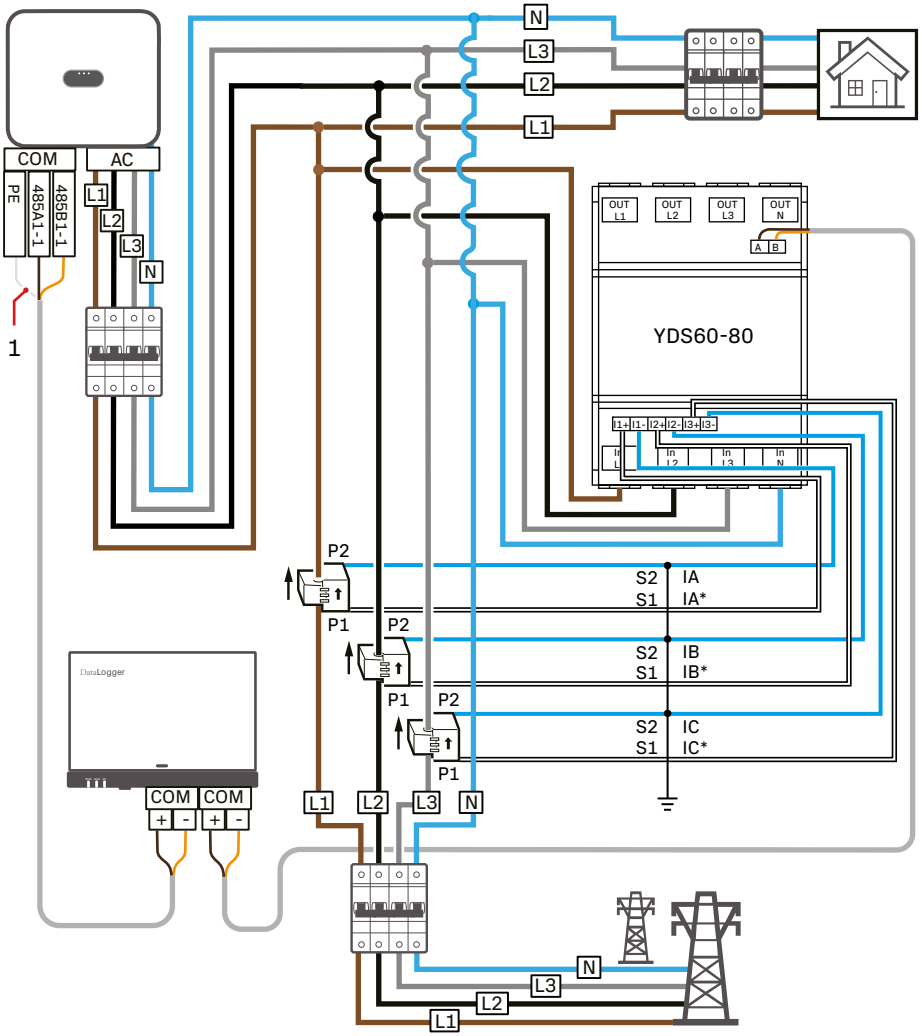
NOTE – Once the cable connections are complete, the parameters must be set. For details, see section “Parameter Settings”. DataLogger network

4.7 Connection via current transformer and direct voltage connection (current > 80 A, line voltage = 500 V)

Current transformer specifications: the accuracy class is 0.5 and the current on the secondary the side is 1 A or 5

4.7.1 DataLogger network

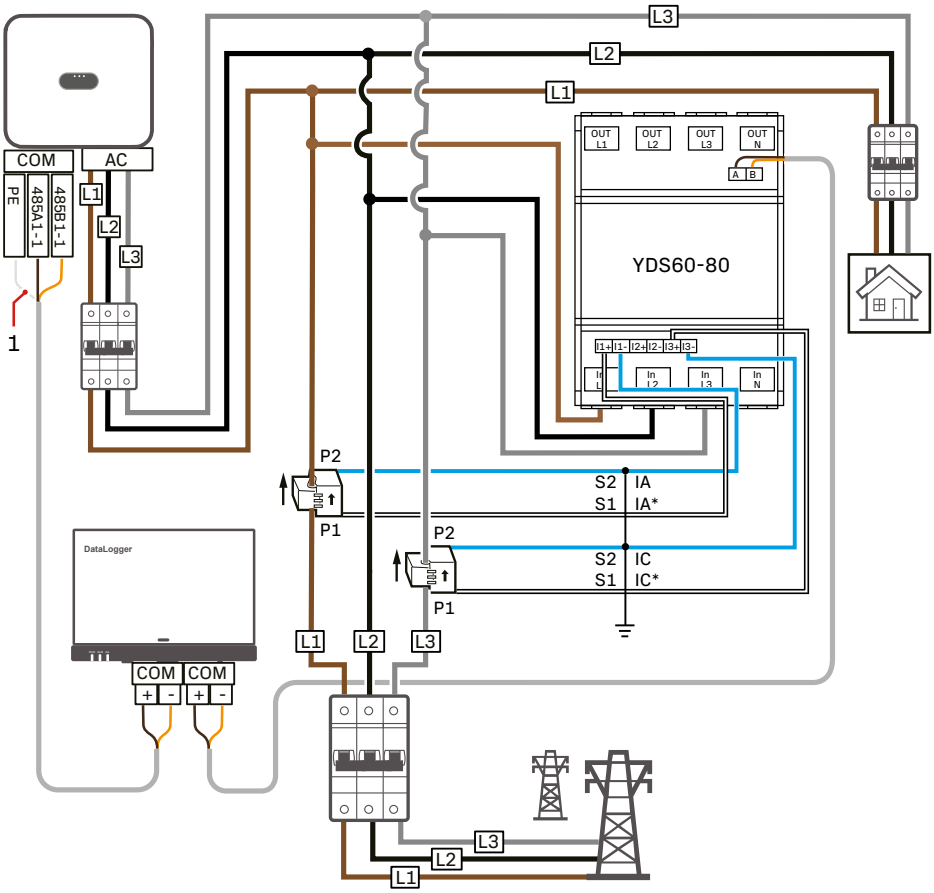
- **Four-wire three-phase connection**



(1) Signal cable shielding layer

NOTE – In the DataLogger network scenario, the power meter is connected to the DataLogger In the grid not DataLogger scenario, the power meter is connected to the inverter.

- **Three-phase three-wire connection**



(1) Signal cable shielding layer

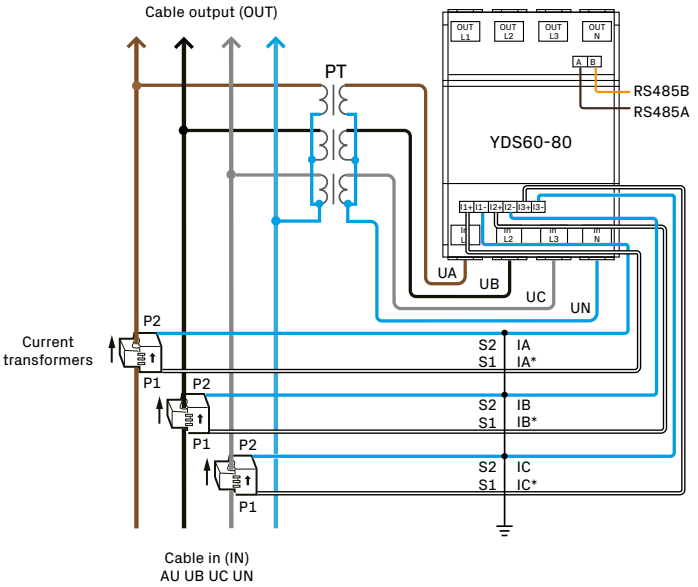
⚠ **ATTENTION –** Make sure that the ground cable is securely installed. Inadequate grounding can cause electric.

NOTE – You must set after cable connections, the parameters are complete. For more details, see section “Parameter Settings”.

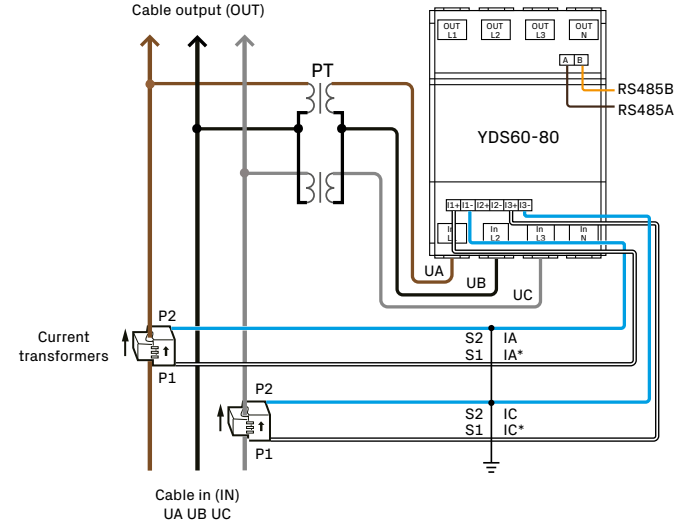
– For three-phase three-wire connection, phase B does not need to be connected to a current transformer.

4.8 Connection via current transformer and potential transformer 3.5 (current = 0 A, line voltage > 500 V)

- **Drift Four-wire three-phase connection**



- **Three-phase three-wire connection**



⚠ **ATTENTION –** Make sure the ground cable is securely installed. Poor grounding may cause electric shock.

NOTE – You must set after the cable connections are completed. For more details, see section “Parameter Settings”.

4.9 Display

The ● button is used to change displays. Set the disp parameter to enable the rotation display function.

NOTE
- The status bar will display" ᴛ" when the sensor is in communication.
- The ""icon does not blink during communication.
- The status bar will show "1" when the sensor is in direct connection mode.
- In a three-phase three-wire system, the voltages Ua, Ub, and Uc represent the line voltages Uab, Ubc, and Uca, respectively.

- Nope.	Display	Description	- Nope.	Display	Description
1		Positive active energy = 1,000.00 kWh	2		Negative active energy = 2345.67 kWh
3		No parity, 8 data bits, and 1 stop bit; baud rate = 9600 bps	4		011 is the address (default)
5			6		Phase B voltage = 220.1 V
7			8		Phase A current = 5,000 A
9			10		Phase C current = 5.002 A
11			12		Active Phase A power = 1.090 kW
13			14		Phase C active power = 1.100 kW
15			16		Phase A power factor PFa = 1,000
17		Phase B power factor PFb = 0.500	18		Phase C power factor PFc = -0.50

4.10 Parameter Settings

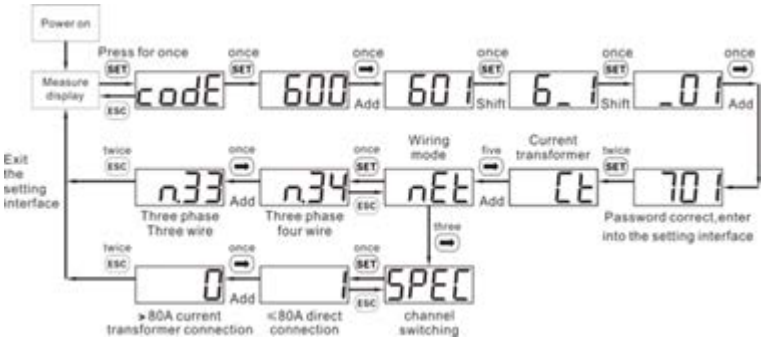
- Nope.	Parameter	Range of values	Description
1		1–6553	Current transformer ratio
2		0.1–999.9	Transformer potential ratio
3		1: 645 2: No.2 3: No.1 4: E.1 5: 0.1	Communication protocol switchove: 1: Factory mode 2: No parity, 2 stop bits, #2 3: No parity, 1 stop bit, #1 4: Even parity, 1 stop bit, E.1 5: Odd Parity, 1 stop bit, 0.1
4		1–247	Modbus communication address
5		0: 1.200 1: 2,400 2: 4,800 3: 9,600 4: 7:20 pm 5: 115.2	Communication baud rate: 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 115200 bps

6	nEt	0: #34 1: #33	Cabling mode: 0: #34, four-wire three-phase 1: #33, three-wire three-phase
7	dISP	0–30	Rotation display time (s): 0: Fixed display 1–30: Rotate display time interval
8	bLCd	0–30	Backlight time control (minutes): 0: Stationary 1–30: Backlit illumination hour without key operation
9	SPEC	0: ct 1: DC	Channel switchover: 0: Transformer Connection 1: Direct Connection

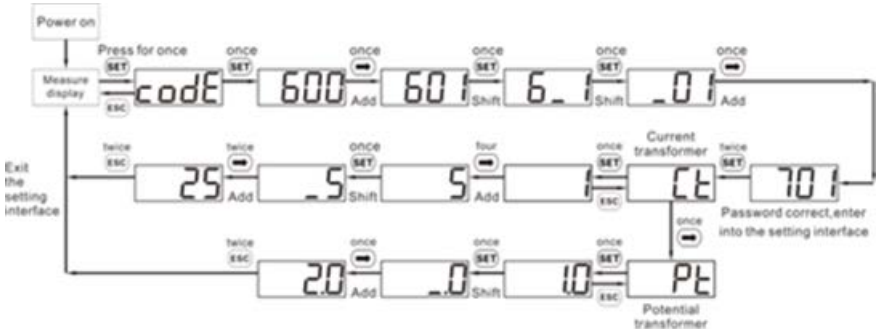
4.11 Parameter Setting Operations

Button description: **SET** means “confirm” or “cursor movement” (when entering numbers or parameters), **ESC** means “exit” and “add”. The default user password is 701.

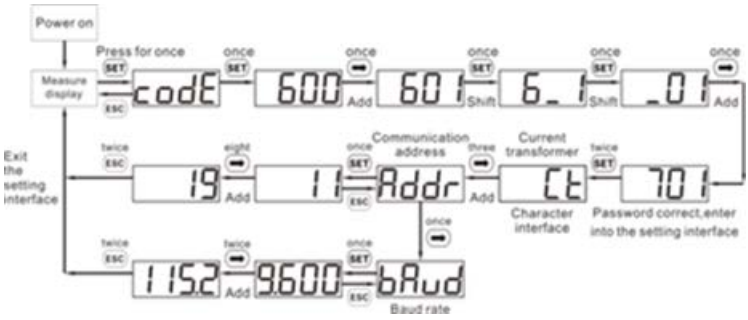
STEP 1 Set cabling mode (four-wire three-phase or three-phase three-wire) and channel switching (direct connection or connection to the current transformer):



STEP 2 Set the current transformation ratio or the potential transformation ratio:

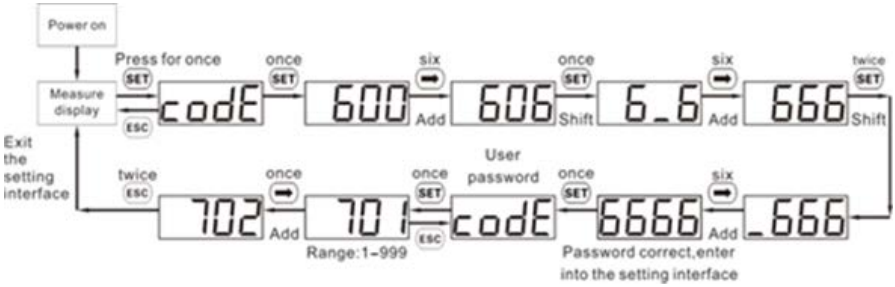


STEP 3 Set the communication address or bit rate:



NOTE – Communication parameters for the Meter are set prior to delivery. If communication is abnormal, check and set the parameters.

STEP 4 Change the user password:



4.11.1 Troubleshooting

Symptoms	Cause analysis	Troubleshooting method
No display after power on	1. The cable connection is incorrect. 2. The voltage supplied to the meter is abnormal.	1. Connect the cables properly (see wiring diagrams). 2. Provide the correct voltage according to specifications.
Abnormal RS485 communication	1. The RS485 communication cable is disconnected, short-circuited, or connected in reverse. 2. The communication address, transmission rate, data bit and parity bit of the counter do not match those of the inverter.	1. If the communication cable is defective, replace it. 2. Set up communication the address, baud rate, data bit, and parity bit of the counter must be the same as those of the inverter when pressing the buttons. Refer to "Parameter Settings" for details.
Inaccurate measurement	1. The cable connection is incorrect. Check whether the corresponding phase sequence of voltage and current is correct. 2. Check whether the high and low ends of the input of the current transformer are connected in reverse. If the values Pa, Pb, and Pc are negative, the high and low ends are connected incorrectly.	1. Connect the cables properly (see wiring diagrams). 2. If a negative value is displayed, change the cable connection for the current transformer to ensure that the high and low the ends are connected properly.

4.11.2 Verifying Installation

STEP 1 Check that all mounting brackets are securely installed and that all screws are tightened.

STEP 2 Check that all cables are reliably connected in the correct polarity without short-circuiting.

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