

YDS60-80 智能功率传感器

快速指南

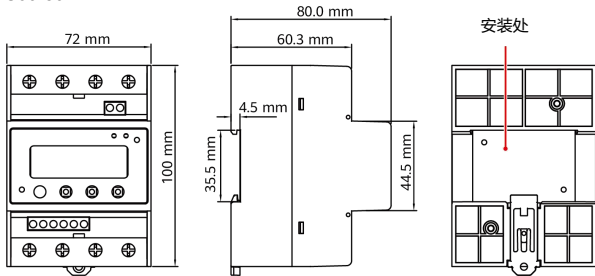
文档版本: 01

发布日期: 2022-05-20

1 产品简介

1.1 外形及安装尺寸

YDS60-80



说明

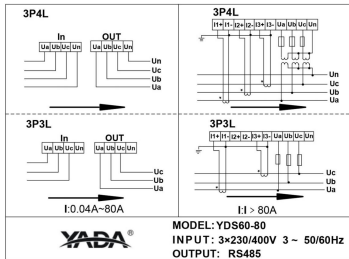
尺寸公差为 $\pm 1\text{mm}$ 。

1.2 外观

前面板参数



铭牌



1.3 关键性能规格

类别	YDS60-80
标称电压	230V AC/400V AC, 50Hz/60Hz
电流测量范围	直通接入: 0A~80A 外置电流互感器接入: >80A
电压测量范围	90V~1000V (线电压, 500V以上需要外置电压互感器接入)
电能精度	1级 (误差在 $\pm 1\%$ 以内)
电网系统	三相四线或三相三线
波特率	4800bps/9600bps/19200bps/115200bps (默认 9600bps)
工作温度	-25℃~+60℃
安装方式	导轨安装
认证	CE、RCM、UKCA

1.4 端口定义

- 输入电压：线电压 $\leq 500\text{V}$ 时直通接入，线电压 $> 500\text{V}$ 时，需加装外置电压互感器。
- 输入电流： $0\text{A}\sim 80\text{A}$ ，直通接入（Channel 1）。
- 输入电流： $> 80\text{A}$ ，需加装外置电流互感器（Channel 2）。

进线侧

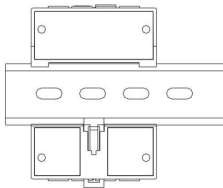
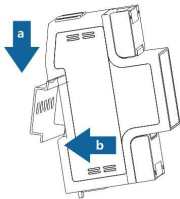


出线侧



2 安装 YDS60-80

1. 将智能功率传感器安装到DIN35mm标准导轨上。
2. 将智能功率传感器从上到下卡入标准导轨上，然后将仪器推入导轨。



3 安装电缆

3.1 准备电缆

线缆	端口	类型	导线截面积	外径	来源
Channel 1 电压 线缆	UA-1 和 3	单芯 户外铜线缆	25mm ²	10mm	用户准备
	UB-4 和 6				
	UC-7 和 9				
	UN-10 和 12				
Channel 2 电压 线缆	UA-1	单芯 户外铜线缆	4mm ² ~25mm ²	5mm~10mm	用户准备
	UB-4				
	UC-7				
	UN-10				
Channel 2 电流互感器 线缆	IA*-31	单芯 户外铜线缆	2mm ² ~4mm ²	3mm~5mm	用户准备或互 感器附带
	IA-33				
	IB*-34				
	IB-36				
	IC*-37				
	IC-39				
通信 线缆	RS485A-24	两芯户外 双绞屏蔽线	0.25mm ² ~1.5mm ²	4mm~11mm	用户准备
	RS485B-25				

说明

1、3、4、6、7、9、10和12端子螺钉的最大扭矩为1.7N·m，建议扭矩为0.9N·m~1.1N·m；
31、33、34、36、37、39、24和25端子螺钉的最大扭矩为0.4N·m，建议扭矩为
0.15N·m~0.25N·m。

3.2 接线场景

电 流	≤80A		> 80A		≥0A	
线电压	≤500V				>500V	
接入方式	电流电压 直通接入		电流互感器接入 电压直通接入		电流互感器接入 电压互感器接入	
设置接入 方式	直通接入：SPEC=1 （出厂默认）		互感器接入：SPEC=0			
设置电流 变比	CT=1（出厂默认）		CT=安装的电流互感器变比			
设置电压 变比	PT=1.0（出厂默认）				PT=安装的电压互感器变比	
设置接线 方式	三相四线： net=n.34 （出厂默认）	三相三线： net=n.33	三相四线： net=n.34 （出厂默认）	三相三线： net=n.33	三相四线： net=n.34 （出厂默认）	三相三线： net=n.33

说明

电表接线完成后需要设置参数，详见“4 显示项目及参数设置”。

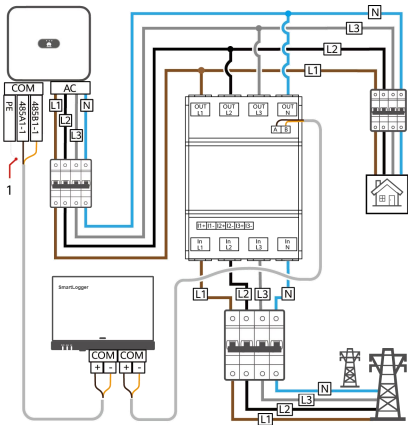
3.3 电流电压直通接入（电流 $\leq 80\text{A}$, 线电压 $\leq 500\text{V}$ ）

SmartLogger组网

- 三相四线接入

说明

SmartLogger组网场景，电表接入SmartLogger。
非SmartLogger组网场景，电表接入逆变器。



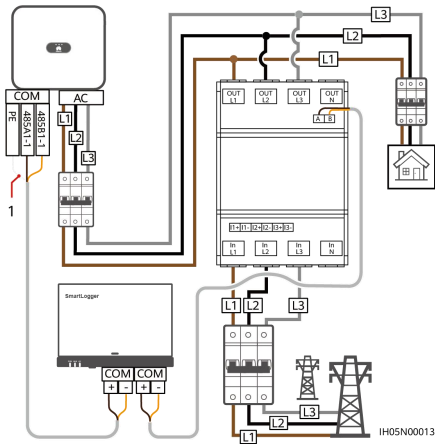
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- 三相三线接入

(1) 信号线屏蔽层

说明

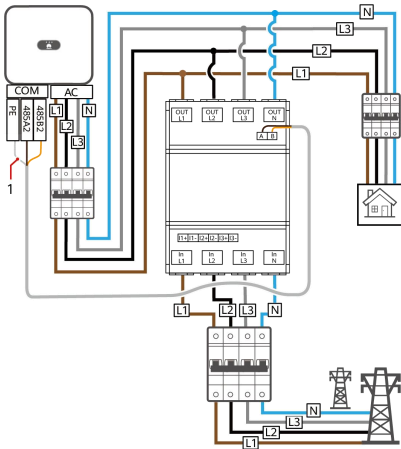
电表接线完成后需要设置参数，详见“4 显示项目及参数设置”。



IH05N00013

智能通信棒组网

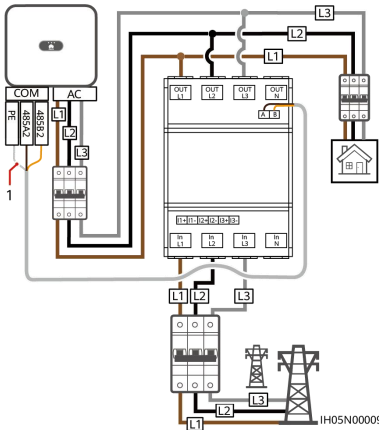
- 三相四线接入



(1) 信号线屏蔽层

IH05N00011

- 三相三线接入



(1) 信号线屏蔽层

说明

电表接线完成后需要设置参数，详见“4 显示项目及参数设置”。

3.4 电流互感器接入，电压直通接入（电流 $>80\text{A}$ ，线电压 $\leq 500\text{V}$ ）

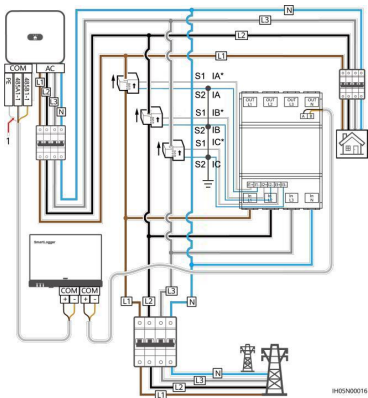
CT规格要求：精度等级为0.5级，二次侧电流为1A或5A。

SmartLogger组网

- 三相四线接入

说明

SmartLogger组网场景，电表接入SmartLogger。
非SmartLogger组网场景，电表接入逆变器。



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(1) 信号线屏蔽层

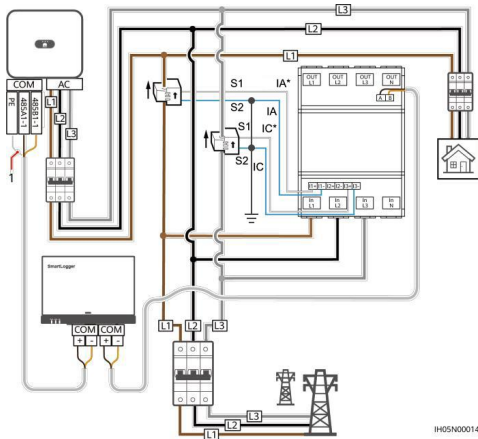
三相三线接入

⚠ 注意

请确保地线安装紧固，设备接地不良可能导致人体触电。

📖 说明

- 电表接线完成后需要设置参数，详见“4 显示项目及参数设置”。
- 三相三线接入时B相不需要接CT。

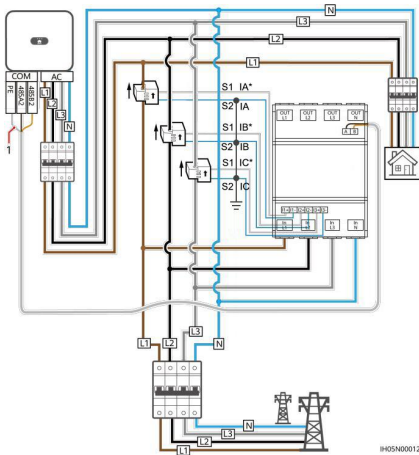


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(1) 信号线屏蔽层

智能通信棒组网

- 三相四线接入



(1) 信号线屏蔽层

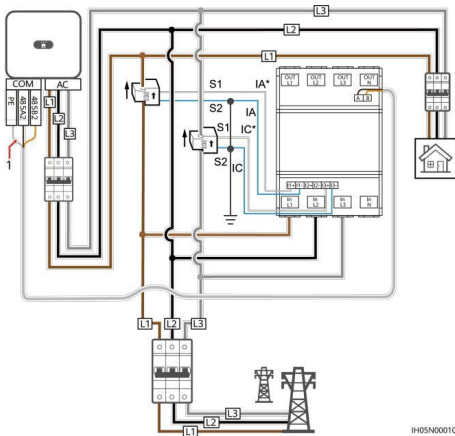
- 三相三线接入

⚠ 注意

请确保地线安装紧固，设备接地不良可能导致人体触电。

📖 说明

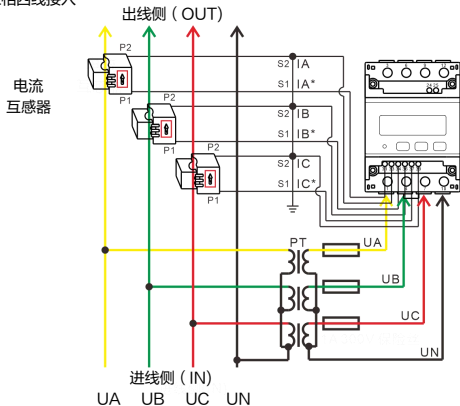
- 电表接线完成后需要设置参数，详见“4 显示项目及参数设置”。
- 三相三线接入时B相不需要接CT。



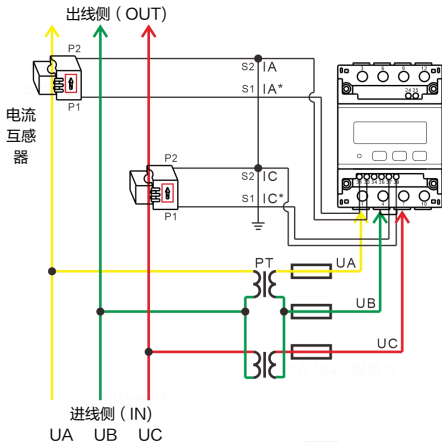
(1) 信号线屏蔽层

3.5 电流互感器接入，电压互感器接入(电流 $\geq 0A$, 线电压 $> 500V$)

- 三相四线接入



- 三相三线接入



⚠ 注意

请确保地线安装紧固，设备接地不良可能导致人体触电。

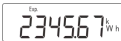
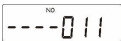
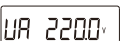
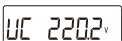
📖 说明

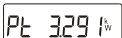
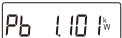
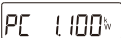
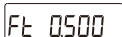
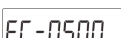
电表接线完成后需要设置参数，详见“4 显示项目及参数设置”。

4 显示项目及参数设置

4.1 显示项目

按键“→”用于切换显示界面，设置参数disp，可开启轮显功能。

序号	显示界面	说明	序号	显示界面	说明
1		正向有功电能 =10000.00kWh	2		反向有功电能 =2345.67kWh
3		无校验位,8个数据位, 1个停止位; 波特率9600bps (默认值)	4		表地址=011 (默认值)
5		A相电压 =220.0V	6		B相电压 =220.1V
7		C相电压 =220.2V	8		A相电流 =5.000A

序号	显示界面	说明	序号	显示界面	说明
9		B相电流 =5.001A	10		C相电流 =5.002A
11		合相有功功率 =3.291kW	12		A相有功功率 =1.090kW
13		B相有功功率 =1.101kW	14		C相有功功率 =1.100kW
15		合相 功率因数 PFt=0.500	16		A相 功率因数 PFa=1.000
17		B相 功率因数 PFb=0.500	18		C相 功率因数 PFc=-0.500

4.2 参数设置

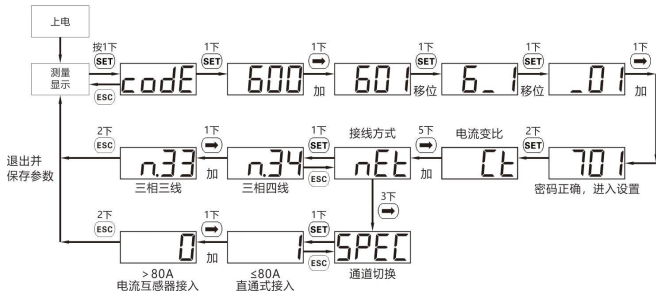
序号	参数	数值范围	描述
1		1~6553	电流互感器变比。
2		0.1~999.9	电压互感器变比。
3		1: 645 2: n.2 3: n.1 4: E.1 5: 0.1	通讯协议切换: 1: 工厂模式; 2: 无校验2个停止位, n.2; 3: 无校验1个停止位, n.1; 4: 偶校验1个停止位, E.1; 5: 奇校验1个停止位, 0.1。
4		1~247	Modbus通讯地址。

序号	参数	数值范围	描述
5		0: 1.200; 1: 2.400; 2: 4.800; 3: 9.600; 4: 19.20; 5: 115.2;	通讯波特率: 0: 1200bps; 1: 2400bps; 2: 4800bps; 3: 9600bps; 4: 19200bps; 5: 115200bps。
6		0: n.34 1: n.33	选择接线方式: 0: n.34表示三相四线; 1: n.33表示三相三线。
7		0~30	轮显时间(秒): 0: 定显; 1~30: 实际轮显的时间间隔。
8		0~30	背光点亮时间控制(分钟): 0: 常亮; 1~30: 无按键操作背光点亮的时间。
9		0: ct 1: dc	通道切换设置: 0: 互感式接入; 1: 直通式接入。

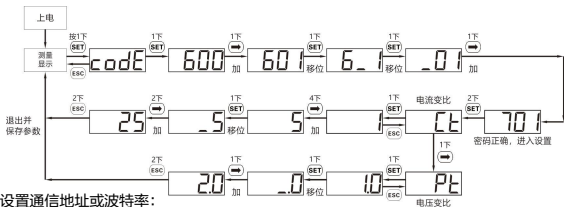
4.3 参数设置操作

按键说明：“SET”表示“确认”或“光标移动”（输入数字或参数时），“ESC”表示“退出”，“→”表示“加”。默认用户密码为701。

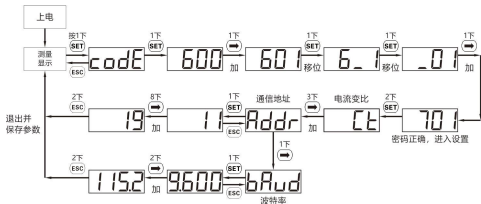
- 设置接线方式（三相四线或三相三线），通道切换（直通式接入或电流互感器接入）：



- 设置电流变比或电压变比：

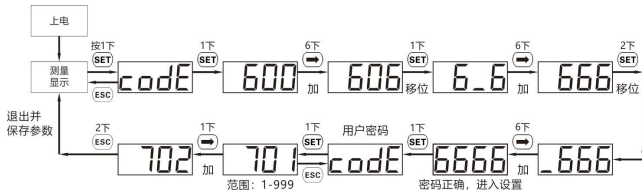


- 设置通信地址或波特率：



说明 在交付前，已为智能功率传感器配置了通信参数。如果通信异常，检查并设置参数。

- 用户密码修改：



5 常见故障的诊断、分析、排除方法

故障现象	原因分析	排除方法
上电不显示	1. 接线不正确。 2. 供电电压异常。	1. 若接线不正确，则请按正确的接线方式（见接线图）接线。 2. 若供电电压异常，则请按采集器规格提供电压。
RS485通信异常	1. RS485通信线缆开路，短路，接反。 2. 通信地址、波特率、数据位校验位与主机不符。	1. 若通信线缆有问题，则请重新接线或更换通信线缆。 2. 通过按键设置通信地址、波特率、数据位校验位与主机相同，按键设置操作参见“参数设置”。
电能计量不准确	1. 接线错误，电压与电流对应的相序是否正确。 2. 电流互感器进线的高端与低端是否接反，请观察Pa、Pb、Pc的功率，如出现负值则表明不正常。	1. 若接线不正确，则请按正确的接线方式（见接线图）接线。 2. 如果有功率显示负值，则改变电流互感器的电缆连接方式，以确保高低端连接正确。

6 安装完成后检查

1. 检查所有安装支架是否牢固安装并拧紧所有螺钉。
2. 检查所有电缆是否可靠连接，正确的极性和无短路。

YDS60-80 Smart Power Sensor Quick Guide

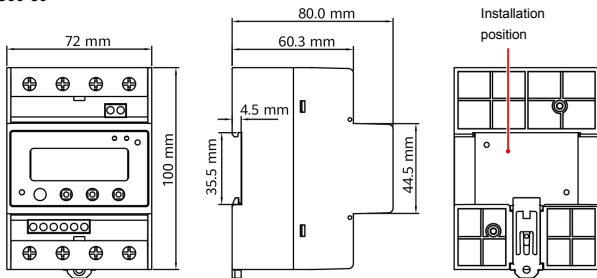
Issue: 01

Date: 2022-05-20

1 Overview

1.1 Dimensions

YDS60-80



NOTE

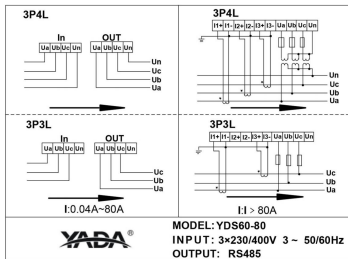
The dimensional tolerance is ± 1 mm.

1.2 Appearance

Specifications on the front panel



Nameplate



1.3 Key Specifications

Category	YDS60-80
Nominal voltage	230V AC/400V AC, 50Hz/60Hz
Current measurement range	Direct connection: 0~80A Connection through current transformers: > 80A
Voltage measurement range	90~1000 V (line voltage; potential transformers are required if the voltage is greater than 500V)
Electricity metering accuracy	Class 1 (error within $\pm 1\%$)
Power grid system	Three-phase four-wire or three-phase three-wire
Baud rate	4800/9600/19200/115200 bps (default value: 9600 bps)
Operating temperature	-25°C to +60°C
Installation mode	Guide rail-mounted
Certification	CE, RCM, and UKCA

1.4 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 0 A to 80 A, connect the meter directly (channel 1). When the input current is greater than or equal to 80 A, connect the meter through current transformers (channel 2).

Cable Inlet

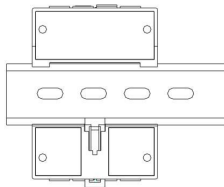
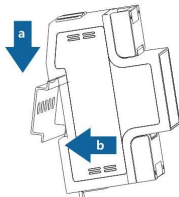


Cable Outlet



2 Installing the YDS60-80

1. Install the Smart Power Sensor on the standard guide rail of DIN35mm.
2. Press the Smart Power Sensor downwards onto the guide rail, and then push it in place along the guide rail.



3 Installing Cables

3.1 Prepare cables

Cable	Port	Type	Conductor Cross-sectional Area Range	Outer Diameter	Source
Channel 1 voltage cable	UA-1 and 3	Single-core outdoor copper cable	25 mm ²	10 mm	Prepared by the customer
	UB-4 and 6				
	UC-7 and 9				
	UN-10 and 12				
Channel 2 voltage cable	UA-1	Single-core outdoor copper cable	4~25 mm ²	5~10 mm	Prepared by the customer
	UB-4				
	UC-7				
	UN-10				
Channel 2 current transformer cable	IA*-31	Single-core outdoor copper cable	2~4 mm ²	3~5 mm	Prepared by the customer or supplied with current transformers
	IA-33				
	IB*-34				
	IB-36				
	IC*-37				
	IC-39				
Communications cable	RS485A-24	Two-core outdoor shielded twisted pair copper cable	0.25~1.5 mm ²	4~11 mm	Prepared by the customer
	RS485B-25				

NOTE

The maximum torque of 1, 3, 4, 6, 7, 9, 10, and 12 terminal 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 terminal screws is 0.4 N·m, and the recommended torque is 0.15~0.25 N·m.

3.2 Wiring Scenarios

Current	≤80A		>80A		≥0A	
Line voltage	≤500V				>500V	
Connection mode	Current and voltage direct connection		Connection through current transformers and voltage direct connection		Connection through current transformers and potential transformers	
Connection setting	Direct connection: SPEC=1 (default)		Connection through transformers: SPEC=0			
Current transformation ratio	CT=1 (default)		CT=Ratio of the installed current transformer			
Potential transformation ratio	PT=1.0 (default)				PT=Ratio of the installed potential transformer	
Wiring mode	3P4W: net=n.34 (default)	3P3W: net=n.33	3P4W: net=n.34 (default)	3P3W: net=n.33	3P4W: net=n.34 (default)	3P3W: net=n.33

NOTE

You need to set parameters after cable connections are complete. For details, see section 4 "Display and Parameter Settings".

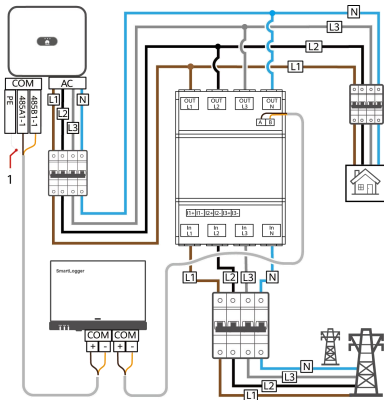
Current and Voltage Direct Connection (Current $\leq 80\text{A}$ and Line Voltage $\leq 500\text{V}$)

- Three-phase four-wire connection



In the SmartLogger networking scenario, the power meter is connected to the SmartLogger. In the non-SmartLogger networking scenario, the power meter is connected to the inverter.

(1) Shield layer of the signal cable

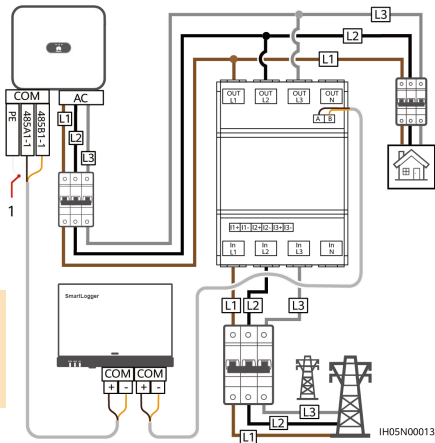


- Three-phase three-wire connection

(1) Shield layer of the signal cable

 NOTE

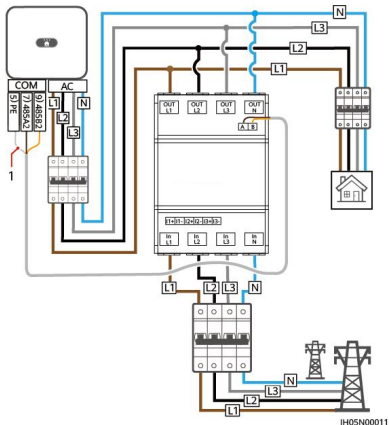
You need to set parameters after cable connections are complete. For details, see section 4 "Display and Parameter Settings".



Smart Dongle net working

- Three-phase four-wire connection

(1) Shield layer of the signal cable

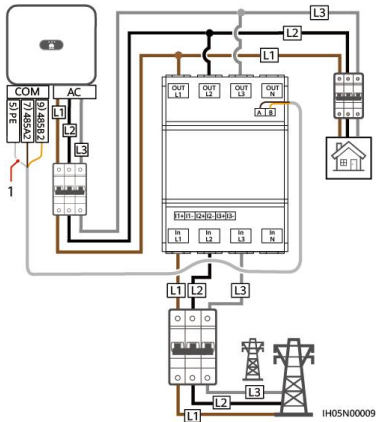


- Three-phase three-wire connection

(1) Shield layer of the signal cable

 NOTE

You need to set parameters after cable connections are complete. For details, see section 4 "Display and Parameter Settings".



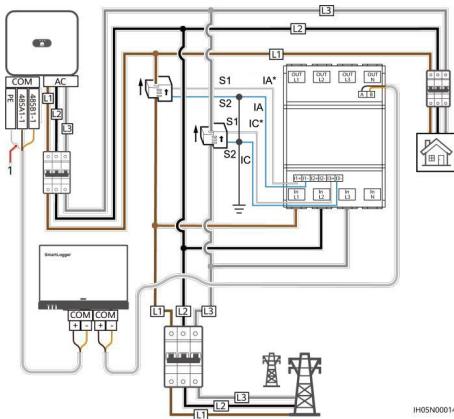
- Three-phase three-wire connection

CAUTION

Please ensure that the ground cable is installed securely. Poor grounding may cause electric shocks.

NOTE

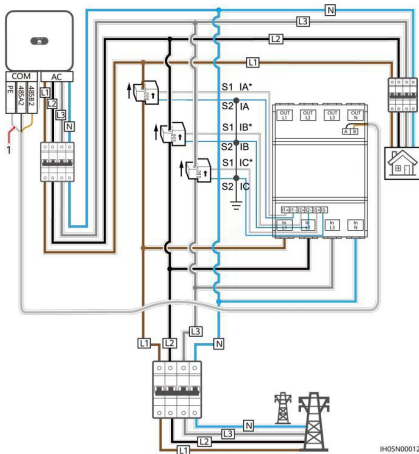
- You need to set parameters after cable connections are complete. For details, see section 4 "Display and Parameter Settings".
- For the three-phase three-wire connection, phase B does not need to connect to a current transformer.



(1) Shield layer of the signal cable

SmartLogger net working

- Three-phase three-wire connection

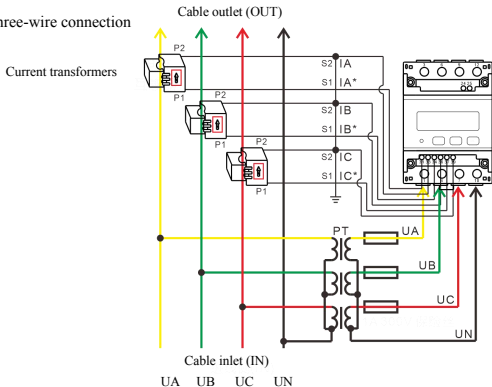


(1) Shield layer of the signal cable

3.5

Connection Through Current Transformer and Potential Transformer (Current $\geq 0A$, Line Voltage $>500V$)

- Three-phase three-wire connection



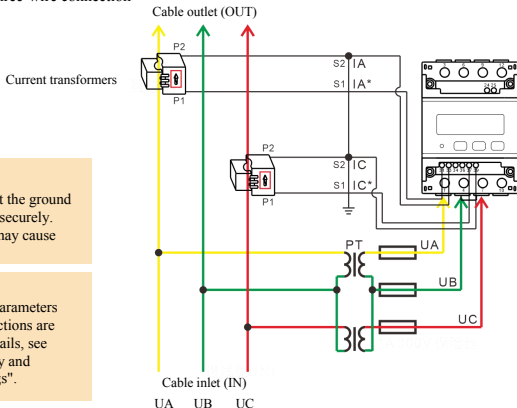
- Three-phase three-wire connection

⚠ CAUTION

Please ensure that the ground cable is installed securely. Poor grounding may cause electric shocks.

📖 NOTE

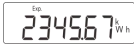
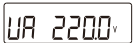
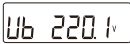
You need to set parameters after cable connections are complete. For details, see section 4 "Display and Parameter Settings".



4 Display and Parameter Settings

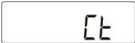
4.1 Display

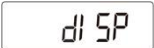
The button → is used to switch the displays. Set parameter disp to enable the rotation display function.

No.	Display	Description	No.	Display	Description
1		Positive active energy = 10000.00 kWh	2		Negative active energy = 2345.67 kWh
3		None parity, 8 data bits, and 1 stop bit; baud rate = 9600 bps (default)	4		011 represents address (default)
5		Phase A voltage = 220.0 V	6		Phase B voltage = 220.1 V

No.	Display	Description	No.	Display	Description
7	UC 220.2 ^v	Phase C voltage =220.2 V	8	IA 5.000 ^A	Phase A current =5.000 A
9	IB 5.001 ^A	Phase B current =5.001 A	10	IC 5.002 ^A	Phase C current =5.002 A
11	Pt 3.291 ^{kW}	Total phase active power=3.291 kW	12	PA 1.090 ^{kW}	Phase A active power=1.090 kW
13	Pb 1.101 ^{kW}	Phase B active power=1.101 kW	14	PC 1.100 ^{kW}	Phase C active power =1.100 kW
15	Ft 0.500	Total phase power factor PFt=0.500	16	FA 1.000	Phase A power factor PFa=1.000
17	Fb 0.500	Phase B power factor PFb=0.500	18	FC -0.500	Phase C power factor PFc=-0.500

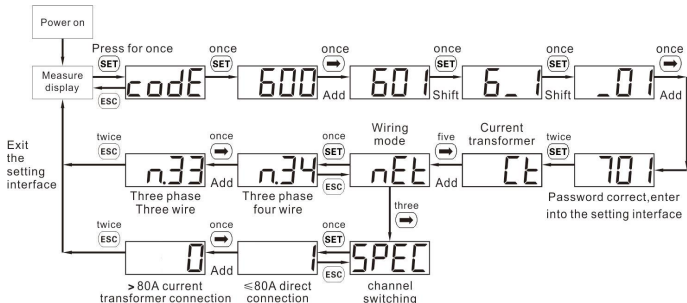
4.2 Parameter Settings

No.	Parameter	Value Range	Description
1		1~6553	Current transformer ratio
2		0.1~999.9	Potential transformer ratio
3		1: 645 2: n.2 3: n.1 4: E.1 5: 0.1	Communication protocol switchover: 1: Factory mode 2: None parity, 2 stop bits, n.2 3: None parity, 1 stop bit, n.1 4: Even parity, 1 stop bit, E.1 5: Odd parity, 1 stop bit, 0.1
4		1~247	Modbus communication address

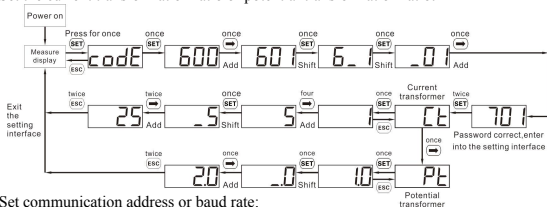
5		0: 1.200 1: 2.400 2: 4.800 3: 9.600 4: 19.20 5: 115.2	Communication baud rate: 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 115200 bps
6		0: n.34 1: n.33	Wiring mode: 0: n.34, three-phase four-wire 1: n.33, three-phase three-wire
7		0~30	Rotation display time (s): 0: Fixed display 1~30: Time interval of rotation display
8		0~30	Backlight illumination time control (minutes): 0: Steady on 1~30: Time of backlight illumination without key operation
9		0: ct 1: dc	Channel switchover: 0: Transformer connection 1: Direct connection

4.3 Parameter Setting Operations

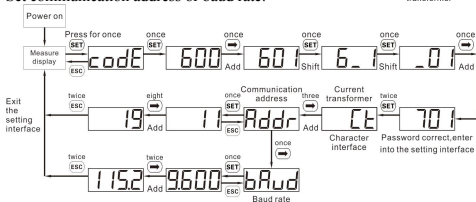
- Button description: SET means "confirm" or "cursor move" (when inputting numbers or parameters), ESC means "exit", and → means "add". The default user password is **701**.
- Set wiring mode (three-phase four-wire or three-phase three-wire) and channel switchover (direct connection or current transformer connection):



- Set the current transformation ratio or potential transformation ratio:

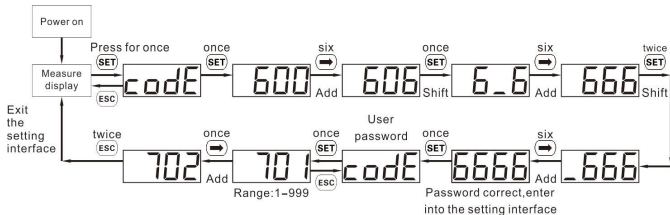


- Set communication address or baud rate:



The communication parameters are set for the Smart Power Sensor before delivery. If the communication is abnormal, check and set the parameters.

- Modify user password:



5 Troubleshooting

Symptom	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 correctly (see wiring diagrams). 2. Supply the correct voltage based on the specifications.
Abnormal RS485 communication	1. The RS485 communication cable is disconnected, short-circuited, or reversely connected. 2. The communication address, baud rate, data bit, and parity bit of the meter do not match those of the inverter.	1. If the communication cable is faulty, replace it. 2. Set the communication address, baud rate, data bit, and parity bit of the meter to be the same as those of the inverter by pressing buttons. For details, see "Parameter Settings".
Inaccurate metering	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 current transformer inlet are reversely connected. If the values Pa, Pb, and Pc are negative, the high and low ends are connected incorrectly.	1. Connect the cables correctly (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 ends are connected correctly.

6 Installation Verification

1. Check that all mounting brackets are securely installed and all screws are tightened.
2. Check that all cables are reliably connected in correct polarity without short circuit.