

Growatt Smart Meter For Flexible System Retrofit

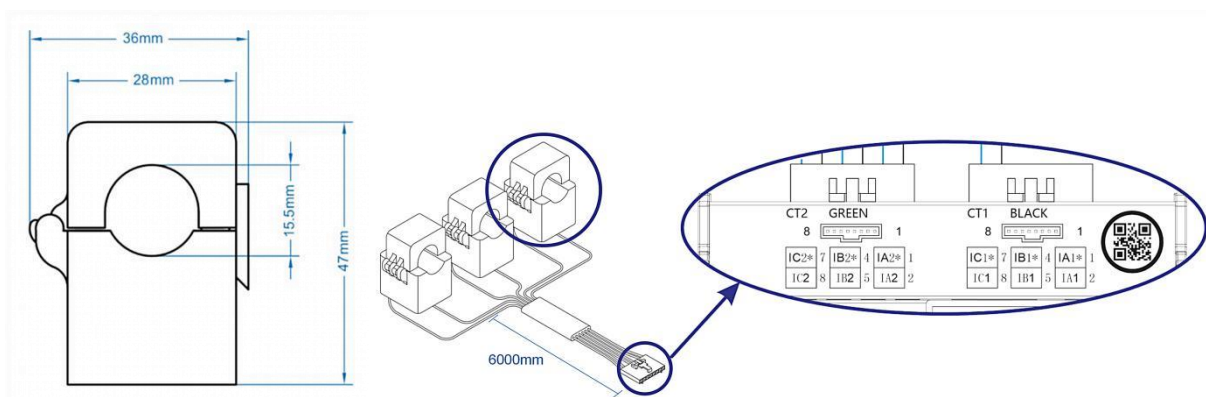
For the users who already have a PV system installed, Growatt offers solutions for retrofitting existing systems and expanding energy storage capacity. With Growatt Smart Meter TPM-CT-C(3-SR), Growatt three-phase battery ready inverters MOD-XH(BP), MID-XH with APX HV battery can be used in AC-Couple application scenarios, which provide great flexibility for upgrading existing PV systems.

Now for retrofitting three-phase systems, the retrofit solution with TPM-CT-C(3-SR) meter came into being. This article introduces the specifications, installation, and system setup of the retrofit solution with TPM-CT-C(3-SR) meter.

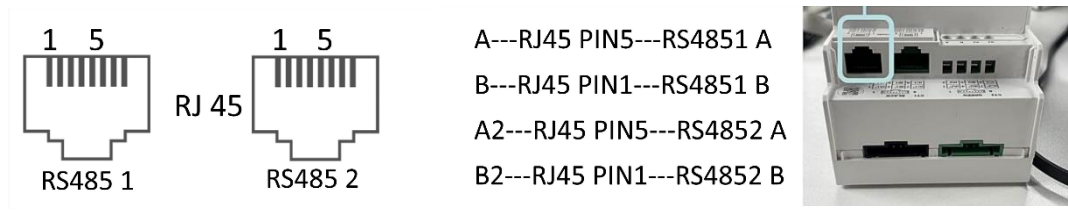
1. Specifications of TPM-CT-C(3-SR)

TPM-CT-C(3-SR) is a multi-function rail meter, it can accurately measure and display various power parameters in 3P3W/3P4W: voltage, current, power, frequency, active power, reactive power, forward power, reverse power, total harmonics, etc. The meter is suitable for real-time power monitoring system, with multi-function, multi-purpose, high stability and long life characteristics.

The meter is connected with 6 external current transformers which nominal current is 100A(40mA secondary). 3 CTs for monitoring power generation from the third-party inverter and 3 CTs for monitoring total system power generation.

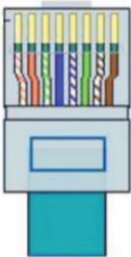


TPM-CT-C(3-SR) has two RS485 communication channels, with the default communication rate of 9600bps and COM address of 4. The communication ports are defined below, choose RJ45.



2. Retrofitting systems with TPM-CT-C(3-SR)

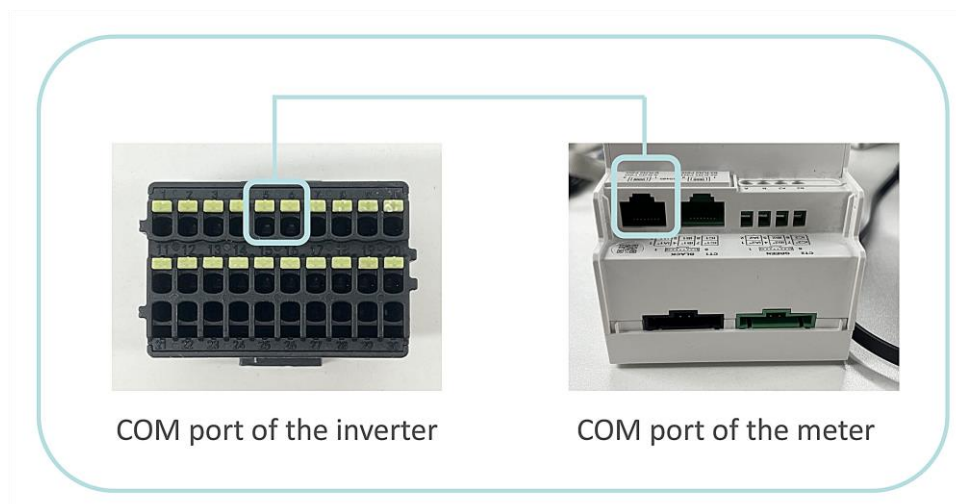
In the process of retrofitting an existing three-phase PV system, the key steps are establishing communication between TPM-CT-C(3-SR) and the inverter, installing the meter and CTs.



LAN line 1-8 colors as below:

PIN	1	2	3	4	5	6	7	8
Color	White orange	Orange	White green	Blue	White blue	Green	White brown	Brown

- Establish Communication
Take PIN5 (RS4851 A, White blue) and PIN1 (RS4851 B, White orange) of the RJ45 network cable and connect them to PIN5 (RS485A) and PIN6 (RS485B) of the inverter's communication port. MOD-XH(BP) and MID-XH have the same definition of PIN for communication with the meter. See manual of your specific inverter.
Please note that the RS485-1 channel of the meter should be used to communicate with the inverter so that the communication address matches exactly with the inverter without any additional settings.



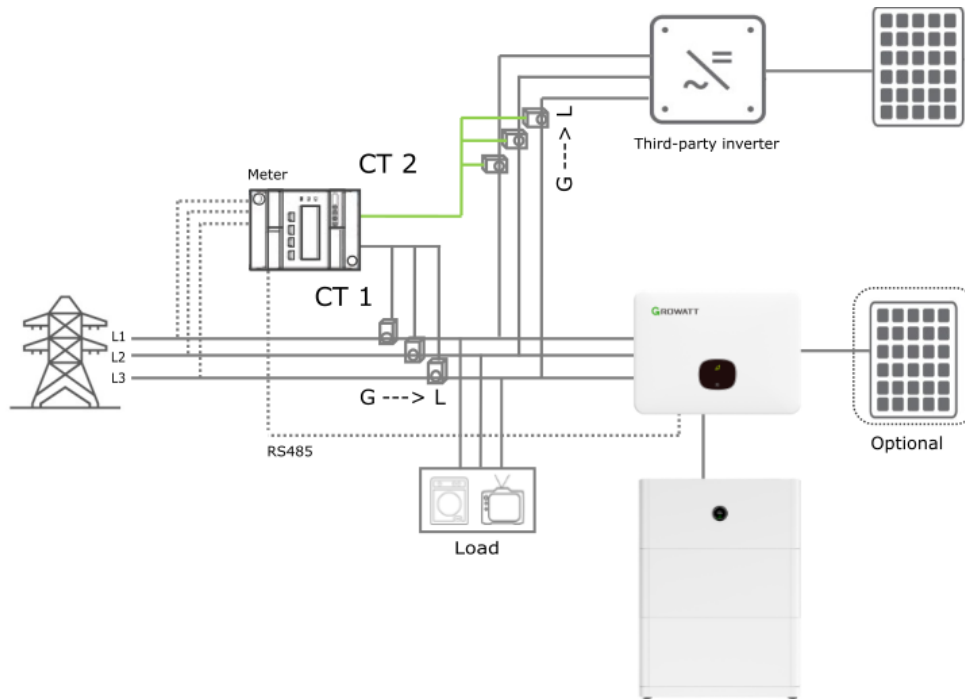
- **Installing TPM-CT-C(3-SR) and CTs**

Install TPM-CT-C(3-SR) on the grid side. The installation of the CTs needs to strictly follow:

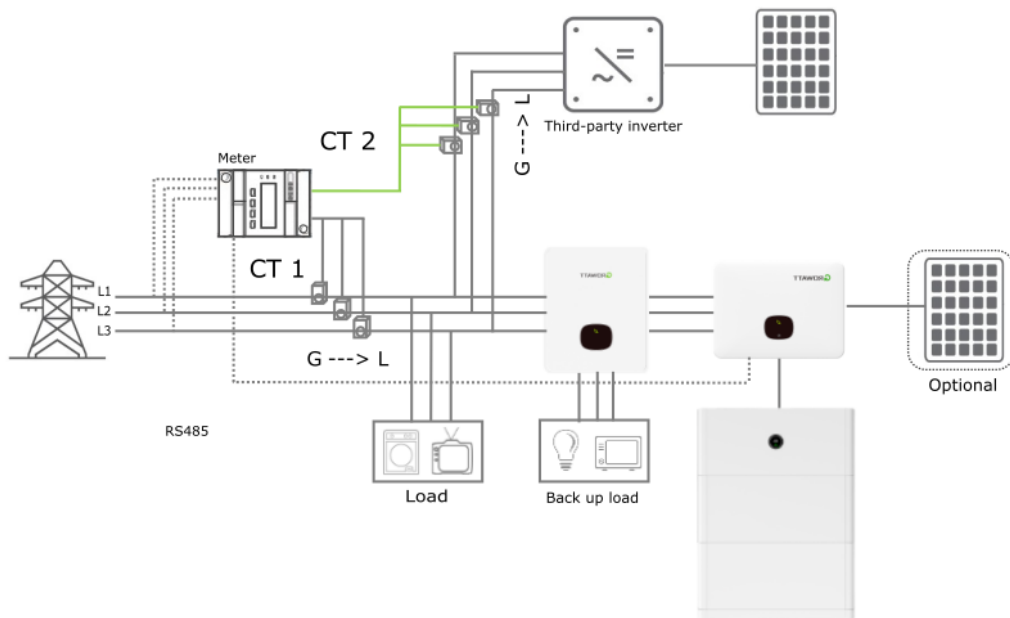
- a.
- b. The three CTs on **CT1** port are snapped on the grid side to detect the total power generation of the system.
Configure each CT as follow; IA1 = L1, IB1 = L2, IC1 = L3
- c. The three CTs on **CT2** port are snapped at the output of the third-party inverter to detect the power generation of the original system.
Configure each CT as follow; IA2 = L1, IB2 = L2, IC2 = L3
- d. The direction of the arrow on the CT1 is pointing from the grid to the load.
- e. The direction of the arrow on the CT2 is pointing from the grid to the third-party inverter.



The installation diagram is shown below:



In addition, by installing a SYN Box(SYN 50-XH-30 for MOD-XH(BP), SYN 100-XH30 for MID-XH), the system is able to switch from on-grid to off-grid, and by connecting critical loads to the SYN box to ensure continuous power supply to the critical loads in case of power outage.

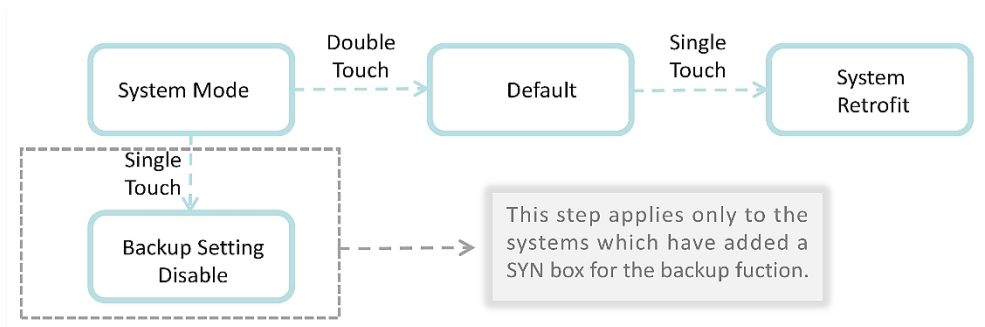


In the above scheme, Growatt inverter can be used to retrofit any brand of third-party system, however, **the whole system doesn't have the export limitation function due to the inability to control the third-party inverter.**

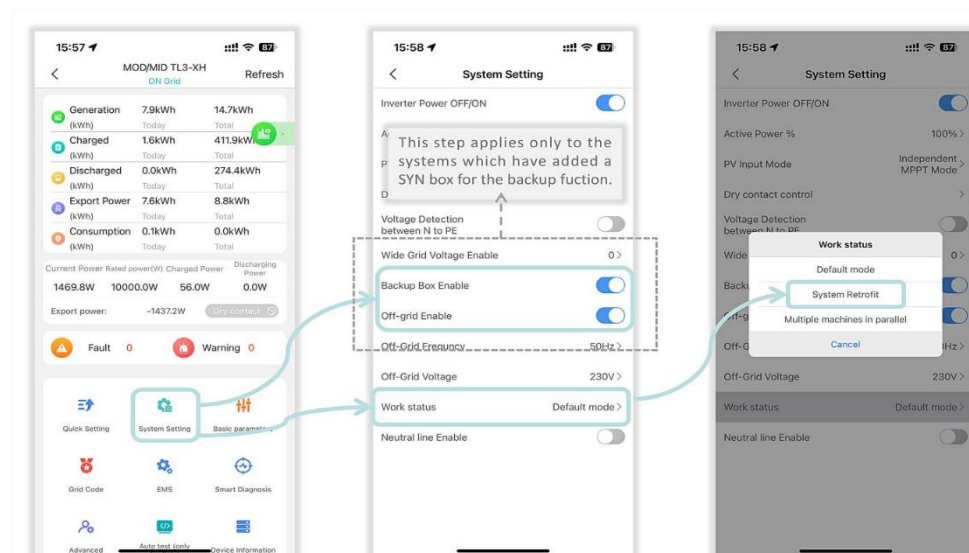
3. System settings

After the system is properly installed, the Growatt inverter needs to be set to System Retrofit mode via the inverter's OLED, ShineTools, or OSS platform. If the system has a SYN box installed and needs to be switched from on-grid to off-grid, the Backup Mode also needs to be enabled, otherwise not. If there is not the option to change the system working mode to 'retrofit system', a firmware update is needed.

- Set on OLED



- Set on ShineTools APP



Set Inverter

☐ Pre PTO

Disable

☐ CV Voltage

58 (38~58V)

☐ CC Current

60 (0~60A)

☒ Working Mode

Default

Default

System Retrofit

Multi-Parallel

Germany

☐ LCD Language

☐ Restore Factory Setting

☐ Country/Area

☐ Custom PF Curve

Point 1 (Power percent,PF Line Point)

2551.0

Point 2 (Power percent,PF Line Point)

2551.0

Point 3 (Power percent,PF Line Point)

2551.0

Point 4 (Power percent,PF Line Point)

2551.0

Power percent (0~100,255); PF Line Point (-1~-0.8,0.8~1);

Yes

No

Set Inverter

Dry Function

Off-grid function setting

☒ Set Backup On/Off

Enable

☐ Set Backup Frequency

50Hz

☐ Set Backup Voltage

230

☐ Generator Charge Enable

Disable

☐ Generator Control

Not force

☐ Generator Rating

0 W [0-60000]

Regulation parameter setting

Q(V)setting

Yes

No

This step applies only to the systems which have added a SYN box for the backup fuction.

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