PowMr

Remote Meter

User Manual

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Important Safety Instructions

Warning: Please read and follow all safety instructions carefully.

➢ Before installing and operating this product, please read the manual thoroughly and keep it in a safe place for future reference.

➢ The following individuals are not allowed to install or operate this product without strict guidance and supervision:

　　a. Anyone lacking the relevant knowledge, experience, or capability to safely install and/or use the product.

　　b. Anyone with physical, sensory, or cognitive impairments/limitations (including children) that may affect safe installation and/or operation.

➢ Upon receiving the product, please check for any damage that may have occurred during transportation. If any issues are found, contact our company or the shipping company immediately.

➢ Before installation, please read all instructions and precautions in the manual to ensure proper operation of the product.

➢ Install the product in an environment that avoids direct sunlight, rain, moisture, corrosion, dust, and strong electromagnetic interference. Keep it away from any flammable liquids or gases. The controller is for indoor use only.

➢ Do not allow water to enter the product.

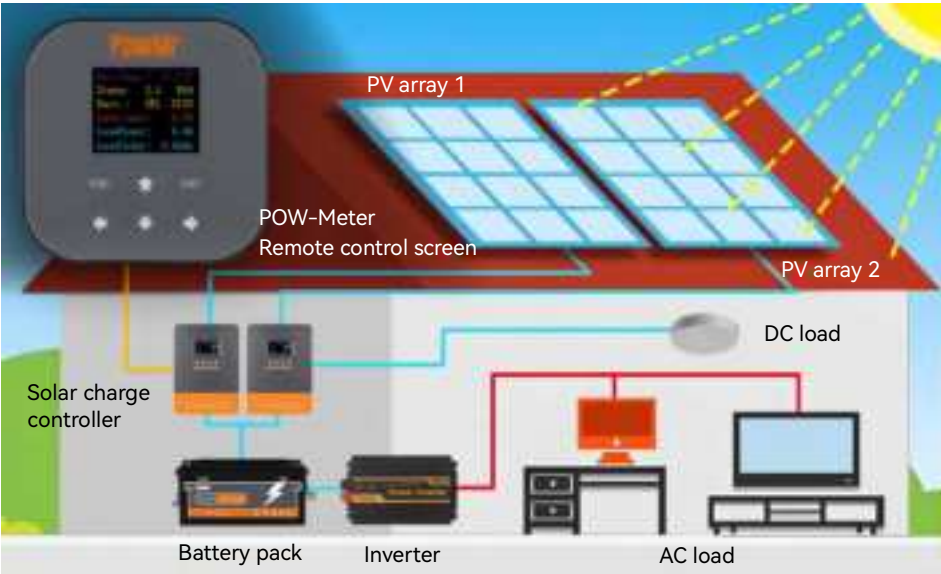➢ Do not open the product casing for self-repair.

1 Product Overview

POW–Meter is a remote control device designed for the POW-M series solar controllers, aimed at meeting the demand for remote data integration, monitoring, and control. The integration of the POW-Meter breaks the spatial limitations of device data monitoring, enhancing user experience with more convenient and seamless usage.

The POW-Meter remote control device integrates data and status from the photovoltaic side, battery side, load side, and the controller itself. Users can view relevant information or modify settings through a remote dashboard, offering a more convenient, flexible, and simple solution for remote solar system monitoring, and meeting the diverse spatial layout needs of photovoltaic systems.

1.1 System Diagram

The application diagram of the POW-Meter remote control device in a photovoltaic system is shown below.

1.2 Features

- Flexible compatibility with POW-M series controllers.
- LCD color screen design, displaying real-time parameters for photovoltaic, battery, and AC/DC load.
- Touch interface with responsive control, easy-to-clean integrated panel.
- Supports quick configuration of charging parameters by selecting battery types or allows custom battery charging parameters.
- Automatically generates and displays daily, monthly, and yearly charging power or energy generation data charts.
- Fault code display for real-time system status monitoring, providing accurate error feedback.
- Adjustable display brightness.
- Supports quick reset of the controller.
- Magnetic back panel for easy and flexible installation.
- Suitable for parallel systems, it can significantly enhance operational convenience and efficiency through centralized management via the remote control screen.

2 Product Appearance

1	LCD Display	4	Metal Mounting Plate
2	Buttons	5	Mounting Holes
3	Magnetic Back Panel	6	Communication Cable

3 Installation Guide

You can scan the QR code on the right to view the installation and operation guide for the remote control screen.

3.1 Items Included in the Package

NO.	Image	Name	Quantity
1		Remote Control Device + 3m Communication Cable	1
2		Metal Mounting Plate	1
3		Installation screws	3
4		User Manual	1

3.2 Wall Installation

Step1. After confirming the installation location, fix the metal mounting plate to a solid, flat surface using 3 screws.

Step2. Attach the remote control device to the metal plate using the magnetic back panel on the back of the device.

3.3 Metal Surface Installation

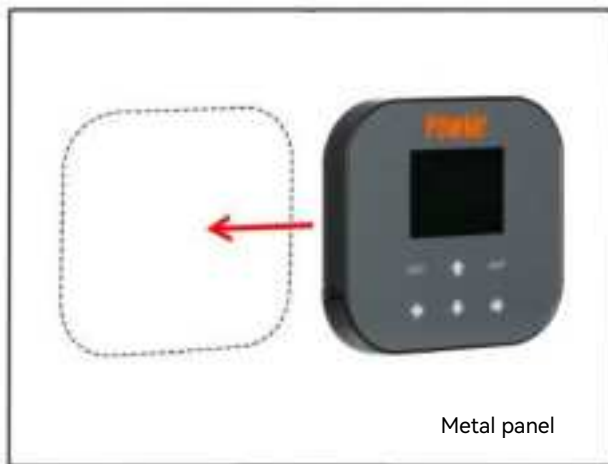Use the magnetic back panel of the remote control device to attach it to an existing metal surface.

Metal panel

3.4 Wiring

Connect the communication cable to the RS485 communication port at the bottom of the compatible controller.

RS485 port

3.5 Remote Control Device Connection in Parallel System

In systems with multiple controllers in parallel, the remote control screen should be connected to the master unit to enable centralized management of the system's operation status and parameter configuration, significantly improving the system's operational convenience and efficiency.
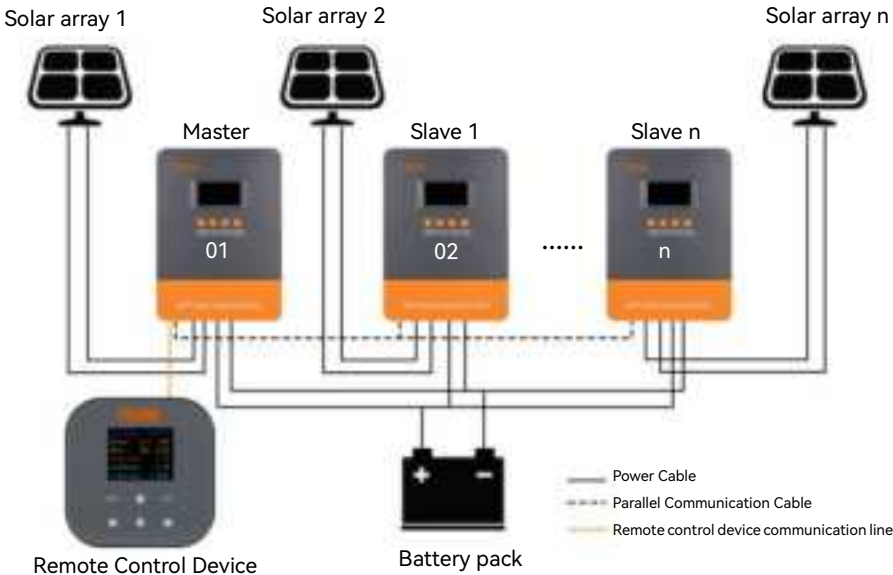
3.5.1   Installation and Connection Steps

➤ **Wiring for Parallel Systems:**

1. Complete the parallel wiring of multiple controllers, ensuring that the power and communication cables are properly and securely connected.
2. Check that the master-slave settings are correct, ensuring that the identity configuration of the master and slave units is accurate.

➤ **Remote Control Screen Connection:**

1. Connect the remote control screen to the master unit, ensuring that the communication connection is functioning correctly.
2. After powering on, confirm that the remote control screen displays the photovoltaic input information and operating status of the master unit properly.

Solar array 1   Solar array 2   Solar array n

Master   Slave 1   Slave n

01   02   ......   n

Power Cable
Parallel Communication Cable
Remote control device communication line

Remote Control Device   Battery pack

3.5.2   Scope of the Remote Control Screen in Parallel Systems

1. The remote control screen can display the master unit's input/output information and operating status in real-time.

2. It supports modifying the master unit's charging program via the remote control screen, including: battery type selection, custom charging parameters (such as charging voltage, charging current), and charging time settings, which will be synchronized to the slave units.

3. The remote control screen also supports modifying the master unit's load output-related program (such as load operation mode).

Note

- The remote control screen only displays the photovoltaic input information of the master unit, not the slave unit's photovoltaic input information.

- After modifying the master unit's charging program, the slave units will automatically synchronize the update within 5 to 10 seconds.

- Modifications to the load output-related program will only apply to the master unit and will not be synchronized to the slave units.

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4 Button Instructions

Button	Description
ESC	Return to previous level / Return to Home
ENT	Enter next level / Retain
⬆	Switch to previous option / Increase value
⬇	Switch to next option / Decrease value
⬅	Switch to the previous setting item / Move the cursor left
➡	Switch to the next setting item / Move the cursor right

5 LCD Screen Display Instructions

5.1 Main Screen

➢ After the device is connected to the controller, it will automatically start and display the startup screen showing the corresponding version number information.

➢ After the startup screen ends, it will enter the main page. You can switch between two main screens using the up or down button.

PV Volt:	71.4V
Bat Volt:	14.6V
ChgCurr:	20.7A
ChgPower:	402.3W
ChgToday:	1.4kWh
ChgMonth:	25.9kWh

Dev. Temp:		26.0°C
State:	7.0	E00
Batt.:	SEL	S12V
Load Curr:		1.5A
LoadPower:		18.9W
LoadToday:		0.66kWh

Main Screen Page 1   Main Screen Page 2

No.	Item	Description	No.	Item	Description
1	PV Volt	Photovoltaic input voltage	7	Dev. Temp	Device temperature
2	BatVolt	Battery voltage	8	State	Operating mode and fault code
3	ChgCurr	Charging current	9	Batt	Battery type and system voltage
4	ChgPower	Charging power	10	Load Curr	Load side output current
5	ChgToday	Today's charging capacity	11	LoadPower	Load side output power
6	ChgMonth	Charging capacity of the month	12	LoadToday	Load side daily consumption

Note
- For operating mode codes, refer to section 6.1; for fault codes, refer to section 6.2.
- "Load Curr", "Load Power", and "Load Today" will only be displayed when the connected controller supports DC output.
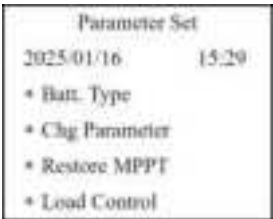
5.2 Settings Menu Page

> **Note**
> ● After connecting the remote control screen, all settings operations of the controller must be done through the remote control screen. Any program changes made on the controller's operation panel will be overridden by the remote control screen.
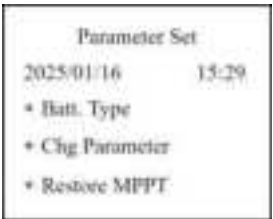
1. On the main screen, press the **ENT** key to enter the settings menu page.

2. The menu page will sequentially display the following options: Battery Type, Charging Parameters, Reset MPPT, Load Control (only applicable for models that support DC output), Data Chart, Device Setup, and Parallel Communication Code Settings (only applicable for models that support parallel operation).

➢ The menu page for each model will display a combination of Page 1 and Page 2.

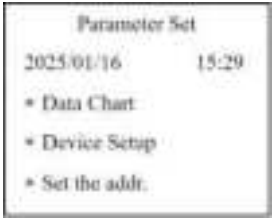| Controller Model	Menu Page 1	Menu Page 2
POW-M25-PRO; POW-M35-PRO; POW-M45-PRO	1-A	2-A
POW-M60-PRO; POW-M60-MAX	1-A	2-A
POW-RV1225A; POW-RV1235A; POW-RV1245A	1-A	2-A
POW-M60-ULTRA	1-A	2-B
POW-M80-PRO; POW-M100-PRO	1-B	2-B

Settings Menu Page 1-A

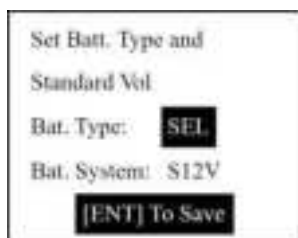Settings Menu Page 1-B

Settings Menu Page 2-A

Settings Menu Page 2-B

5.2.1   Battery Type

> **Note**
> ● Due to differences in the voltage ranges supported by different controller models, the available battery types and system voltages vary between models. The available options are detailed in the controller manual.

Step1.   Select a preset battery type or choose the user-defined mode. If you choose the USE mode, you will be allowed to manually modify the "Chg Parameter" (Charging Parameters) in menu item.
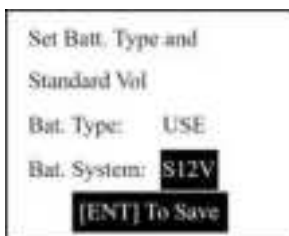

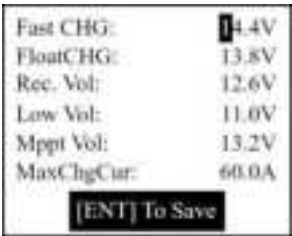Set Battery Type   Choose User-defined

Step2.   Set the battery system voltage. If the "USE" option is selected for the battery type, you will need to manually set the system voltage. If a preset battery type is selected, the system will automatically detect the system voltage, and no manual setting is required.

Set System Voltage

5.2.2 Charging Parameters

Charging parameters can only be edited when the battery type is selected as USE.

Taking POW–M60–ULTRA as an example

Item	Description
Fast CHG	Fast Charging Voltage
Float CHG	Float Charging Voltage
Rec. Vol	Low Voltage Recovery Voltage
Low Vol	Low Voltage Cutoff Voltage
Mppt Vol	Maximum Power Point Tracking Voltage
MaxChgCur	Maximum Charging Current

Note

- All battery charging voltage parameters displayed on the device are for a 12V system voltage. For a 24V system, multiply the value by 2. If the system voltage is 24V with a lead-acid battery or a custom battery type, the actual charging voltage will be the displayed value multiplied by 2.

- The maximum charging current setting can only be effectively changed when the controller is connected to the following models.

Models of controllers that support custom maximum charging current.
POW-M60-ULTRA

➢ **Preset Charging Parameters for Each Battery Type**

1. For Lead-Acid Batteries and User-defined Batteries:

Battery type Parameters	FLd	GEL	SEL	USE
Boost Charging Voltage	14.6V	14.2V	14.4V	9.0~17.0V
Float Charging Voltage	13.8V	13.8V	13.8V	9.0~17.0V
Low Voltage Cutoff Voltage	11.0V	11.0V	11.0V	9.0~17.0V
Low Voltage Recovery Voltage	12.6V	12.6V	12.6V	9.0~17.0V

2. For Lithium Iron Phosphate (LiFePO4) Batteries:

Battery type Parameters	L04	L08	L16
Boost Charging Voltage	14.5V	29.0V	58.0V
Float Charging Voltage	13.8V	27.6V	55.2V
Low Voltage Cutoff Voltage	11.2V	22.4V	44.8V
Low Voltage Recovery Voltage	12.0V	24.0V	48.0V

Note
- The charging parameters for lead-acid batteries and custom batteries in the table above are for a 12V system voltage. For a 24V system, multiply the values by 2. If a 24V lead-acid battery or custom battery type is connected, the actual charging voltage will be the displayed voltage value multiplied by 2.
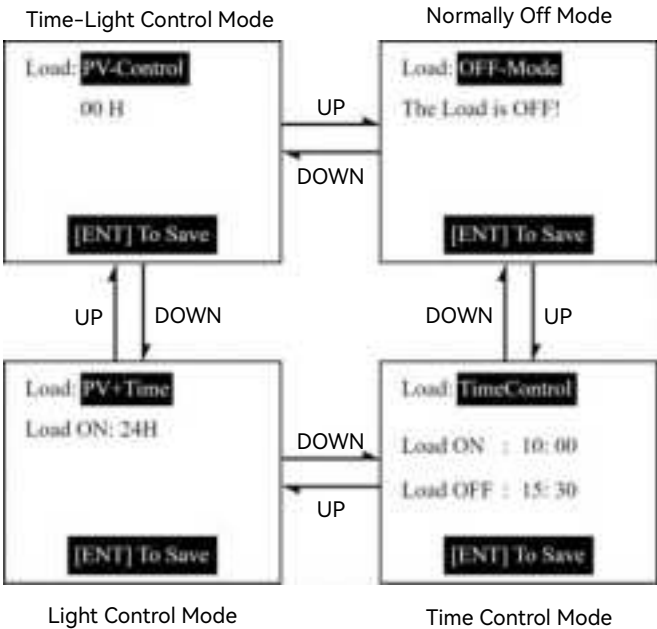
5.2.3 Reset MPPT

After entering the Reset MPPT page, press the **ENT** key to restore the charging parameters to the factory settings.

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5.2.4 Load Control Mode

The load control mode settings are only applicable to models that support DC output with load.
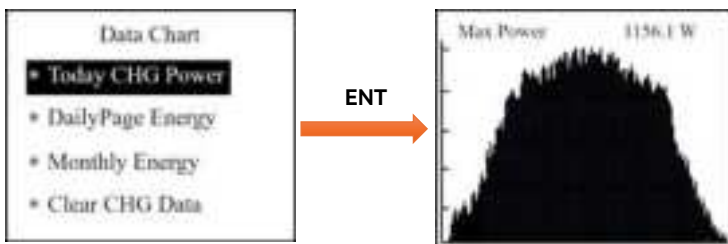
Time-Light Control Mode   Normally Off Mode

Light Control Mode   Time Control Mode

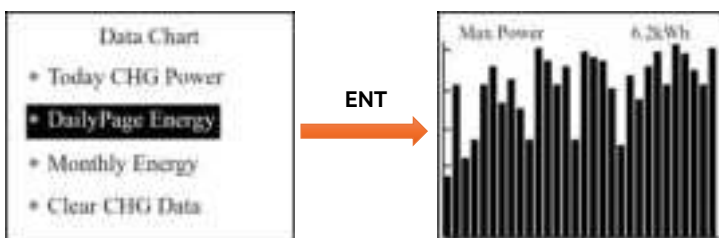| Mode	Description
PV+Time	Time-Light Control Mode: The set duration refers to the time after sunset when the load will be activated. If set to 24H, it will be in the normally on mode.
OFF-Mode	Normally Off Mode.
Time-Control	Time Control Mode: The load is activated and deactivated according to the set on/off times.
PV-Control	Light Control Mode: The load is activated after sunset and stopped after sunrise.

5.2.5   Data Chart

➢ **Daily Charging Power**

View the photovoltaic power generation data for the day, with a maximum of 15 hours of data displayed, recorded every 6 minutes. The real-time data for the day is cleared at midnight and converted into cumulative data.
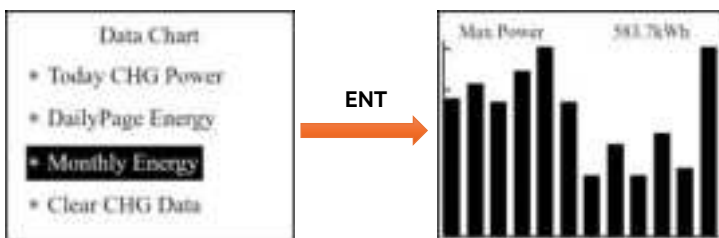

➢ **Daily Power Generation**

View the daily power generation data for the current month, with a maximum of 31 days of data displayed. Data is cleared at the end of the month and converted into cumulative data.
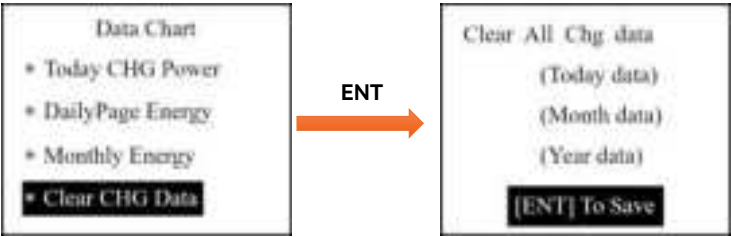

➢ **Monthly Power Generation**

View the power generation data for the past 12 months. New data will overwrite old data, and the display will always show the most recent 12 months of data.
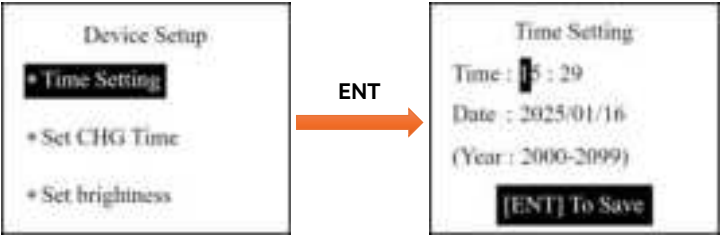
➢ **Clear Data**

ENT

5.2.6 Device Setup

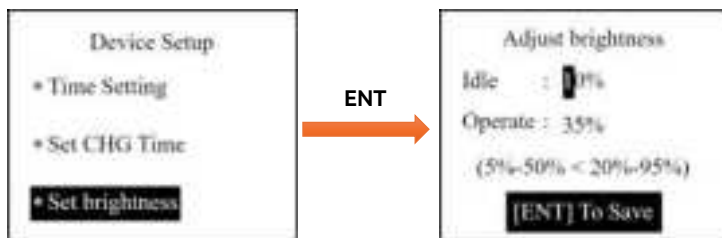Used to configure the remote control screen device.

➢ Set the local time displayed on the remote control screen.

ENT

➢ Set the time for recording and reading charging data. (Charging data outside this period will not be displayed in the "Data Chart")

ENT

➤ Set the display brightness

ENT

5.2.7 Parallel Communication Code Settings

Note

- Only applicable to models that support parallel operation.
- It only applies to the connected controller
- If parallel operation is not used, this program does not need to be configured.

The parallel communication code is used to define the master and slave units. The controller with the smallest communication code value is the master. During parallel operation, if the master unit malfunctions, the system will automatically select the controller with the next communication code as the new master. For example, if the master unit with communication code 01 fails, the system will define the unit with communication code 02 as the new master.

ENT

Menu Page 2   Parallel Communication

6 Device Operation

6.1 Operating Mode Codes

Dev. Temp:		26.0°C
State:	7.0	E00
Batt.:	SEL	S12V
Load Curr:		1.5A
LoadPower:		18.9W
LoadToday:		0.6kWh

Main Page 2

Mode Code	Description
3.0	Night Mode, No Charging
4.0	Fast Charging Mode (MPPT Mode)
7.0	Boost Charging Mode
8.0	Float Charging Mode

6.2 Fault Reference Codes

Main Page 2

Fault Code	Description	Troubleshooting Methods
18	Low Photovoltaic Input Voltage	Increase the photovoltaic array voltage by changing the series–parallel configuration or adding more solar panels.
60	Overtemperature Protection	When overheating, the fan will automatically activate for efficient forced cooling.
63	Battery Voltage Too High	Charging will automatically stop, and charging will resume once the battery voltage drops to normal levels.
65	Battery Voltage Too Low	Discharging will automatically stop, and discharging will resume once the battery voltage rises to normal levels.
71	High Photovoltaic Input Voltage	Decrease the photovoltaic array voltage by changing the series–parallel configuration or removing solar panels.
73	Overcharging Current	Reduce the number of solar panels to lower the photovoltaic input power.

7 Technical Parameters

Model	POW-Meter
Applicable Models	POW–M25–PRO; POW–M35–PRO; POW–M45–PRO POW–M60–PRO; POW–M60–MAX; POW–M60–ULTRA POW–M80–PRO; POW–M100–PRO POW–RV1225A; POW–RV1235A; POW–RV1245A
Input Power	5VDC (Controller communication interface power supply)
Installation Method	Back panel mounting / Magnetic panel mounting
Static Loss	20mA/5V
Maximum Power Consumption	50mA/5V
Operating Environment	–20℃ ~ +65℃
Storage Environment	–20℃ ~ +80℃
Communication Cable Length	3m
Dimensions	81x81x15mm (including base, excluding communication cable)
Net Weight	153g (including base and communication cable)

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