AlwaysControl Technology

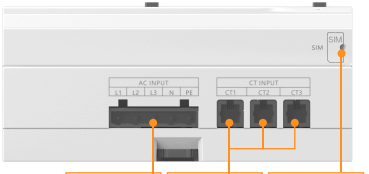
Neuron III(N3)

Quick Guide

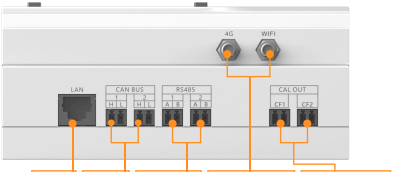
1. Hardware interface and safety precautions

1. 1 Hardware interface

Neuron III (N3) Front-view



NeuronIII(N3) Top-view



NeuronIII(N3) Bottom-view

1. 2 Safety Precautions

Personal safety:

- During installation, operating live equipment is strictly prohibited. Never install or remove cables while live. The moment cable cores come into contact with conductors, arcs, sparks, or explosions may occur, potentially causing fire or personal injury.
- Improper or incorrect operation of equipment while live equipment may cause fire, electric shock, or explosions, resulting in personal injury or property damage.
- During operation, wearing watches, bracelets, bangles, rings, necklaces, or other conductive objects is strictly prohibited to avoid electric shock and burns.
- Specialized insulated tools must be used during this operation to avoid electric shock or short circuits. The insulation withstand voltage rating must meet local laws, regulations, standards, and specifications.
- Specialized protective equipment, such as protective clothing, insulated shoes, goggles, a hard hat, and insulated gloves, must be used during this operation.

Electrical Safety:

- Before making any electrical connections, ensure the equipment is undamaged, as this could cause electric shock or fire.
- Improper or incorrect operation may result in fire, electric shock, or other accidents.
- During operation, prevent foreign matter from entering the equipment. Failure to do so may cause a short circuit, damage, load power derating, or power failure, resulting in personal injury.

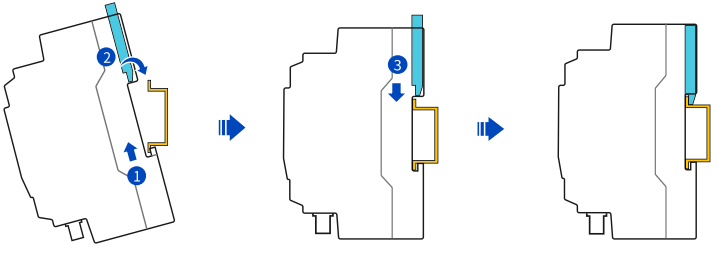
Environmental requirements:

- Do not expose the device to flammable or explosive gases or smoke, and do not perform any operation in such an environment.
- Do not store flammable or explosive items in the device area.
- Do not place the device near heat or fire sources, such as fireworks, candles, heaters, or other heat-generating devices. Heat from the device may damage the device or cause a fire.
- The device should be installed away from liquids. Do not install it below water pipes, air vents, or other locations prone to condensation. Do not install it below air conditioning vents, ventilation holes, or computer room wiring windows, as this prevents liquid from entering the device and causing malfunction or short circuits.

Safety of machinery:

- When working at height, wear a safety helmet, safety belt, or waist rope, and attach to a sturdy structure. Do not hang from loose, moving objects or sharp metal edges to prevent hooks from slipping and causing falls.
- Tools must be fully prepared and inspected by a professional organization. Do not use tools that are damaged, have failed inspection, or have expired. Ensure that tools are secure and not overloaded.
- Drilling holes in equipment is strictly prohibited. Drilling will damage the equipment's seals, electromagnetic shielding, internal components, and cables. Metal chips from drilling can enter the equipment and cause short circuits in circuit boards.

Equipment installation method： For guide rail type installation, clamp N3 onto the 35mm standard guide rail from bottom to top, and then press down the buckle to make N3 buckle on the guide rail.



2. Quick operation guide

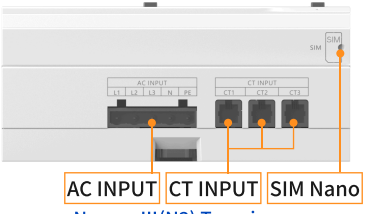
2. 1 Packing list

No.	Product Name	QTY
1	Neuron III Intelligent controller	1
2	Quick Guide	1
3	Warranty	1
4	*External twistable rod antenna	2
5	5-pin AC power input terminal	1
6	2-pin communication input terminal	6
7	*Open and close CT ring (standard 100A, line length 50cm)	3

2. 2 Equipment wire

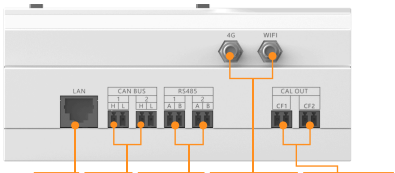
Identified in the figure	Product Name	Type	Wire diameter	Source
AC INPUT	AC power input line	Copper core cable (temperature resistance ⩾ 90 °C)	14 AWG, 2.1 ㎟	User-provided
CAN BUS	CAN communication line	Two-core outdoor shielded twisted-pair cables	0.2 ㎟ ~ 1.5 ㎟, 0.5 ㎟ recommended	User-provided
RS485	RS485 communication line	Two-core outdoor shielded twisted-pair cables	0.2 ㎟ ~ 1.5 ㎟, 0.5 ㎟ recommended	User-provided
LAN	Network port communication line	Cat 5e network cable, RJ45 connector	0.12 ㎟ ~ 0.2 ㎟, 0.2 ㎟ recommended	User-provided
CAL OUT	Calibration interface	Two-core outdoor shielded twisted-pair cables	0.2 ㎟ ~ 1.5 ㎟, 0.5 ㎟ recommended	User-provided
WIFI	External WIFI antenna	2.4GHz, external screwable rod antenna		Optional
4G	External 4G antenna	2.4GHz, external screwable rod antenna		Optional
CT INPUT	CT ring input interface * 3	Two or more twisted-pair cables, RJ9 crystal head, CT ring transformation ratio 3000:1	18~26AWG black sheathed wire, 50cm	Standard CT is 100 A, Optional(400A, 500A)

2. 3 Electrical connection: connect AC power line/external CT line/RS485, CAN communication line.



NeuronIII(N3) Top-view

Interface description	Definition	Function	Explain
AC INPUT	L1	AC power incoming line L1	Used to connect to the power grid
	L2	AC power incoming line L2	
	L3	AC power incoming L3	
	N	AC power incoming line N	
	PE	AC power incoming line PE	
CT INPUT	CT1	CT loop input incoming line 1, detect current at L1 side	Used to connect the external open-and-close CT ring (Note: Do not connect the CT ring in the wrong order, which may affect the normal operation of the equipment)
	CT2	CT loop input incoming line 2, detect current at L2 side	
	CT3	CT loop input incoming line 3, detect current at L3 side	
SIM Nano	SIM Card	SIM card slot	Used to connect LTE communication



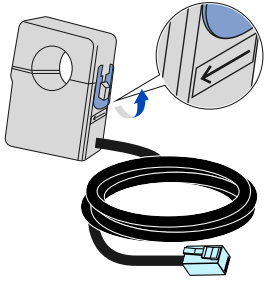
NeuronIII(N3) Bottom-view

Interface Description	Definition	Function	Explain
LAN	Network port	RJ45 network port	Used to connect to a router or computer for communication
CAN BUS	CAN BUS_1 H	CAN H	Used to connect CAN devices for communication
	CAN BUS_1 L	CAN L	
	CAN BUS_2 H	CAN H	
	CAN BUS_2 L	CAN L	
RS485	RS485_1 A	RS485 A	Used to connect RS485 devices for communication
	RS485_1 B	RS485 B	
	RS485_2 A	RS485 A	
	RS485_2 B	RS485 B	
CAL OUT	CAL OUT_CF1+	Reactive energy meter pulse output+	For calibrating electric meters (for professional use)
	CAL OUT_CF1-	Reactive energy meter pulse output-	
	CAL OUT_CF2+	Active energy meter pulse output+	
	CAL OUT_CF2-	Active energy meter pulse output-	

The procedure for connecting the CT ring is as follow:

1. First, install the CT rings according to phase: CT1 for L1 phase, CT2 for L2 phase, and CT3 for L3 phase.
2. When installing the CTs, ensure that the current direction matches the CT direction to avoid reverse connection, which can cause current detection errors.
3. Open the CT ring's latch, place the wire into the center hole, and then close the latch.
4. Finally, plug the CT ring's RJ9 connector into the CT ring's input port and secure it firmly in place.

1



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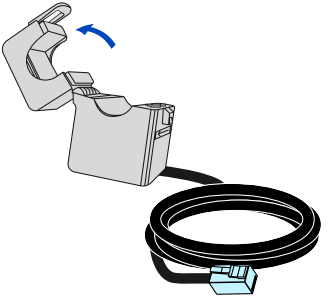

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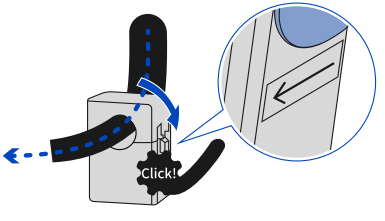

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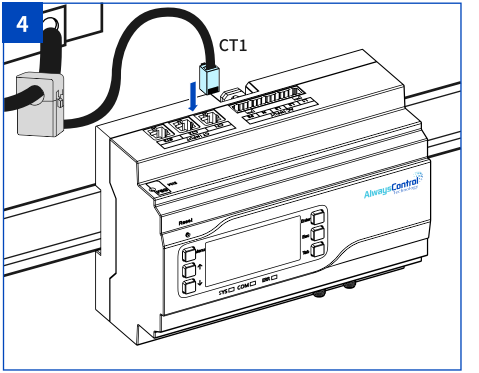
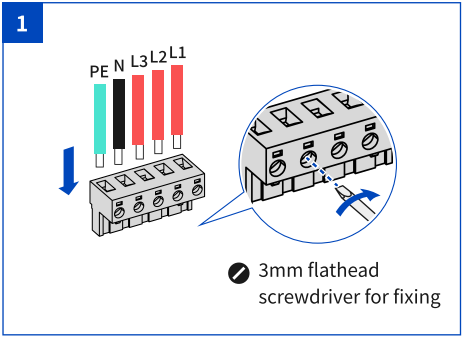
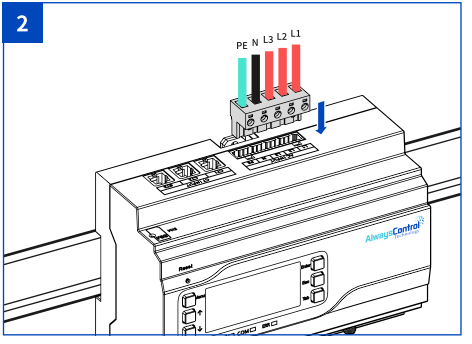


The steps to connect the AC power cord are as follows:

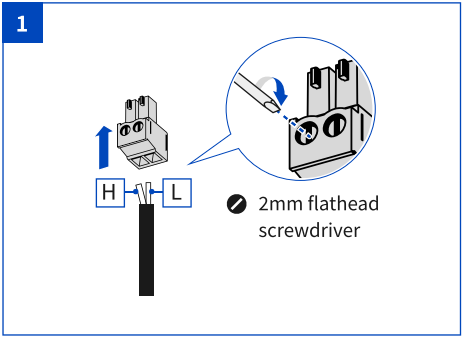
1. Connect the AC power cables L1, L2, L3, N, and PE to the power connector in order and secure them using a 3mm flat-blade screwdriver.
2. Insert the power connector into the AC power input port, ensuring it is fully seated and secure.

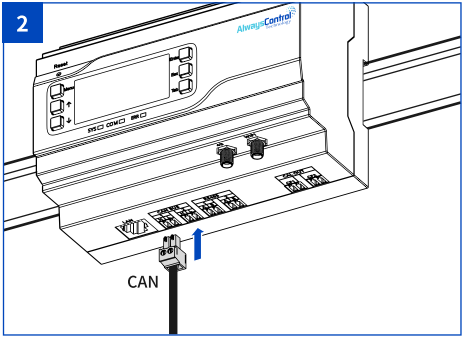




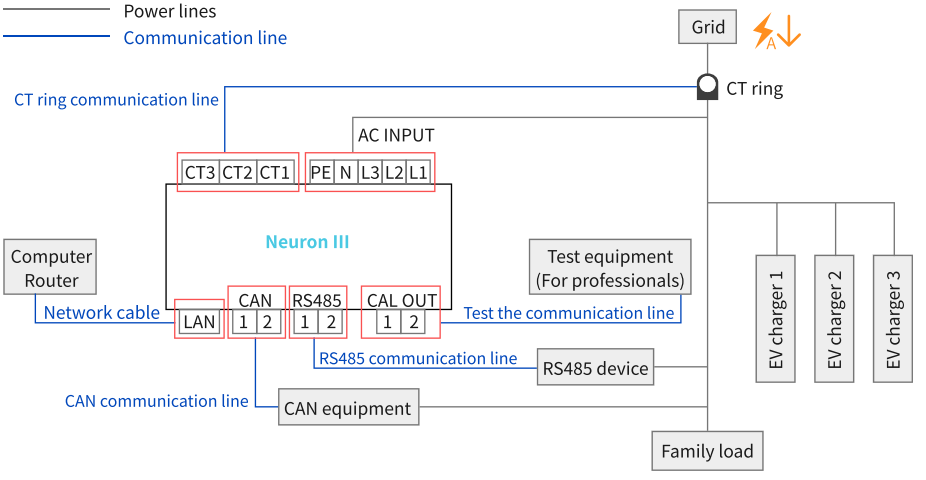
The steps to connect CAN and RS485 communication lines are as follows:

1. Connect the CAN and RS485 communication cables to the 2-pin connectors in that order and secure them using a 2mm flat-blade screwdriver.
2. Insert the 2-pin connector into the CAN/RS485 communication port and make sure it is fully seated.





System wiring diagram



3. Check before powering on

- The Neuron III is securely installed, free of looseness, drift, or shaking. The installation environment is free of condensation and frost.
- All cables are securely connected, free of short circuits, breaks, or looseness. The CT rings match the power cable sequence and are oriented correctly.
- The power and signal cable routing meets the requirements for power and weak current routing and complies with the system cabling plan.
- The cables are neatly and beautifully tied, with cable ties evenly spaced, appropriately tight, and aligned in the same direction.
- There is no excess tape or cable ties left on the cables.

4. Neuron III power on and debugging

- Please use special protective equipment and insulated tools to avoid electric shock or short circuits.
- Before powering on the device for the first time, parameter settings must be accurately performed by a qualified professional. Non-professional operation may result in incorrect settings, causing the device to fail to meet the requirements of the country or region, and affecting normal operation.

4. 1 Neuron III Commissioning

Industrial control software is required to debug the Neuron III (for professional use).
Initial login account: **admin**
Initial login password: **xuheng8888**

Industrial control software download link: https://www.alwayscontrol.com.cn/en-US/doc/information
For detailed instructions on how to use the industrial control software, please refer to the industrial control software manual.

4. 2 Button Description

Neuron III (N3) Front-view

Button	Explain
Reset	Press and hold for 5 seconds to restore the device to factory settings. During this 5-second period, the system indicator light will flash slowly (1 second per cycle), then quickly (0.2 seconds per cycle), indicating that you can release the Reset button and wait for the device to be restored to factory settings.
Menu	Short press to view the meter display content, such as voltage, current, etc.; long press to enter the setting page menu and set parameters.
↑	Look up
↓	Look down
Enter	Confirm key
Esc	Back key
Tab	Short-press this key to quickly view the current operating mode, anti-tripping current, alarm details, and more.Long-press it to access the quick settings menu, set the screen backlight, and pair devices.

4. 3 LED indicator light description

Indicator light	State	Explain
SYS	OFF	System not running
	Green light is always on	System power on and running
COM	OFF	N3 has no network configuration and data cannot be uploaded to the cloud
	Solid yellow light	N3 has a network configuration, and data can be uploaded to the cloud
	The yellow light flashes, and the flashing cycle is 1s/time	N3 Firmware Update
ERR	OFF	No system alarm
	Red light is on	System abnormality alarm

5. Equipment maintenance

- Before performing maintenance, disconnect the device from the power supply. Follow the instructions on the delayed discharge label and wait the appropriate amount of time to ensure the device is powered off before operating.
- Use specialized protective equipment and insulated tools to avoid electric shock or short circuits.

Maintenance content

Maintenance content	Inspection method	Maintenance cycle
Equipment operating status	1. Check the device for damage or deformation. 2. Check the indicator light status to see if it is normal.	Every six months
Electrical connections	1. Check for loose or disconnected cables. 2. Check for damage to the cables, especially any cuts where the cables meet the metal surface.	Six months after the first commissioning; every six months to once a year thereafter

6. Product information link

https://www.alwayscontrol.com.cn/en-US/doc/information

7. Technical Support

If you encounter any problems, please contact us.
Phone：0755-23303782
Email：xuheng@alwayscontrol.com.cn
Web：https://www.alwayscontrol.com.cn
Address：4th Floor, Building 7#, Taihua Wutong Industrial Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen

Always-control Technology Co., Ltd.

Warranty

Product name:

Year Month Day

Name		Phone		Post code	
Address					
Where to buy				Price	
Product Specifications		Order number		Serial number	
Dealer Signature:			User Signature:		

Warranty Terms

1. The product is under warranty for two years from the date of sale, and accessories are not covered by the warranty.
2. If the product fails due to human damage, self-disassembly, folding of the seal label, improper use, etc., paid repair service will be implemented.
3. This card must be provided during warranty. If this card is not provided or the card is altered privately, the company has the right to refuse warranty.
4. The starting date of the warranty period shall be based on the date of the purchase invoice or voucher of the product.

*The final right of interpretation of the contents of this warranty card belongs to Always-control Technology Co., Ltd.