Wireless Current Sensor
with 6 x Clamp-On CT, 4 x NTC Temperature Sensor and 1 x Digital Output

R900NAD Series User Manual

Contents

1. Introduction

R900NAD series is a wireless current sensor that has 6 clamp-on current transformers (CT), 4 point-contact NTC thermistors, 1 digital output, 1 light sensor, and a built-in vibration sensor. In addition to these powerful functions, the R900NAD series supports configuration and firmware upgrade through Netvox NFC App. Just hold your phone near the device. Data reading, device settings, everything you need can all be done on the app.

LoRa Wireless Technology

LoRa is a wireless communication technology famous for its long-distance transmission and low power consumption. Compared with other communication methods, LoRa spread spectrum modulation technique greatly extends the communication distance. It can be widely used in any case that requires long-distance and low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, and industrial monitoring. It has features like small size, low power consumption, long transmission distance, strong anti-interference ability, and so on.

LoRaWAN

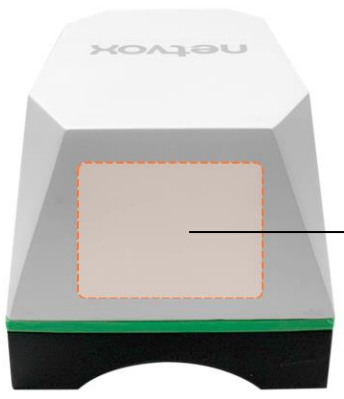
LoRaWAN uses LoRa technology to define end-to-end standard specifications to ensure interoperability between devices and gateways from different manufacturers.

2. Appearance

R900NADxxx L

R900NADxxx

Top



Bottom

Left Side

Back

3. Features

- Equipped with multiple kinds of sensors
  (Up to 6* clamp-on CTs + up to 4* NTC thermistor + 1* digital output + 1* light sensor +1* built-in vibration sensor)
- CT cable (detachable/undetachable), measurement range (75/150/250A…), phase (single / 3-phase) can be personalized based on user's need
- Only for AC detection
- Powered by DC 12V
- Support NFC. Configure and upgrade firmware on Netvox NFC app
- Store up to 10000 data
- Report when device disconnects from the network
- Output digital signal based on the threshold of current and temperature
- Support magnetic switch to turn on/off and factory reset device
- Up to 7 installation methods for different kinds of scenarios
- Main unit: IP53; Sensor: IP30
- LoRaWAN™ Class A compatible
- Frequency hopping spread spectrum
- Applicable to the third-party platforms: Actility/ThingPark, TTN, MyDevices/Cayenne

4. Setup Instructions

On / Off

Power on	Connect the DC adapter and power on the device — the green indicator flashes once.
Power off	Disconnect the adapter power.

Function key

Reboot	Step 1. When the device is powered on, press and hold the function key for 5 seconds until the green indicator flashes once, indicating that 5 seconds have passed. Step 2. Release the function key and short press it within 5 seconds. Step 3. The green indicator will flash rapidly 5 times, and the device will automatically reboot.
Factory reset	Step 1. Press and hold the function key for 10 seconds. The green indicator flashes once every 5 seconds. Step 2. Release the function key and short press it in 5 seconds. Step 3. The green indicator flashes 20 times. R900 is factory reset and off.

Magnetic switch

Reboot	Step 1. When the device is powered on, place the magnet close to the device for 5 seconds until the green indicator flashes once, indicating that 5 seconds have passed. Step 2. Remove the magnet, then place it close again within 5 seconds and remove it. Step 3. The green indicator will flash rapidly 5 times, and the device will automatically reboot.
Factory reset	Step 1. Hold a magnet close to R900 for 10 seconds. The green indicator flashes once every 5 seconds. Step 2. Remove the magnet and get close to R900 in 5 seconds. Step 3. The green indicator flashes 20 times. R900 is factory reset and off.

Note:

a. 5 seconds after powering on, the device will be in engineering test mode.

b. The on/off interval should be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.

c. After the batteries are removed, the device can still operate for a while until the power supported by the super capacitor runs out.

Join a Network

First time joining the network	Turn on the device to search the network. The green indicator stays on for 5 seconds: Success The green indicator remains off: Fail
Had joined the network before (Device is not factory reset.)	Turn on the device to search the network. The green indicator stays on for 5 seconds: Success The green indicator remains off: Fail
Fail to join the network	(1) Please turn off the device and remove the batteries to save power. (2) Please check the device verification information on the gateway or consult your platform server provider.

Function key

Short press	Device is in the network The green indicator flashes once. 6 seconds after sampling is completed, the device reports a data packet. Device is not in the network The green indicator remains off.

Note: The function key does not work during sampling.

Magnetic switch

Move magnet close to the switch and remove it	Device is in the network The green indicator flashes once. 6 seconds after sampling is completed, the device reports a data packet. Device is not in the network The green indicator remains off.

5. Data Report

35 seconds after the device is powered on, it will send a version packet and data including CT's current (mA), current consumption (mAh), and NTC's temperature (0.1°C).

Default setting:

Min Interval = 0x0E10 (3600s)

Max Interval = 0x0E10 (3600s) // should not be less than 30 seconds

Current Change = 0x0064 (100 mA)

Current Consumption = 0x03E8 (1000mAh)

Temperature Change = 0x001E (3°C)

Current Transformer Measurement Range and Accuracy:

	75A	**150A**	**250A**	**630A**	**1000A**	**3000A**
Measurement Range	100mA – 75A	1A – 150A	1A – 250A	5A – 630A	10A – 1000A	150A – 3000A
Accuracy	±1% (300mA–75A)	±1%				

Note: a. Current transformer reports 0A when the current < 1A.

b. If no configuration is done, the device sends data based on the default settings.

c. Please refer to Netvox LoRaWAN Application Command document and Netvox Lora Command Resolver http://www.netvox.com.cn:8888/cmddoc to resolve uplink data.

Data report configuration and sending period are as follows:

Min Interval (unit: second)	Max Interval (unit: second)	Reportable Change	Current Change ≥ Reportable Change	Current Change < Reportable Change
Any number between 30 to 65535	Any number between Min time to 65535	Cannot be 0	Report per Min Interval	Report per Max Interval

5.1 Example of Report Data Cmd

FPort: 0x16

(The above is in hexadecimal. To use decimal, please convert it to port 22.)

Bytes	1	2	1	Var (length according to the payload)
	Version	Device Type	Report Type	Netvox PayLoad Data

Version – 1 bytes – 0x03——the Version of Netvox LoRaWAN Application Command Version

Device Type – 2 bytes – Device Type of Device

The device type is listed in Netvox LoRaWAN Application Device type V3.0.doc

Report Type – 1 byte – the presentation of the Netvox PayLoad Data according to the device type

Netvox PayLoad Data – Var bytes (length according to the payload)

Tips

1. Version Packet

When Report Type = 0x00 is the version packet, such as 030117000A0320251013, the firmware version is 2025.10.13.

2. Data Packet

When Report Type=0x01 is the data packet.

3. Signed Value

When the temperature is negative, 2's complement should be calculated.

Device	Device Type	Report Type	NetvoxPayLoadData												
R900NAD	0x0104 0x0105 0x010C 0x010D	0x01	Battery (1 Byte, unit: 0.1v)	Current1 (3 Bytes, unit: mA)	Current2 (3 Bytes, unit: mA)	Current3 (3 Bytes, unit: mA)	Current4 (3 Bytes, unit: mA)	Current5 (3 Bytes, unit: mA)	Current6 (3 Bytes, unit: mA)	Temperature 1 (Signed 2 Bytes, unit: 0.1℃)	Temperature 2 (Signed 2 Bytes, unit: 0.1℃)	Temperature 3 (Signed 2 Bytes, unit: 0.1℃)	Temperature 4 (Signed 2 Bytes, unit: 0.1℃)	ThresholdAlarm (3 Bytes) Bit0:LowCurrent1Alarm Bit1:HighCurrent1Alarm Bit2:LowCurrent2Alarm Bit3:HighCurrent2Alarm Bit4:LowCurrent3Alarm Bit5:HighCurrent3Alarm Bit6:LowCurrent4Alarm Bit7:HighCurrent4Alarm Bit8:LowCurrent5Alarm Bit9:HighCurrent5Alarm Bit10:LowCurrent6Alarm Bit11:HighCurrent6Alarm Bit12:LowTemp1Alarm Bit13:HightTemp1Alarm Bit14:LowTemp2Alarm Bit15:HightTemp2Alarm Bit16:LowTemp3Alarm Bit17:HightTemp3Alarm Bit18:LowTemp4Alarm Bit19:HightTemp4Alarm Bit20_23: Reserved	ShockTamper Alarm (1 Byte, 0x00_NoAlarm, 0x01_Alarm)

Example of Uplink: 03 0117 01 00 000000 000000 000000 000000 000000 000000 000000 0045 0046 0056 0057 64111401 00 000000005 00000005 00000005 0000005 00000005 0000005

1st Byte (03): Version

2nd 3rd Byte (0117): DeviceType

4th (01): ReportType

5th Byte (00): Battery—0.0V

6th – 8th Byte (000000): Current1—0mA

9th – 11th Byte (000000): Current2—0mA

12th – 14th Byte (000000): Current3—0mA

15th – 17th Byte (000000): Current4—0mA

18th – 20th Byte (000000): Current5—0mA

21th – 23th Byte (000000): Current6—0mA

24th – 25th Byte (0045): Temperature1—6.9°C 0045 (Hex) = 69 (Dec), 69* 0.1°C = 6.9°C

26th – 27th Byte (0046): Temperature2—7.0°C 0046 (Hex) = 70 (Dec), 70* 0.1°C = 7.0°C

28th – 29th Byte (0056): Temperature3—8.6°C 0056 (Hex) = 86 (Dec), 86* 0.1°C = 8.6°C

30th – 31th Byte (0057): Temperature4—8.7°C 0057 (Hex) = 87 (Dec), 87* 0.1°C = 8.7°C

32th – 35th Byte (64111401): Threshold Alarm—R900NAD

36th Byte (00): Shock Tamper Alarm —false

37th – 40th Byte (0000005): Current Consumption—5mAh 0000005(Hex) = 5(Dec), 5* 1mAh = 5mAh

41th – 44th Byte (0000005): Current Consumption—5mAh 0000005(Hex) = 5(Dec), 5* 1mAh = 5mAh

45th – 48th Byte (0000005): Current Consumption—5mAh 0000005(Hex) = 5(Dec), 5* 1mAh = 5mAh

49th – 52th Byte (0000005): Current Consumption—5mAh 0000005(Hex) = 5(Dec), 5* 1mAh = 5mAh

53th – 56th Byte (0000005): Current Consumption—5mAh 0000005(Hex) = 5(Dec), 5* 1mAh = 5mAh

57th – 60th Byte (0000005): Current Consumption—5mAh 0000005(Hex) = 5(Dec), 5* 1mAh = 5mAh

Note: Current and Temperature reports 0xFFFFFF or 0xFFFF when no sensor is connected. For example, Current4, 5, and 6 report 0xFFFFFF when R900 only has 3 CTs connected.

5.2 Example of Configure Cmd

FPort: 0x17

(The above is in hexadecimal. To use decimal, please convert it to port 23.)

Bytes	1	2	Var (length according to the payload)
	Cmd ID	Device Type	Netvox PayLoad Data

Cmd ID – 1 byte

Device Type – 2 bytes – Device Type of Device

The device type is listed in Netvox LoRaWAN Application Devicetype3.0.doc

Netvox PayLoad Data– var bytes Var bytes (length according to the payload)

Description	Device	Cmd ID	Device Type	Netvox Pay Load Data				
Config Report Req	R900NA D6T4DO R900NA D6T1O R900NA D3T1O R900NA D1T1O	0x01	0x0117 0x0118 0x0119 0x011A	MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	Current Change (2byte Unit:1mA)	Temperature Change (2byte Unit:0.1°C)	Current Consumption Change (4Bytes,Unit :1mAh)
Config Report Rsp		0x81		Status (0x00_success)				
Read Config Report Req		0x02						
Read Config Report Rsp		0x82		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	Current Change (2byte Unit:1mA)	Temperature Change (2byte Unit:0.1°C)	Current Consumption Change (4Bytes,Unit :1mAh)
Set Shock Sensor Sensitivity Req		0x03		Shock Sensor Sensitivity (1 Byte)				
Set Shock Sensor Sensitivity Rsp		0x83		Status (0x00_success)				
Get Shock Sensor Sensitivity Req		0x04						
Get Shock Sensor Sensitivity Rsp		0x84		Shock Sensor Sensitivity (1 Byte)				

(1) Configure device parameters

MinTime = 0x003C (60s), MaxTime = 0x003C (60s),

Current Change = 0x0064 (100mA), Temperature Change = 0x001E (3°C)

Downlink: 010117003C003C0064001E03E8

Response: 81011700 (configuration success)

81011701 (configuration fail)

Read device parameters

Downlink: 020117

Response: 820117003C003C0064001E03E8

(2) Configure Shock Sensor Sensitivity = 0x14 (20)

Downlink: 03011714

Response: 83011700 (configuration success)

83011701 (configuration fail)

Note: Shock Sensor Sensitivity range = 0x01 to 0x14

0xFF (disables vibration sensor)

Read Shock Sensor Sensitivity

Downlink: 040117

Response: 84011714 (device's current parameters)

Description	Device	Cmd ID	Device Type	Netvox PayLoad Data		
Config Digital Output Req	R900NA D6T4DO R900NA D6T1O R900NA D3T1O R900NA D1T1O	0x05	0x0117 0x0118 0x0119 0x011A	Digital Out Put Type (1 Byte) 0x00_NormallyLowLevel, 0x01_NormallyHighLevel	OutPulseTime (1 Byte, unit: s)	Bind Alarm Source (4 Bytes) Bit0_LowCurrent1Alarm, Bit1_HighCurrent1Alarm, Bit2_LowCurrent2Alarm, Bit3_High Current2Alarm, Bit4_LowCurrent3Alarm, Bit5_High Current3Alarm, Bit6_LowCurrent4Alarm, Bit7_High Current4Alarm, Bit8_LowCurrent5Alarm, Bit9_High Current5Alarm, Bit10_LowCurrent6Alarm, Bit11_High Current6Alarm, Bit12_LowTemp1Alarm, Bit13_HightTemp1Alarm, Bit14_LowTemp2Alarm, Bit15_HightTemp2Alarm, Bit16_LowTemp3Alarm, Bit17_HightTemp3Alarm, Bit18_LowTemp4Alarm, Bit19_HightTemp4Alarm, Bit20_LowCurrentConsumption1 Alarm, Bit21_HighCurrentConsumption1 Alarm, Bit22_LowCurrentConsumption2

						Alarm, Bit23_HighCurrentConsumption2 Alarm, Bit24_LowCurrentConsumption3 Alarm, Bit25_HighCurrentConsumption3 Alarm, Bit26_LowCurrentConsumption4 Alarm, Bit27_HighCurrentConsumption4 Alarm, Bit28_LowCurrentConsumption5 Alarm, Bit29_HighCurrentConsumption5 Alarm, Bit30_LowCurrentConsumption6 Alarm, Bit31_HighCurrentConsumptio n6Alarm,)
Config Digital Output Rsp		0x85		Status (0x00_success)		
Read Config Digital Output Req		0x06				
Read Config Digital Output Rsp		0x86		Digital Out Put Type (1 Byte) 0x00_NormallyLowLevel, 0x01_NormallyHighLevel	Out Pulse Time (1 Byte, unit: s)	BindAlarmSource(4Bytes, Bit0_LowCurrent1Alarm, Bit1_HighCurrent1Alarm, Bit2_LowCurrent2Alarm, Bit3_High Current2Alarm, Bit4_LowCurrent3Alarm, Bit5_High Current3Alarm, Bit6_LowCurrent4Alarm, Bit7_High Current4Alarm, Bit8_LowCurrent5Alarm, Bit9_High Current5Alarm, Bit10_LowCurrent6Alarm, Bit11_High Current6Alarm, Bit12_LowTemp1Alarm, Bit13_HightTemp1Alarm, Bit14_LowTemp2Alarm, Bit15_HightTemp2Alarm, Bit16_LowTemp3Alarm, Bit17_HightTemp3Alarm,

						Bit18_LowTemp4Alarm, Bit19_HightTemp4Alarm, Bit20_LowCurrentConsumption1Alarm, Bit21_HighCurrentConsumption1Alarm, Bit22_LowCurrentConsumption2Alarm, Bit23_HighCurrentConsumption2Alarm, Bit24_LowCurrentConsumption3Alarm, Bit25_HighCurrentConsumption3Alarm, Bit26_LowCurrentConsumption4Alarm, Bit27_HighCurrentConsumption4Alarm, Bit28_LowCurrentConsumption5Alarm, Bit29_HighCurrentConsumption5Alarm, Bit30_LowCurrentConsumption6Alarm, Bit31_HighCurrentConsumption6Alarm,)
TriggerDigitalOutputReq		0x07		Out Pulse Time (1 Byte, unit: s)		
TriggerDigitalOutputRsp		0x87		Status (0x00_success)		
ClearCurrentConsumptionReq		0x08		Channel(1Byte,0x00_channel1,0x01_channel2,etc)		
ClearCurrentConsumptionRsp		0x88		Status(0x00_success)		

(3) Configure Digital Out Put Type = 0x00 (Normally Low Level),

Out Pulse Time = 0xFF (disable pulse duration),

Bind Alarm Source = 0x002000 (HightTemp1Alarm = 1)

(0010 0000 0000 0000 (BIN) // When HightTemp1Alarm is triggered, digital outputs signals.

Downlink: 05011700FF002000

Response: 85011700 (configuration success)

85011701 (configuration fail)

Read DO parameters

Downlink: 060117

Response: 86011700FF002000

Configure Out Pulse Time = 0x0A (10 seconds)

Downlink: 0701170A00

Downlink: 87011700 (configuration success)

Clear total Current Consumption of channel 1.

Downlink: 08011700

Downlink: 88011700 (configuration success)

5.3 Example of Set Sensor Alarm Threshold Cmd

FPort: 0x10

(The above is in hexadecimal. To use decimal, please convert it to port 16.)

Cmd Descriptor	Cmd ID (1 Byte)	Payload (10 Bytes)			
Set Sensor Alarm Threshold Req	0x01	Channel (1Byte) 0x00_Channel1 0x01_Channel2 0x02_Channel3 etc.	Sensor Type (1Byte) 0x00_Disable ALL 0x01_Temperature 0x27_ Current 0x37_Current Consumption mAh	SensorHighThreshold (4Bytes) unit: Current – 1mA Temperature – 0.1°C	SensorLowThreshold (4Bytes) unit: Current – 1mA Temperature – 0.1°C
SetSensorAlarm ThresholdRsp	0x81	Status (0x00_success)		Reserved (9 Bytes, Fixed 0x00)	
GetSensorAlarm ThresholdReq	0x02	Channel (1 Byte) 0x00_Channel1, 0x01_Chanel2, 0x02_Channel3, etc.	Sensor Type (1 Byte) 0x00_Disable ALL 0x01_Temperature 0x27_ Current	Reserved (8 Bytes, Fixed 0x00)	
GetSensorAlarm ThresholdRsp	0x82	Channel (1Byte) 0x00_Channel1, 0x01_Chanel2, 0x02_Channel3, etc.	Sensor Type (1 Byte) 0x00_Disable ALL 0x01_Temperature 0x27_ Current	SensorHighThreshold (4 Bytes) unit: Current – 1mA Temperature – 0.1˚C	SensorLowThreshold (4 Bytes) unit: Current – 1mA Temperature – 0.1˚C

Note:

a. Current Channel: 0x00 – 0x05; Sensor Type: 0x27

Current Consumption Channel: 0x00 – 0x05; Sensor Type：0x37

Temperature Channel: 0x00 – 0x03; Sensor Type: 0x01

b. Set Sensor High / Low Threshold as 0xFFFFFFFF to disable threshold.

c. The last configuration will be saved when the device is reset to factory setting.

(1) Configure parameters

Channel = 0x00, Sensor Type = 0x27 (Current),

Sensor High Threshold = 0x000003E8 (1000mA), Sensor Low Threshold = 0x00000064 (100mA)

Downlink: 010027000003E800000064

Response: 8100000000000000000000 (configuration success)

8101000000000000000000 (configuration fail)

(2) Read parameters

Downlink: 0200270000000000000000

Response: 820027000003E800000064 (device's current parameters)

(3) Configure parameters

Channel = 0x00, Sensor Type = 0x01 (Temperature),

Sensor High Threshold = 0x000003E8 (100°C), Sensor Low Threshold = 0x00000064 (10°C)

Downlink: 010027000003E800000064

Response: 8100000000000000000000 (configuration success)

8101000000000000000000 (configuration fail)

(4) Read parameters

Downlink: 0200010000000000000000

Response: 820001000003E800000064 (device's current parameters)

5.4 Example of Global Calibrate Cmd

Fport: 0x0E

Description	Cmd ID	SensorType	PayLoad (Fix = 9 Bytes)				
Set Global Calibrate Req	0x01	0x01_Temperature Sensor	Channel (1 Byte) 0_Channel1 1_Channel2, etc.	Multiplier (2 Bytes, Unsigned)	Divisor (2 Bytes, Unsigned)	Delt Value (2 Bytes, Signed)	Reserved (2 Bytes, Fixed 0x00)
Set Global Calibrate Rsp	0x81		Channel (1 Byte) 0_Channel1 1_Channel2, etc.	Status (1 Byte) 0x00_success)	Reserved (7 Bytes, Fixed 0x00)		
Get Global Calibrate Req	0x02		Channel (1 Byte) 0_Channel1 1_Channel2, etc.	Reserved (8 Bytes, Fixed 0x00)			
Get Global Calibrate Rsp	0x82		Channel (1 Byte) 0_Channel1 1_Channel2, etc.	Multiplier (2 Bytes, Unsigned)	Divisor (2 Bytes, Unsigned)	DeltValue (2 Bytes, Signed)	Reserved (2 Bytes, Fixed 0x00)
Clear Global Calibrate Req	0x03	Reserved (10 Bytes, Fixed 0x00)					
Clear Global Calibrate Rsp	0x83	Status (1 Byte, 0x00_success)	Reserved (9 Bytes, Fixed 0x00)				

Sensor Type: 0x01_Temperature Sensor; Channel: 0x00 – 0x03

※ " Current " does not support calibration.

(1) Set Global Calibrate Req

Calibrate temperature sensor by increasing 10°C

Channel: 0x00 (channel1); Multiplier: 0x0001 (1); Divisor: 0x0001 (1); Delt Value: 0x0064 (100)

Downlink: 0101000001000000640000

Response: 8101000<u>00</u>00000000000000 (configuration success)

8101000<u>10</u>00000000000000 (configuration fail)

(2) Read parameters

Downlink: 0201000000000000000000

Response: 8201000001000000640000 (configuration success)

(3) Clear Global Calibrate Req

Downlink: 0300000000000000000000

Response: 8300000000000000000000

5.5 Example of Netvox LoRaWAN Rejoin

Fport:0x20

(The above is in hexadecimal. To use decimal, please convert it to port 32.)

Check if the device is connected to the network during Rejoin Check Period. If the device does not respond within the Rejoin Threshold, it will be rejoined back to the network automatically.

Cmd Descriptor	Cmd ID (1 Byte)	Payload (Var Bytes)						
Set Netvox LoRaWAN Rejoin Req	0x01	Rejoin Check Period (4 Bytes, unit: 1s)	Rejoin Threshold (1 Byte)					
Set Netvox LoRaWAN Rejoin Rsp	0x81	Status (1 Byte) 0x00_success	Reserved (4 Bytes, Fixed 0x00)					
Get Netvox LoRaWAN Rejoin Req	0x02	Reserved (5 Bytes, Fixed 0x00)						
Get Netvox LoRaWAN Rejoin Rsp	0x82	Rejoin Check Period (4 Bytes, unit: 1s)	Rejoin Threshold (1 Byte)					
Set Netvox LoRaWAN Rejoin Time Req	0x03	1st Rejoin Time (2 Bytes, unit:1 min)	2nd Rejoin Time (2 Bytes, unit: 1 min)	3rd Rejoin Time (2 Bytes, unit: 1 min)	4th Rejoin Time (2 Bytes, unit: 1 min)	5th Rejoin Time (2 Bytes, unit: 1 min)	6th Rejoin Time (2 Bytes, unit: 1 min)	7th Rejoin Time (2 Bytes, unit: 1 min)
Set Netvox LoRaWAN Rejoin Time Rsp	0x83	Status (1 Byte) 0x00_success	Reserved (13 Bytes, Fixed 0x00)					
Get Netvox LoRaWAN Rejoin Time Req	0x04	Reserved (15 Bytes, Fixed 0x00)						
Get Netvox LoRaWAN Rejoin Time Rsp	0x84	1st Rejoin Time (2 Bytes, unit:1 min)	2nd Rejoin Time (2 Bytes, unit: 1 min)	3rd Rejoin Time (2 Bytes, unit: 1 min)	4th Rejoin Time (2 Bytes, unit: 1 min)	5th Rejoin Time (2 Bytes, unit: 1 min)	6th Rejoin Time (2 Bytes, unit: 1 min)	7th Rejoin Time (2 Bytes, unit: 1 min)

Note:

a. Set Rejoin Check Threshold as 0xFFFFFFFF to stop the device from rejoining the network.

b. The last configuration would be kept when the device is factory reset.

c. Default setting:

Rejoin Check Period = 2 (hr) and Rejoin Threshold = 3 (times)

1st Rejoin Time = 0x0001 (1 min), 2nd Rejoin Time = 0x0002 (2 mins), 3rd Rejoin Time = 0x0003 (3 mins),

4th Rejoin Time = 0x0004 (4 mins), 5th Rejoin Time = 0x003C (60 mins), 6th Rejoin Time = 0x0168 (360 mins),

7th Rejoin Time = 0x05A0 (1440 mins)

d. If device loses connection from network before data are reported, the data will be saved and reported every 30 seconds after the device is reconnected. Data will be reported based on the format of Payload + Unix times tamp. After all data are reported, the report time will be back to the normal setting.

(1) Command Configuration

Set Rejoin Check Period = 0x00000E10 (3600s), Rejoin Threshold = 0x03 (3 times)

Downlink: 0100000E1003

Response: 810000000000 (Configuration success)

810100000000 (Configuration failure)

(2) Read Rejoin Check Period and Rejoin Threshold

Downlink: 020000000000

Response: 8200000E1003

(3) Configure Rejoin Time

1st Rejoin Time = 0x0001 (1 min), 2nd Rejoin Time = 0x0002 (2 mins), 3rd Rejoin Time = 0x0003 (3 mins),

4th Rejoin Time = 0x0004 (4 mins), 5th Rejoin Time = 0x0005 (5 mins), 6th Rejoin Time = 0x0006 (6 mins),

7th Rejoin Time = 0x0007 (7 mins)

Downlink: 0300010002000300040005000600 07

Response: 8300000000000000000000000000000 (Configuration success)

8301000000000000000000000000000 (Configuration failure)

(4) Read Rejoin Time parameter

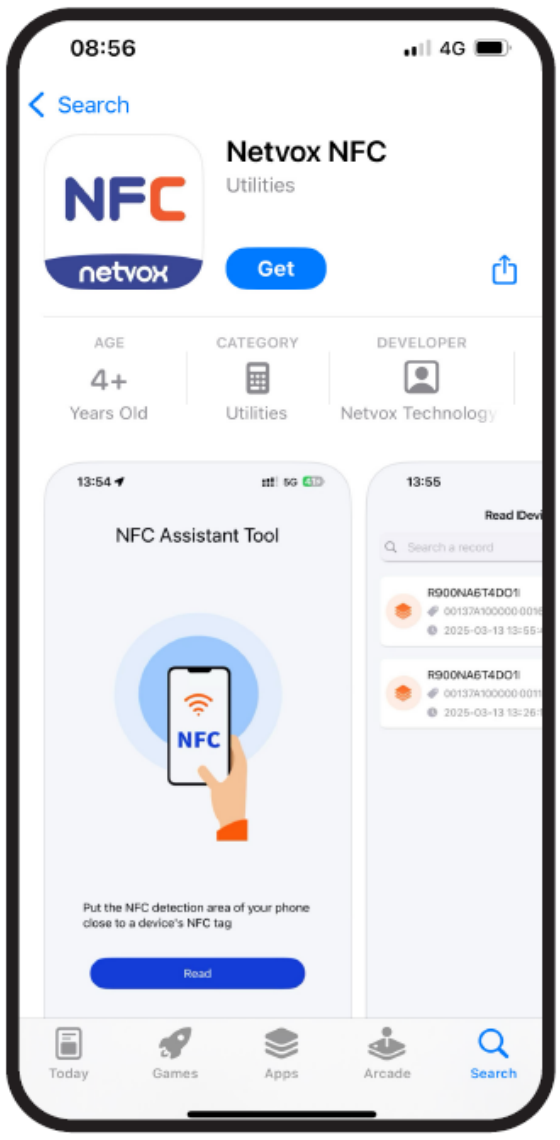
Downlink: 0400000000000000000000000000000

Response: 8400010002000300040005000600 07

6. NFC App

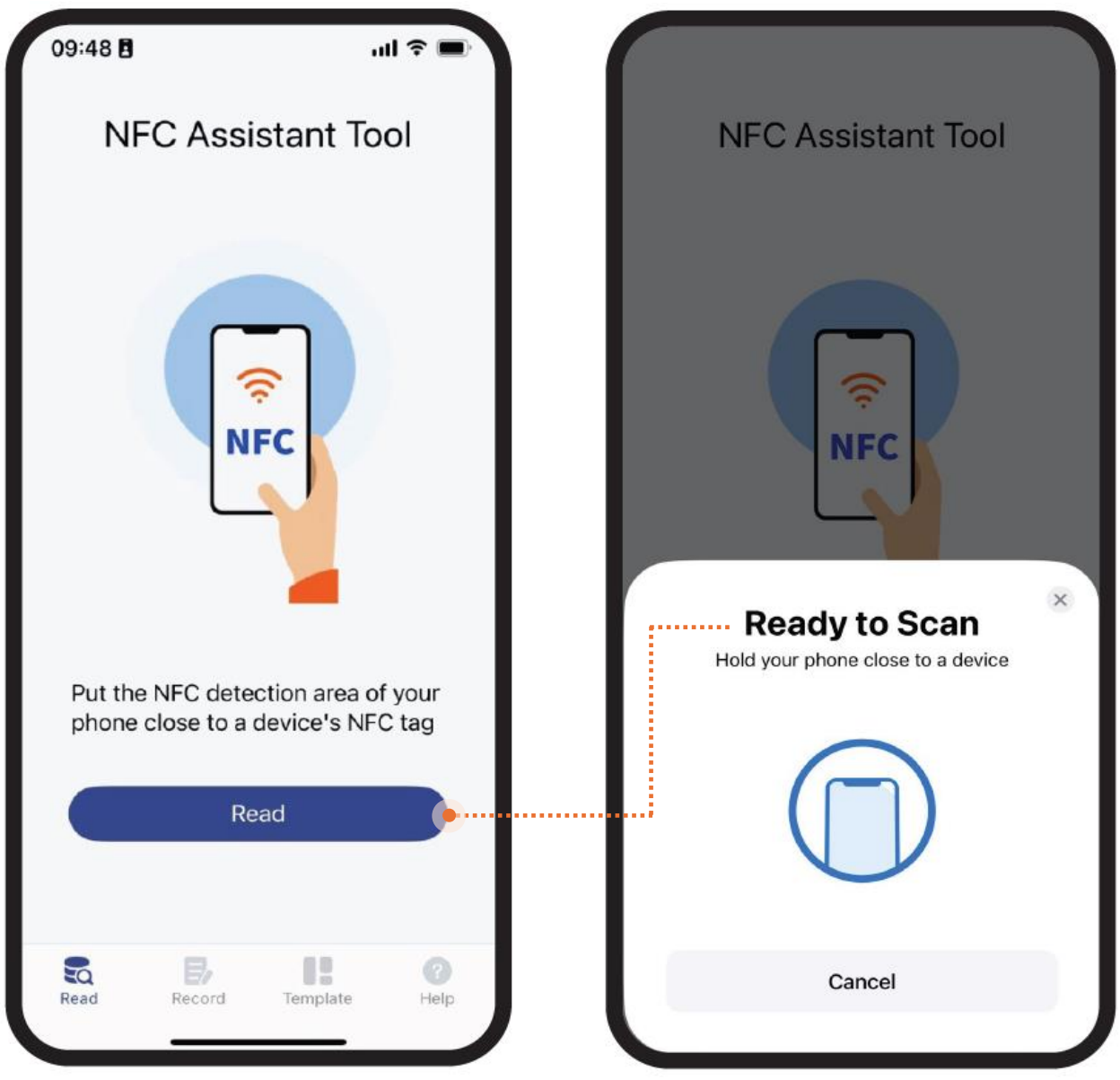
(1) Download Netvox NFC app.

Please make sure your phone supports NFC.

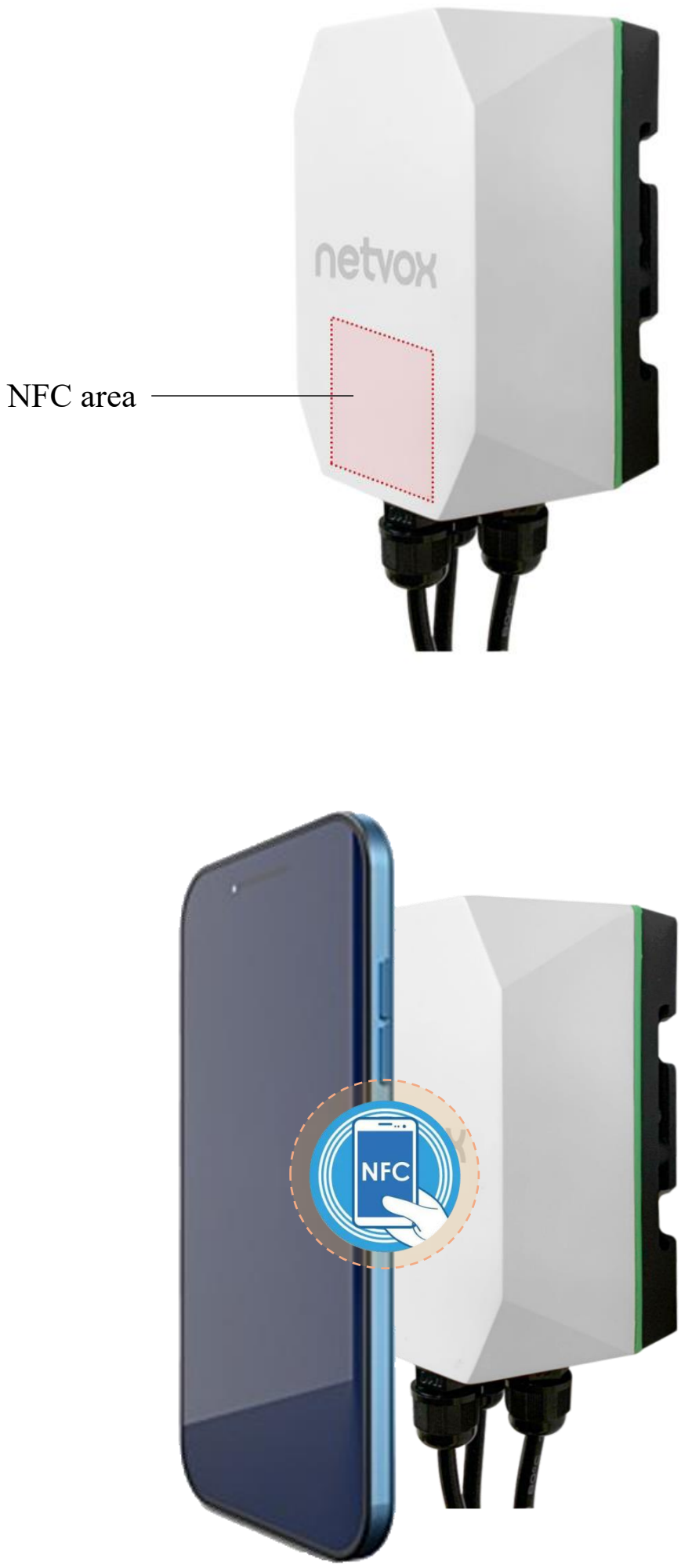


(2) Enable NFC in Settings and find your phone’s NFC area.

Open the app and click Read.

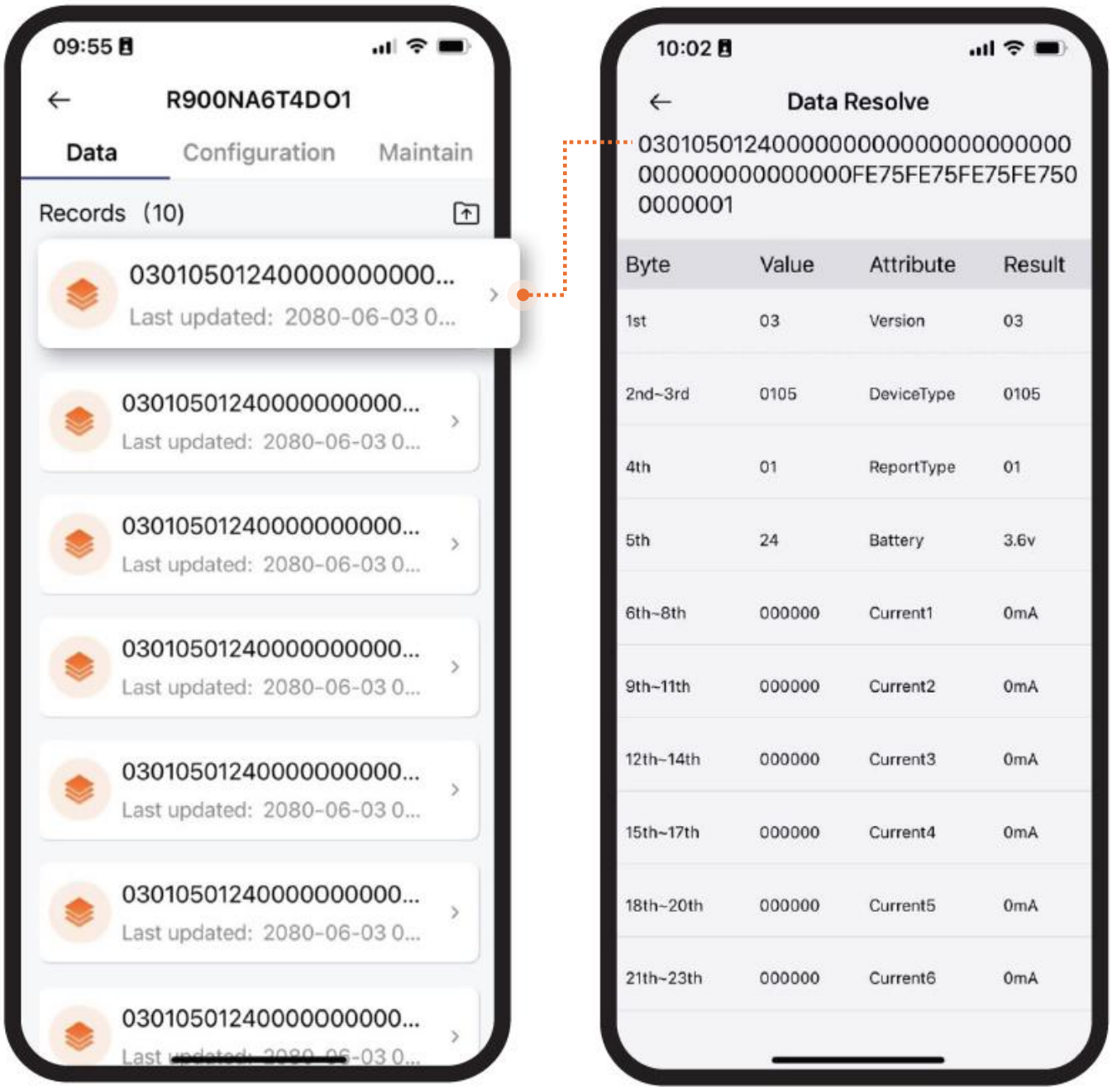


(3) Hold your phone near R900’s NFC tag.



(4) After R900 is successfully read, the latest 10 data will be displayed.

Select a data and go to the Data processing.

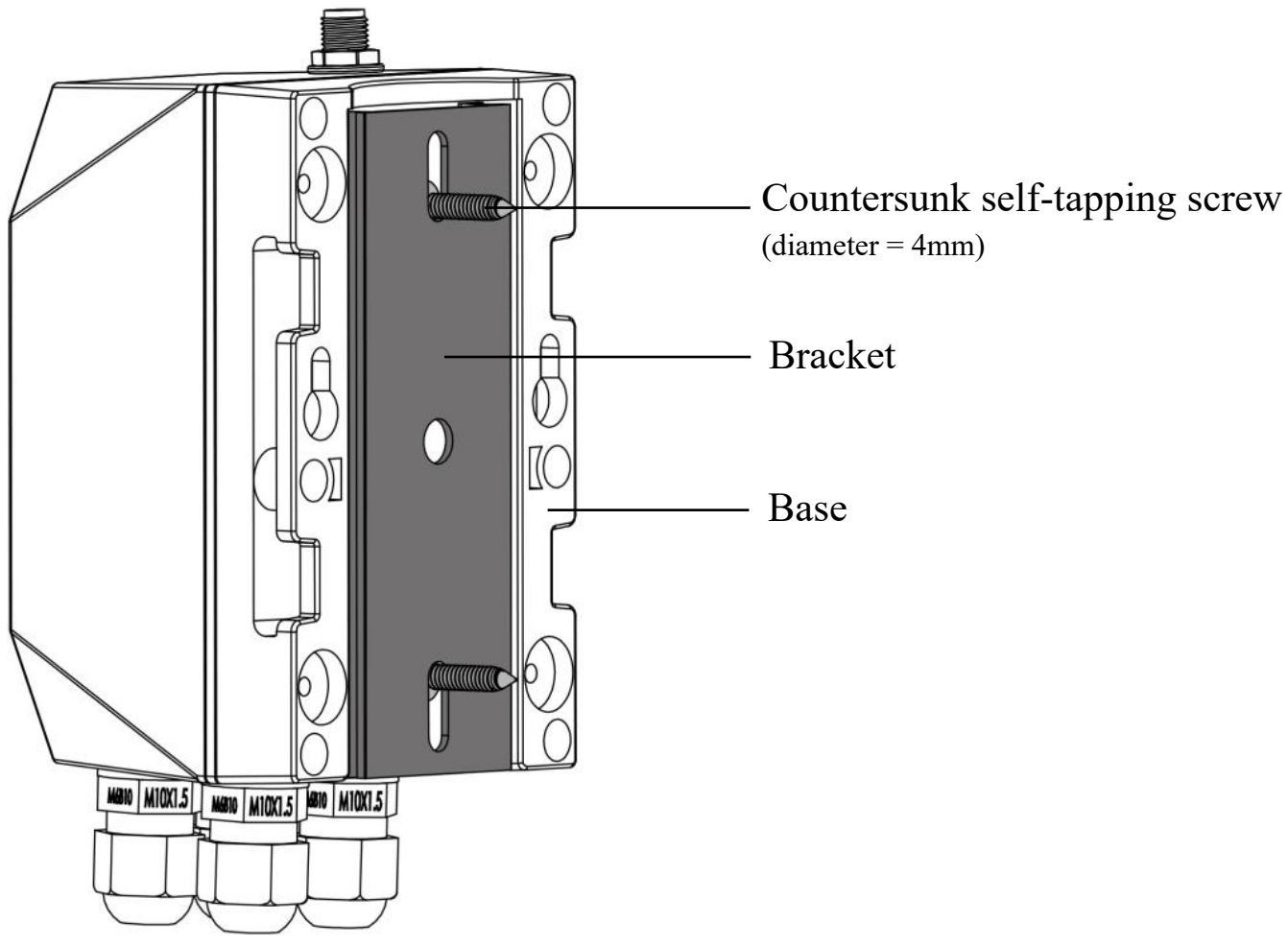

09:55
R900NA6T4DO1
Data
Configuration
Maintain
Records (10)
03010501240000000000...
Last updated: 2080-06-03 0...
03010501240000000000...
Last updated: 2080-06-03 0...
03010501240000000000...
Last updated: 2080-06-03 0...
03010501240000000000...
Last updated: 2080-06-03 0...
03010501240000000000...
Last updated: 2080-06-03 0...
03010501240000000000...
Last updated: 2080-06-03 0...
10:02
Data Resolve
03010501240000000000000000000000000000000000000000FE75FE75FE75FE750000000001
Byte
Value
Attribute
Result
1st
03
Version
03
2nd~3rd
0105
DeviceType
0105
4th
01
ReportType
01
5th
24
Battery
3.6v
6th~8th
000000
Current1
0mA
9th~11th
000000
Current2
0mA
12th~14th
000000
Current3
0mA
15th~17th
000000
Current4
0mA
18th~20th
000000
Current5
0mA
21th~23th
000000
Current6
0mA

7. Installation

R900

- Standard

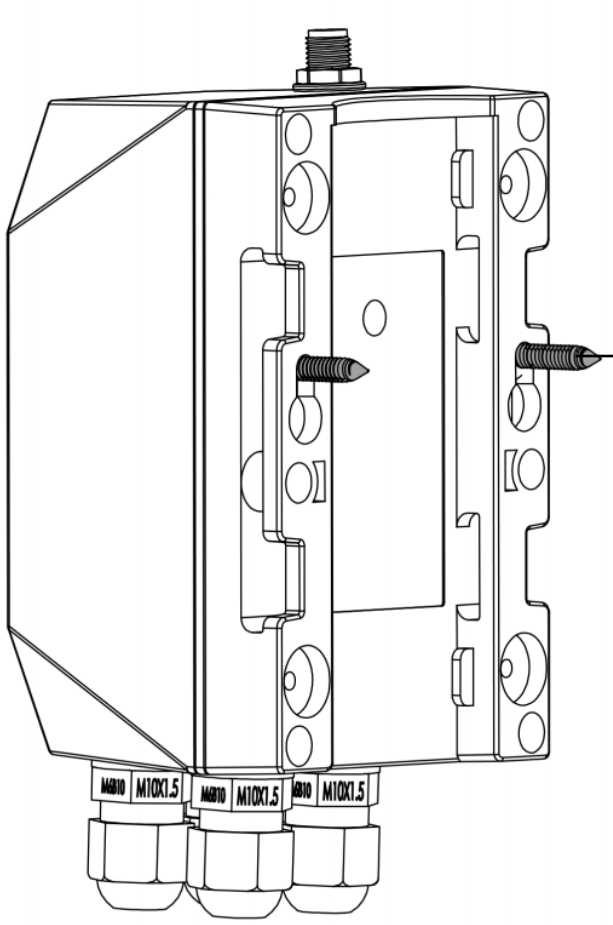
(1) Screws + Bracket



❶ Mount the bracket on a surface with 2 counter self-tapping screws.

❷ Hold R900 and slide down to connect the base and bracket.

(2) Screws



Countersunk self-tapping screw
(Thread diameter 3mm; Head diameter < 7mm)

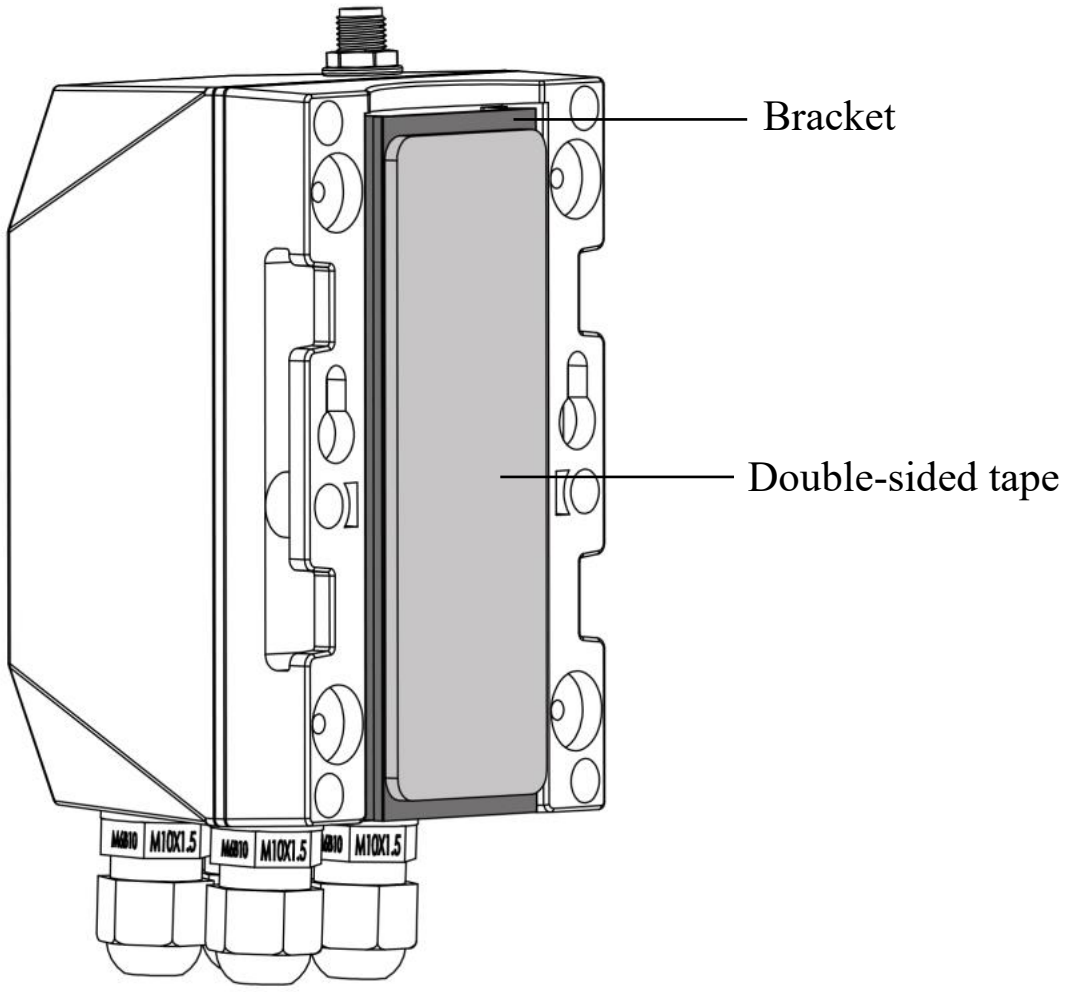
❶ Mount 2 countersunk self-tapping screws or expansion bolts on the wall.

The distance between the two screws should be 48.5mm. The gap between the bottom of the screw head and the wall should be 3mm.

❷ After the screws are mounted, align the holes of the base with the screws.

❸ Move R900 down to clamp it.

(3) Double-Sided Tape



❶ Stick the double-sided tape on the bracket.

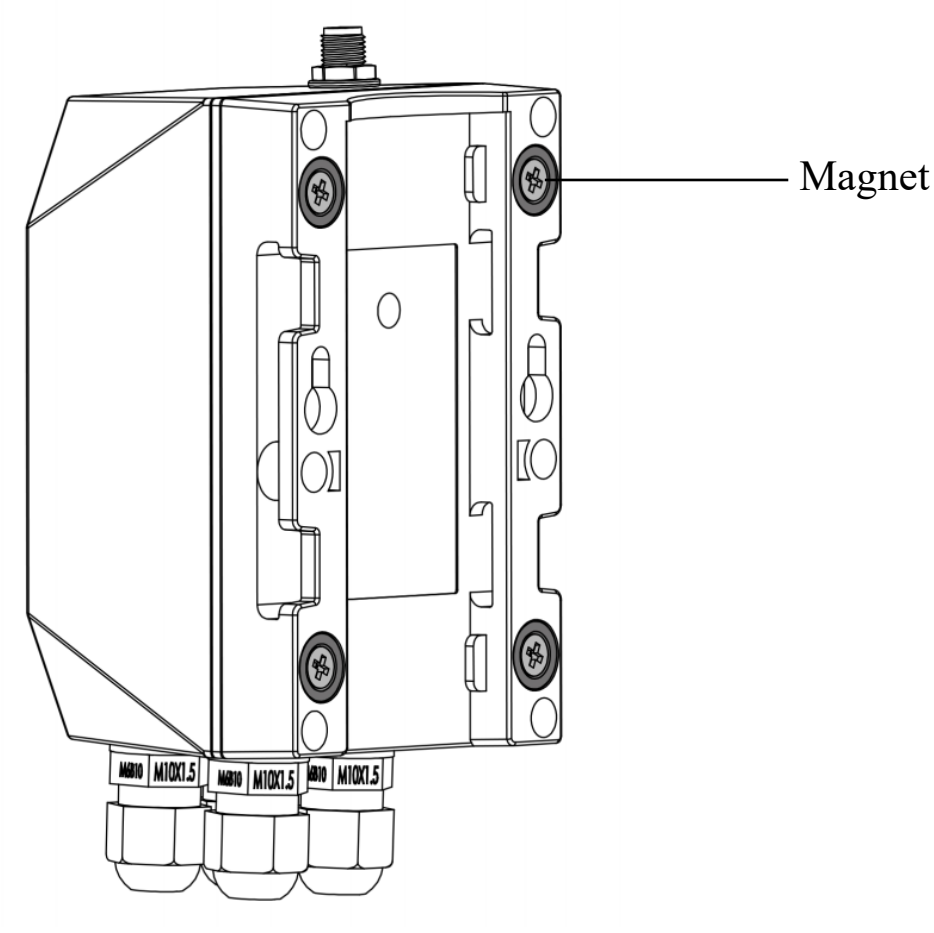
❷ Peel the liner and fix R900 on the surface.

❸ Press to ensure R900 is firmly installed.

Note: Please make sure the surface is clean and dry before applying double-sided tape.

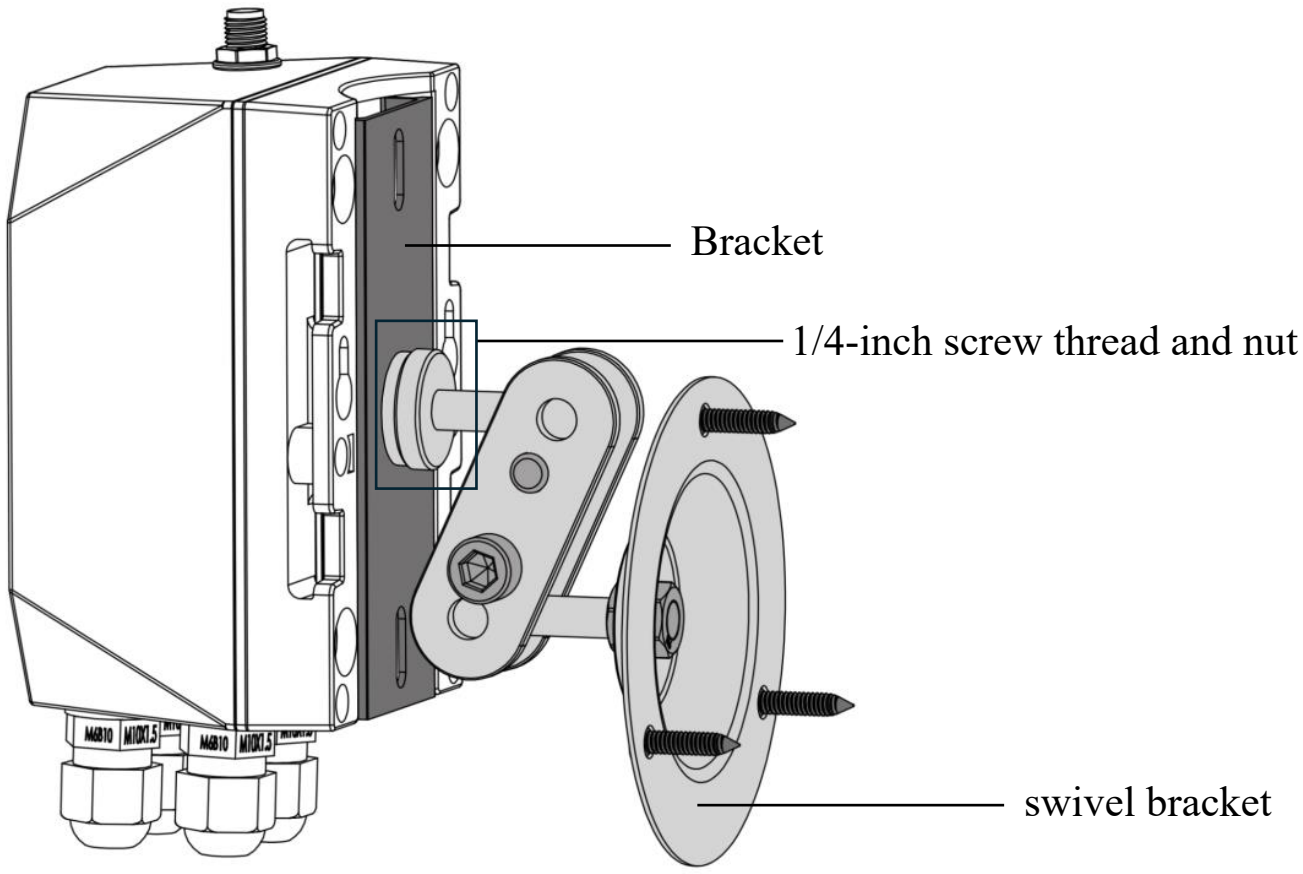
- Optional

(1) Magnet



❶ Fix the R900 on a metal surface.

(2) Swivel Bracket



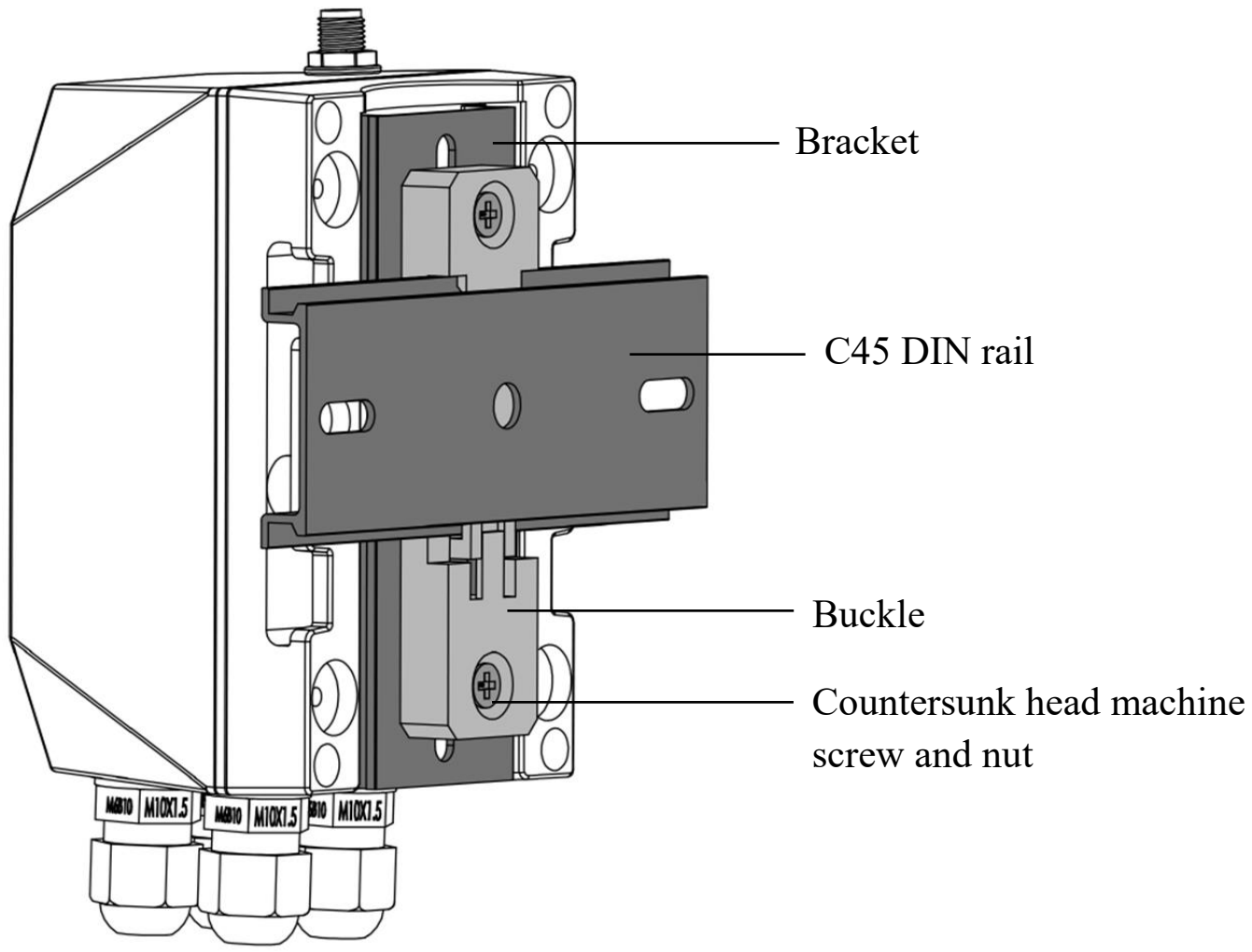
❶ Insert a 1/4-inch screw thread into the hole of the bracket.

❷ Tighten the thread with a nut.

❸ Mount the swivel bracket with self-tapping screws and expansion bolts.

❹ Hold R900 and slide down to connect the base and bracket.

(3) DIN Rail



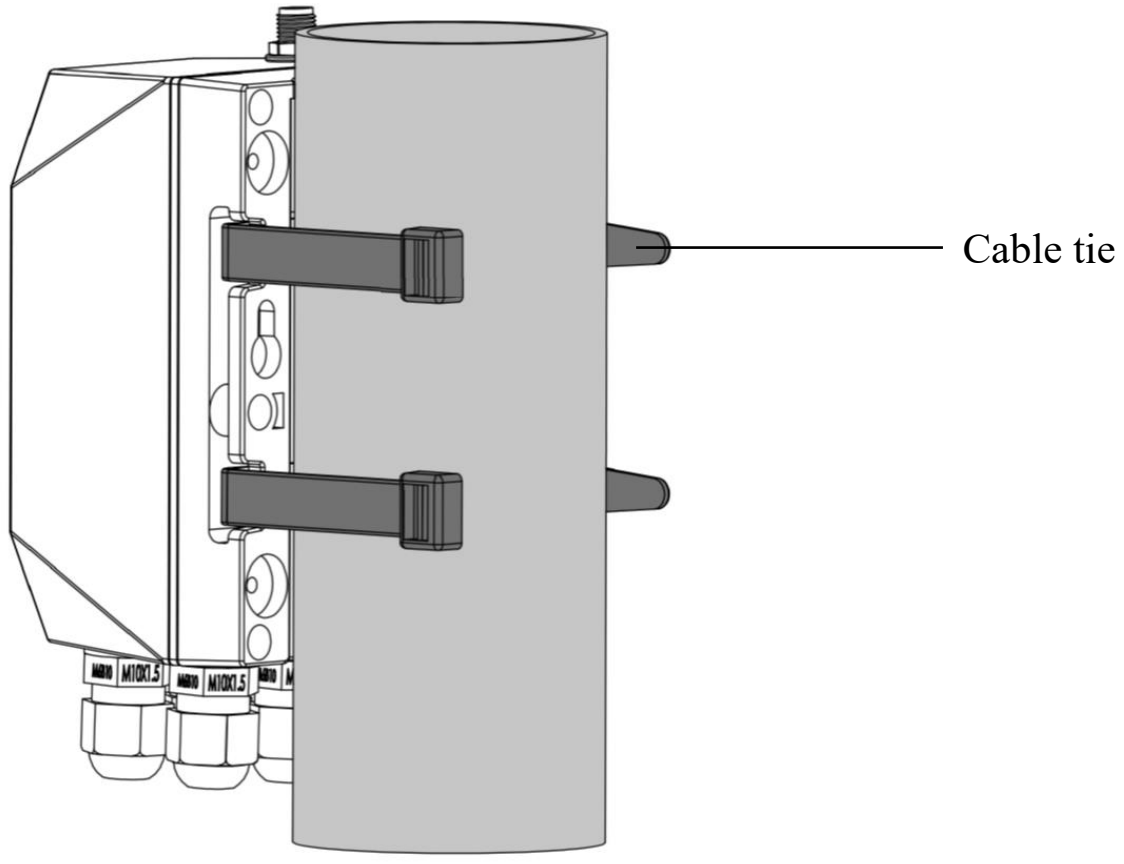
❶ Mount the rail buckle onto R900’s bracket with countersunk head machine screws and nuts.

❷ Snap the buckle onto the DIN rail.

❸ Hold R900 and slide down to connect the base and bracket.

- Prepared by customers

(1) Cable Tie



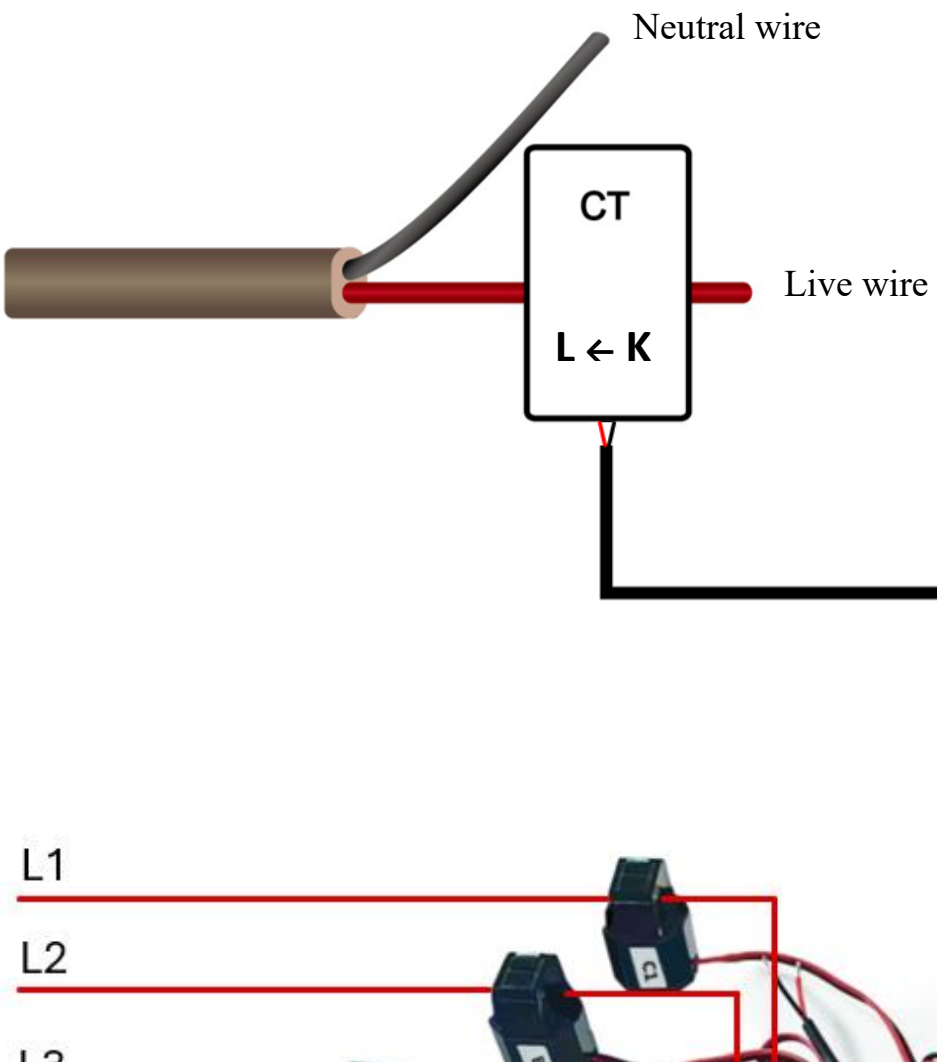
❶ Insert cable ties through the holes of the base.

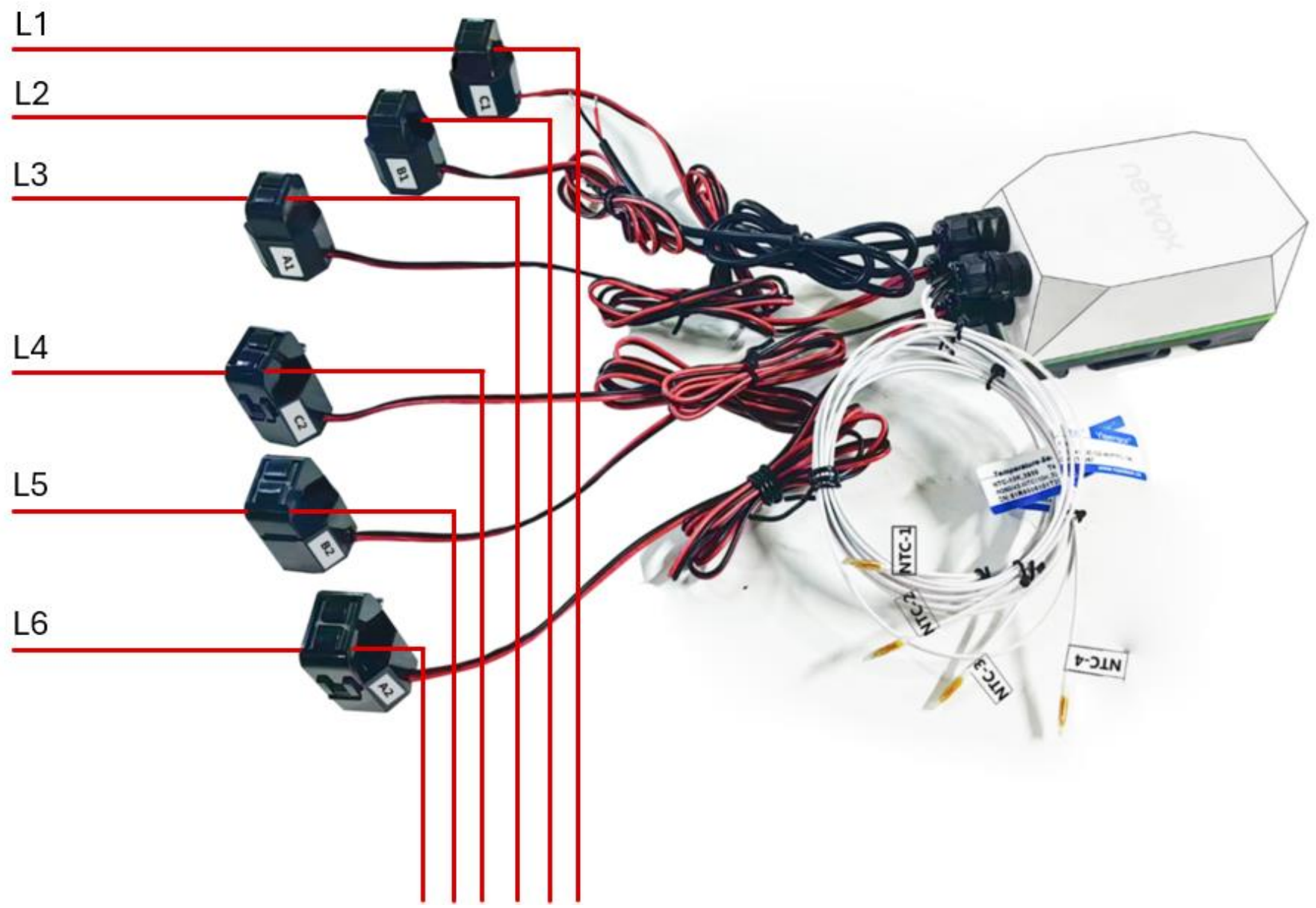
❷ Insert the pointed end through the slot.

❸ Tighten the cable ties and make sure R900 is fixed firmly around a column.

Current Transformer

1. Open the clip of a current transformer.
2. Separate live and neutral wires.
3. Put a live wire in a clip and close it.





NTC thermistor

❶ Put the probe on the surface of a motor or any electrical device.

❷ Fix the probe with PTFE tape.

8. Important Maintenance Instructions

Kindly pay attention to the following to achieve the best maintenance of the product:

- Keep the device dry. Rain, moisture, or any liquid might contain minerals and thus corrode electronic circuits. If the device gets wet, please dry it completely.
- Do not use or store the device in a dusty or dirty environment. It might damage its detachable parts and electronic components.
- Do not store the device under extremely hot conditions. High temperatures can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store the device in places that are too cold. Otherwise, when the temperature rises, moisture that forms inside the device will damage the board.
- Do not throw, knock, or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not clean the device with strong chemicals, detergents, or strong detergents.
- Do not apply the device with paint. Smudges might block the device and affect the operation.

All of the above applies to your device and accessories. If any device is not operating properly, please take it to the nearest authorized service facility for repair