



CT10x

Smart Current Transformer

User Guide

Contents

Chapter 1. Preface.....	3
Chapter 2. Product Introduction.....	5
Overview.....	5
Packing List.....	5
Hardware Introduction.....	6
Chapter 3. ToolBox Software Configuration.....	9
Access the Device Using Type-C Port.....	9
Configure LoRaWAN® Parameters.....	10
Configure the Device Parameters.....	15
Change the Device Password.....	15
Configure General Parameters.....	16
Configure Threshold Parameters.....	18
Maintain the Device.....	19
Upgrade the Device.....	19
Configure a Template for Configuration Backup.....	20
Reset the Device.....	21
Chapter 4. Install the Device.....	22
Chapter 5. Uplink Packets and Downlink Commands.....	28
Uplink Packets.....	28
Basic Information Packet.....	28
Periodic Data Packet.....	29
Alarm Report.....	30
Downlink Commands.....	32
Commands for General Setting.....	32
Command for Threshold Setting.....	33
Chapter 6. Services.....	36

Chapter 1. Preface

Copyright Statement

This guide may not be reproduced in any form or by any means to create any derivative such as translation, transformation, or adaptation without the prior written permission of Xiamen Milesight IoT Co., Ltd (Hereinafter referred to as Milesight).

Milesight reserves the right to change this guide and the specifications without prior notice. The latest specifications and user documentation for all Milesight products are available on our official website <http://www.milesight.com>

Safety Instruction

These instructions are intended to ensure that users can use the product correctly to avoid danger or property loss. Milesight will not take responsibility for any loss or damage resulting from failure to follow the instructions in this operating guide.



Warning:

Serious injury or death may be caused if any of these warnings is neglected.

- The installation and maintenance must be conducted by a qualified service person and should strictly comply with the electrical safety regulations of the local region.
- The device must not be disassembled or remodeled in any way.
- Keep the device away from water to prevent electric shock.



CAUTION:

Injury or equipment damage may be caused if any of these cautions are neglected.

- The device is not intended to be used as a reference sensor, and Milesight will not should responsibility for any damage which may result from inaccurate readings.
- Do not overload the maximum capacity to avoid damage to the device.
- Do not place the device close to objects with naked flames, heat source (oven or sunlight), cold source, liquid and extreme temperature changes.
- The device is intended only for indoor use. Do not place the device where the temperature is below/above the operating range.



- Use the device opening clean and free of dust before installation. Dusty or dirty environments may prevent the proper operation of this device.
- Do not drop the device or subject it to physical shocks and strong vibration.

Revision History

Release Date	Version	Revision Content
Jan 12, 2024	V1.0	Initial version
Jun 6, 2024	V1.1	1. Support flexible detachable design; 2. Support cable temperature sensor.
Feb 26, 2025	V1.2	Add CT105.
March 19, 2026	V2.0	1. Support energy consumption reporting; 2. Add low voltage alarm; 3. Remove the low power operating mode; 4. Minimum reporting current optimise.

Chapter 2. Product Introduction

This chapter describes basic product information.

Overview

CT10x is a LoRaWAN[®] Smart Current Transformer for monitoring energy consumption and analyzing usage remotely. CT10x provides multiple current options to suit energy monitoring needs and supports sending threshold alarms. Its compact size enables quick and safe installation in any indoor space without de-energizing facilities, thereby simplifying installation and saving costs. Compliant with Milesight LoRaWAN[®] gateways and the Milesight Development Platform solution, CT10x can be conveniently monitored remotely via a webpage.

CT10x is widely used for energy monitoring in smart buildings, machine failure detection and prevention, etc.

The device has the following features:

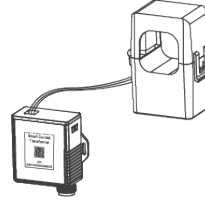
- Report the RMS current and accumulated current data by minutes
- Support optional accumulated energy consumption reporting
- High measuring accuracy with a sampling frequency of up to 3.3 kHz
- Self-powered, free from batteries or external wires
- Utilize a sampling rate of up to 1s for real-time monitoring and quick alarm response
- Non-invasive clamp design ensures easy and safe installation without the need for power de-energizing
- Equipped with LED indicator to indicate working status and alarms
- Support external wire temperature sensor for cable temperature measurement
- Compliant with standard LoRaWAN[®] gateways and network servers
- Compliant with Milesight Development Platform
- Support Firmware Update Over the Air (FUOTA)

Packing List

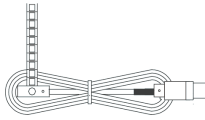
This section describes the packing list. After unboxing, please check that the following items are included in the package. If any of the below items are missing or damaged, please contact your sales representative.



or



1 × Smart Current Transformer



1 × USB-C NTC Sensor (1m)



1 × LoRaWAN® Stubby Antenna



1 × Warranty Card

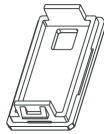


1 × Quick Guide

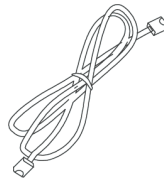


1 × LoRaWAN® Magnetic Antenna (Optional)

CT101/CT103 Only



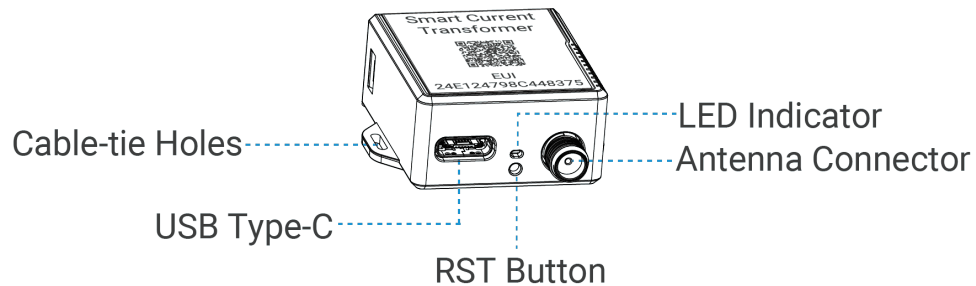
1 × Transceiver Cover



1 × Extension Cable (1m)

Hardware Introduction

Hardware Overview



Part	Description
Cable-tie Holes	Used to fix the installation position of the device.
LED Indicator	Indicates the device status.
Antenna Connector	Attachment of an external antenna to enhance wireless communication range and reliability.
USB Type-C	Used for power supply, charging or USB-C NTC sensor connection.
RST Button	Used to reboot the device.

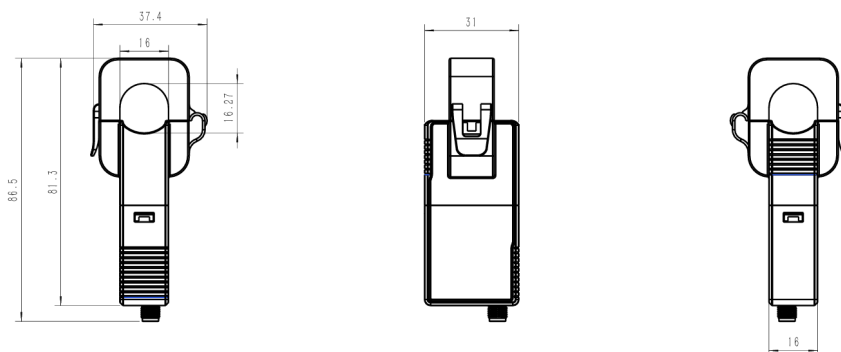
LED and Button Descriptions

Function	Action	LED Indicator
Normal Work	The device is functioning properly.	Green light blinking every 2s
Low Voltage Mode	The device only measures at a reduced rate.	Green light blinking every 13s
Alarm	The current is over the threshold or measuring range, or the temperature is over the threshold.	Red light fast blinking
Reboot	Quick press the RST button once.	Green light blinking Once

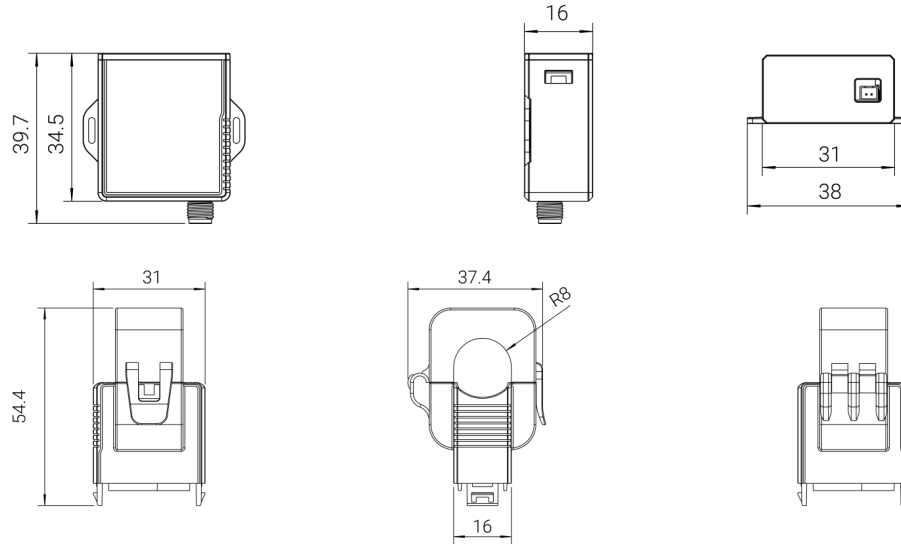
Dimensions

The following figure shows the device dimensions (unit: mm).

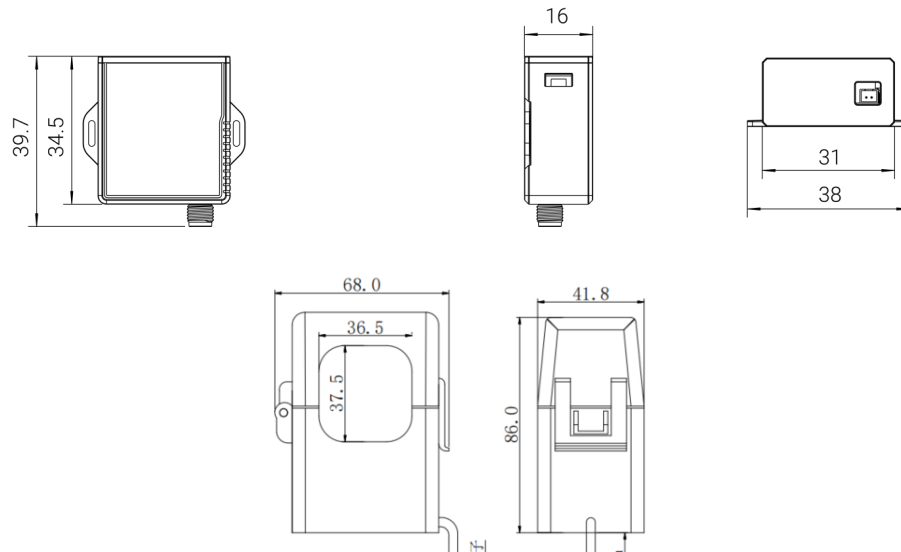
CT101/CT103:



CT101/CT103 (Detachable Design):



CT105:



Chapter 3. ToolBox Software Configuration

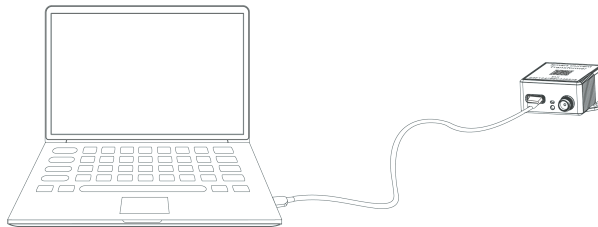
The Milesight ToolBox software can be used to configure the device. This chapter describes ToolBox related configuration.

Access the Device Using Type-C Port

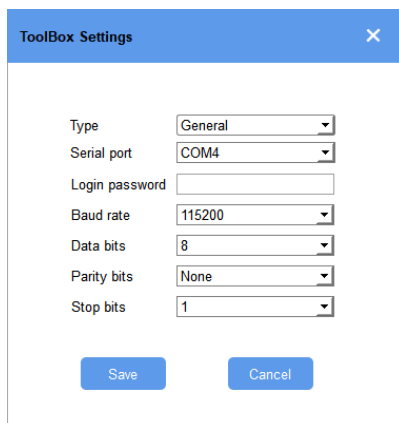
This section describes how to access the device using Type-C port.

Steps:

1. Download ToolBox software from [Milesight website](#).
2. Connect the device to a computer via the Type-C port.



3. Open the ToolBox and select the type as **General** and input the password to log into ToolBox. (Default password: 123456).

A screenshot of a software window titled "ToolBox Settings". The window has a blue header bar with a close button (X). Below the header, there are several configuration options, each with a label and a dropdown menu or text input field. The options are: "Type" (set to "General"), "Serial port" (set to "COM4"), "Login password" (empty text field), "Baud rate" (set to "115200"), "Data bits" (set to "8"), "Parity bits" (set to "None"), and "Stop bits" (set to "1"). At the bottom of the window, there are two buttons: "Save" and "Cancel".

4. After logging into the ToolBox, you can check device status and change device settings.

Status >

Model:	CT303-915M
Serial Number:	6751F48878190050
Device EUI:	24e124751f488781
Firmware Version:	01.01-a3
Hardware Version:	2.0
Device Status:	On
Join Status:	Activate
RSSI/SNR:	-87/11
Temperature:	Error
Current(Phase A):	0.0 A
Current(Phase B):	0.0 A
Current(Phase C):	0.0 A
Kiloampere Hour (Phase A Total):	0.00 Ah <button>Clear</button>
Kiloampere Hour (Phase B Total):	0.00 Ah <button>Clear</button>
Kiloampere Hour (Phase C Total):	0.00 Ah <button>Clear</button>
Channel Mask:	0000000000000000ffff
Uplink Frame-counter:	45

Configure LoRaWAN® Parameters

This section describes how to configure the device transmission parameters for the LoRaWAN® network.

1. [Configure Join Type and Supported Frequency \(Necessary\)](#)
2. [Configure Other LoRaWAN® Parameters \(Optional\)](#)

Configure Join Type and Frequency

It is necessary to configure the join type and the frequency to establish communication with LoRaWAN® gateways.

Steps:

1. On the homepage of ToolBox, click **LoRaWAN Settings** to enter the setting page.
2. On the left top bar, select **Channel** tab. The **channel** page is displayed, see the following figure.

Supported Frequency : US915

? Enabled Channel Index: 0-71

Channel Index	Frequency/MHz	Channel Spacing/MHz	BW/kHz
0 - 15	902.3 - 905.3	0.2	125
16 - 31	905.5 - 908.5	0.2	125
32 - 47	908.7 - 911.7	0.2	125
48 - 63	911.9 - 914.9	0.2	125
64 - 71	903.0 - 914.2	1.6	500

Note:
 64 channels numbered 0 to 63 utilizing LoRa 125 kHz BW starting at 902.3 MHz and incrementing linearly by 0.2 MHz to 914.9
 8 channels numbered 64 to 71 utilizing LoRa 500 kHz BW starting at 903.0 MHz and incrementing linearly by 1.6 MHz to 914.2

Save

3. Select a frequency from the **Support Frequency** selection box as needed. This must be the same as the frequency configured on the gateway's web GUI.

- If the **Supported Frequency** is **CN470**, **US915** or **AU915**, enter the channel index(es) separated by commas.

Examples:

1, 40: Enabling Channel 1 and Channel 40

1-40: Enabling Channel 1 to Channel 40

1-40, 60: Enabling Channel 1 to Channel 40 and Channel 60

All: Enabling all channels

Null: All channels are disabled



Tip:

Set the **Channel Index** to **8-15** when connecting to a Milesight LoRaWAN[®] gateway with default settings.

- If the **Supported Frequency** is **AS923**, select a channel plan and enable the frequencies as needed.
- If the **Supported Frequency** is any option other than those listed above, enable the frequencies as needed.

4. Click **Save** in the lower left corner and wait a few seconds.

5. On the left top bar, select **Basic** tab. The **Basic** page is displayed, see the following figure.

Device EUI	24E124751F488781
App EUI	24E124C0002A0001
Application Port	85
Join Type	OTAA
LoRaWAN Version	V1.0.3
Class Type	Class A
Application Key	*****
RX2 Data Rate	DR8 (SF12, 500k)
RX2 Frequency	923300000
Spread Factor	SF8-DR2
Confirmed Mode	☐
Rejoin Mode	☒
Set the number of packets sent	32 packets
ADR Mode	☒
TXPower	TXPower0-22 dBm
<button>Save</button>	

6. From the **Join Type** selection box, select **OTAA** or **ABP** as needed.



Note:

OTAA is required if you connect the device to the [Milesight Development Platform](#).

7. Configure **Join Type** related parameters as needed. You can use default values unless otherwise specified.

- If **OTAA** is selected, configure **Application Key** and **Rejoin Mode** as needed. For details, refer to the following table.

Parameter	Description
Applica- tion Key	Appkey for OTAA mode. Default: Device EUI + Device EUI. Example: 24e124123456789024e1241234567890.  Tip: Contact sales before purchase if you need random App keys.
Rejoin Mode	Rejoin mode for OTAA mode. Reporting interval≤35 minutes: The device sends a specific number of LinkCheckReq MAC packets at each reporting interval or every other reporting interval to verify connectivity.

Parameter	Description
	Reporting interval > 35 minutes: The device sends a specific number of LinkCheckReq MAC packets at each reporting interval to validate connectivity. If there is no response, the device will re-join the network. When Rejoin Mode is enabled, enter a number in the Set the number of detection signals sent text box. The actual sending number is the configured number +1.

- If **ABP** is selected, configure **Network Session Key**, **Application Session Key** and **Device Address** as needed. For details, refer to the following table.

Parameter	Description
Network Session Key	Nwkskey for ABP mode. Default: 5572404C696E6B4C6F52613230313823.
Application Session Key	Appskey for ABP mode. Default: 5572404C696E6B4C6F52613230313823.
Device Address	DevAddr for ABP mode. Default: 5 th to 12 th digits of SN.

8. Click **Save** in the lower left corner and wait a few seconds.

Configure Other LoRaWAN[®] Parameters

Steps:

1. On the homepage of ToolBox, click **LoRaWAN Settings** to enter the setting page.
2. On the left top bar, select **Basic** tab. The **Basic** page is displayed, see the following figure.

Device EUI	24E124751F488781
App EUI	24E124C0002A0001
Application Port	85
Join Type	OTAA
LoRaWAN Version	V1.0.3
Class Type	Class A
Application Key	*****
RX2 Data Rate	DR8 (SF12, 500k)
RX2 Frequency	923300000
Spread Factor	SF8-DR2
Confirmed Mode	☐
Rejoin Mode	☒
Set the number of packets sent	32 packets
ADR Mode	☒
TXPower	TXPower0-22 dBm
<button>Save</button>	

3. Configure the following parameter as needed. You can use default values unless otherwise specified. For a description of the parameters, refer to the following table.

Parameter	Description
Device EUI	Unique ID of the device labelled on the device housing.  Tip: For bulk deployments, contact sales to request the device EUI list.
App EUI	The default App EUI (join EUI) is 24E124C0002A0001.
Application Port	Port used for sending and receiving data. Default: 85 .
Join Type	Refer to Configure Join Type and Frequency.
LoRaWAN [®] Version	Options: V1.0.2 , V1.0.3 .
Class Type	Fixed value: Class A .
RX2 Data Rate	RX2 data rate to receive downlinks.
RX2 Frequency	RX2 frequency to receive downlinks. Unit: Hz
Spreading Factor	If ADR mode is disabled, the device sends uplink data using this spreading factor. A higher spreading factor increases transmission

Parameter	Description
	range but reduces data rate and increases power consumption. This parameter varies with Supported Frequency .
Confirmed Mode	If the device does not receive ACK packet from network server, it will resend data once.
ADR Mode	Enables the network server to adjust the spreading factor, the bandwidth and the transmission power to optimize data rates, airtime and energy consumption in the network.
Tx Power	Defined by the LoRa Alliance. Specifies the strength of the radio signal transmitted by the device.

- Click **Save** in the lower left corner and wait a few seconds.

Configure the Device Parameters

This section describes how to configure the device.

Change the Device Password

It is recommended to change the device password upon initial configuration for security purposes. This section describes how to change the device password.

Steps:

- On the homepage of ToolBox, click **Device Setting** to enter the **Settings** page.
- In the **Basic Settings** Box, enable **Change Password** and enter the new password.

Change Password	☒
Old Password	
New Password	
Confirm Password	

Parameter	Description
Old Password	Enter the old password.
New Password	Enter a new password of 6 characters. Only letters, digits, and underscores are allowed.

Parameter	Description
Confirm Password	Enter the password again.

3. Click **Save** in the lower left corner and wait a few seconds.

Configure General Parameters

This section describes how to configure the general parameters of the device, which includes:

- Reporting Interval
- Cumulative Data Type
- Device password

Steps:

1. On the homepage of ToolBox, click **Device Setting** to enter the **Settings** page.
2. In the **Basic Settings** box, configure the following device parameters as needed.

Basic Settings

Device Type

CT101-915M

Reporting Interval (min)

10

Cumulative Data Type

Kiloampere Hour

Change Password

☐

Parameter	Description								
Reporting Interval	The interval to report data to network server. Range: 1~1440 min, Default: 10 min.  Note: a. It is necessary to meet the minimum reporting current requirement to report properly. <table><tr><th>Reporting Interval</th><th>CT101</th><th>CT103</th><th>CT105</th></tr><tr><td>1 min</td><td>1.5A</td><td>3A</td><td>5A</td></tr></table>	Reporting Interval	CT101	CT103	CT105	1 min	1.5A	3A	5A
Reporting Interval	CT101	CT103	CT105						
1 min	1.5A	3A	5A						

Parameter	Description				
		Reporting Interval	CT101	CT103	CT105
		10 min	1.4A	2.8A	4.7A
		To measure lower currents, the device must be powered via USB. b. If the device does not meet the minimum reporting current requirement, it will enter either low-voltage mode. In low-voltage mode, the device will stop reporting. The operating mode can be identified by the LED indicator. c. If the device meets the minimum reporting current requirement but still enters low-voltage mode, this indicates that the measured conductor is faulty or has no power. Please inspect and repair it promptly.			
Cumulative Data Type	Select the type of cumulative data reported by the device. Options: Kiloampere Hour , Energy Consumption . Energy Consumption = Kiloampere Hour × Voltage × Power Factor.				
Voltage	Set the line voltage. This field is required when Cumulative Data Type is set to Energy Consumption . Range: 0 ~ 600, resolution: 0.01V.  Note: If left unconfigured, a default value of 1.				
Power Factor	Set the power factor of the load. This field is required when Cumulative Data Type is set to Energy Consumption . Range: 0-1, resolution: 0.01.  Note: If left unconfigured, a default value of 1.				
Device password	Change the password for ToolBox Software to access this device.				

3. Click **Save** in the lower left corner and wait a few seconds.

Related information[Commands for General Setting](#)

Configure Threshold Parameters

This section describes how to configure threshold parameters.

Steps:

1. On the homepage of ToolBox, click **Device Setting** to enter the **Settings** page.
2. In the **Alarm Settings** box, enable **Current Threshold Value** and configure the following threshold parameters.

Alarm Settings

Current Threshold Value

☒

Excessive Current Threshold

A

Insufficient Current Threshold

A

Parameters	Description
Excessive Current Threshold	The maximum current threshold value.
Insufficient Current Threshold	The minimum current threshold value.

3. (Optional) If the USB-C NTC sensor is connected, you can enable the **Temperature** and set the max./min. threshold value in **Over/Below** Box.

Temperature

☒

Over

°C

Below

°C

4. Configure the alarm reporting parameters.

Alarm Reporting Interval(min)

Alarm Reporting Times

Parameters	Description
Alarm Reporting Interval (min)	The interval to report alarm packet after alarm triggers. This interval should be less than reporting interval.
Alarm Reporting Times	Alarm packet report times after alarm triggers.

**Note:**

Current overrange alarm is fixed as enabled, the alarm reporting interval is fixed as 5 minutes and the alarm reporting times is fixed as 3.

5. Click **Save** in the lower left corner and wait a few seconds.

Related information

[Command for Threshold Setting](#)

[Alarm Report](#)

Maintain the Device

This section describes how to maintain the device.

Upgrade the Device

This section describes how to upgrade the device locally.

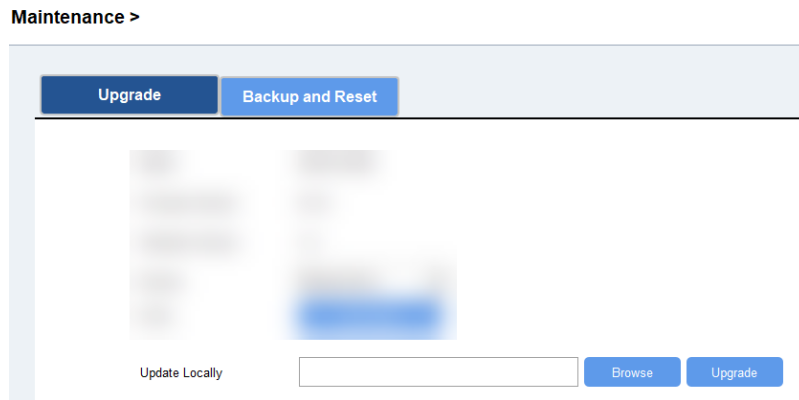
Prerequisites: Download firmware from [Milesight official website](#) and save it to the PC. It is recommended to consult technical support before upgrading to ensure a safe and successful upgrade.

Steps:

1. On the homepage of ToolBox, click **Maintenance** in the lower left corner.
2. On the left top, select **Upgrade**.
3. Click **Browse** to import firmware.
4. Click **Upgrade** to upgrade the device.

**CAUTION:**

Any operation on ToolBox is not allowed during upgrading, otherwise the upgrading will be interrupted, or even the device will break down.



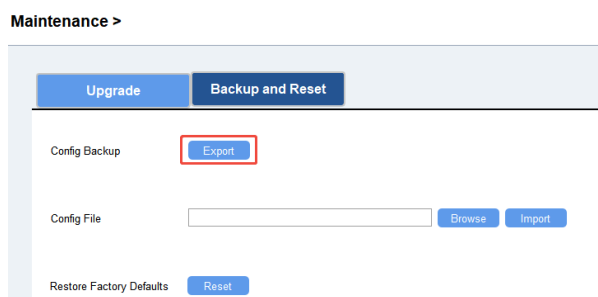
Configure a Template for Configuration Backup

This device supports configuration backup, which enables quick and easy batch configuration. This section describes how to backup the device configuration and write to other devices.

Prerequisites: The backup device and the device importing the backup are exactly the same model.

Step 1. Set a Template

1. Log in the device via ToolBox Software.
2. Edit and save the device parameters as required.
3. Click **Maintenance** and enter the **Backup and Reset** page.
4. Click **Export** to save the current configuration as json format template file.

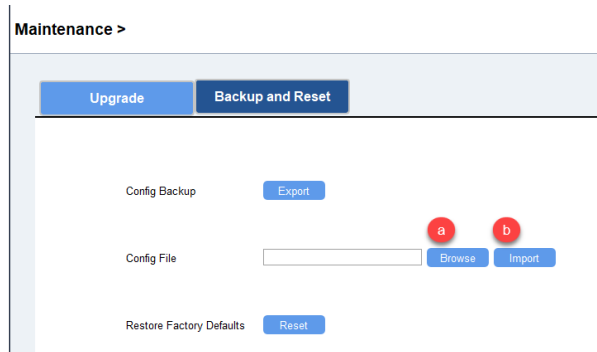


5. If the save is successful, you will see the template file on your computer.

Step 2. Write Template Configuration to the Target Device

1. Connect another target device to the same computer.
2. Log in the device via ToolBox software.
3. On the homepage, click **Maintenance** and enter the **Backup and Reset** page.
4. Click **Browse** to select the saved template.

5. Click **Import** to import the template file.

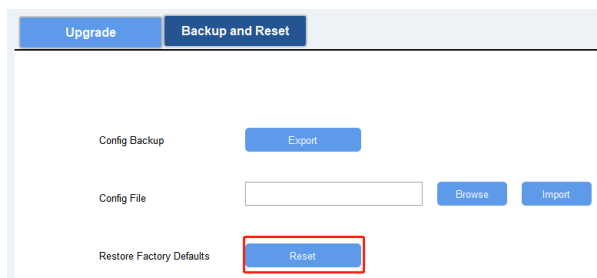


Reset the Device

This section describes how to reset the device.

Steps:

1. On the homepage of ToolBox, click **Maintenance** in the lower left corner.
2. Click **Backup and Reset**. The following page is displayed.



3. Click **Reset**.

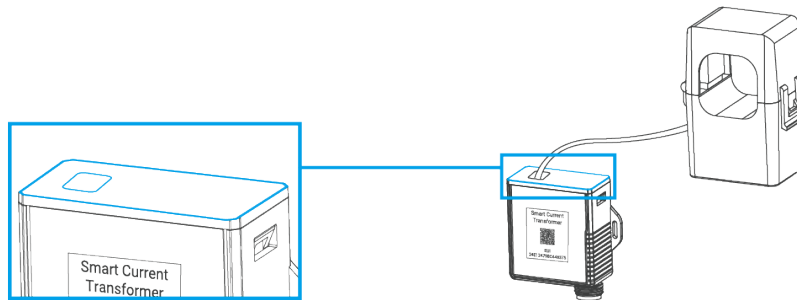
Chapter 4. Install the Device

Installation Requirement

1. The installation and maintenance must be conducted by a qualified service person and should strictly comply with the electrical safety regulations of the local region.
2. To realize the best data transmission, ensure the device is within the signal range of the LoRaWAN® gateway.
3. The device is intended for indoor use only. Do not place the device where the temperature is below/above the operating range.
4. Keep the device away from water to prevent electric shock.
5. Keep the opening clean and free of dust before installation.

Current Transformer Assembly (CT105 Only)

CT105 can be connected to the connectors of transceiver.



Extension Cable Assembly (CT101/CT103 Optional)

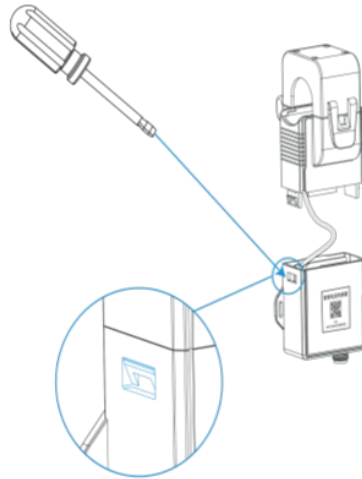
CT101/CT103 supports for using the current transformer probe separately from the transceiver or with an extension cable.

1. Press the clip on the side with a screwdriver and separate CT and transceiver.

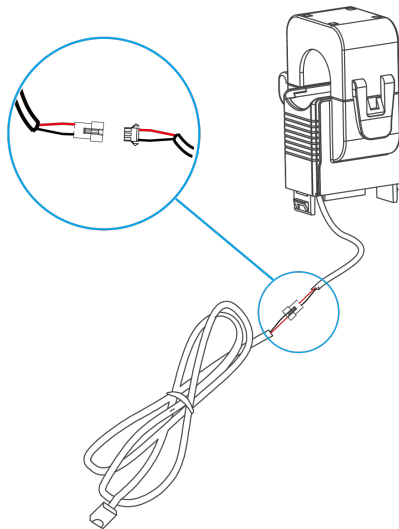


Attention:

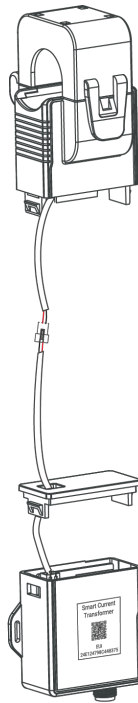
Do not attempt to disassemble the device by force.



2. Disconnect the wiring socket of the probe from the transceiver, then connect the extension cable to the CT clip.



3. Pass the other end of the extension cable through the transceiver cover, then connect to the transceiver.



Antenna Installation

Prerequisites:

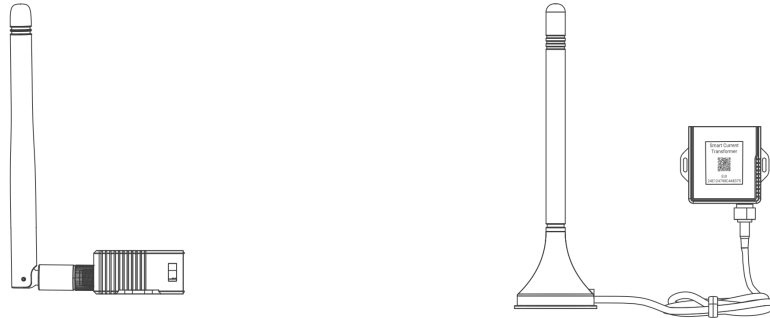
- LoRaWAN[®] antenna

Installation Guidelines

- Keep the device away from metal objects, obstacles, or other electrical equipment that may cause interference.
- If the installation environment is challenging, the optional magnetic antenna provides greater flexibility for placement.

Steps:

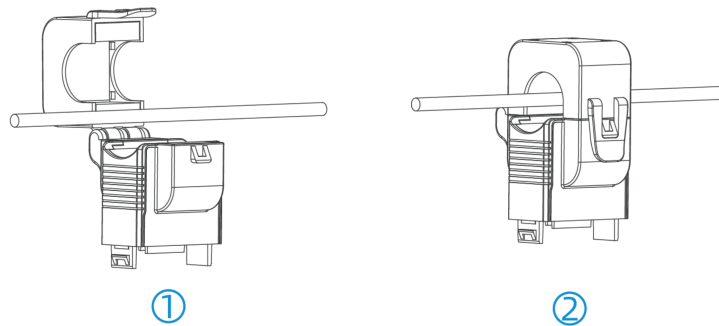
1. Screw the antenna into the antenna connector and hand-tighten it.
2. Orient the antenna vertically to ensure optimal performance.



Transformer Installation

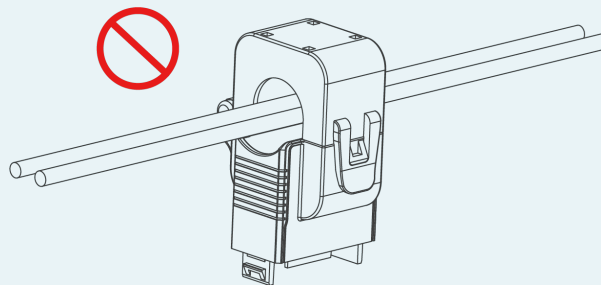
Steps:

1. Open the current transformer to clip it around a single Phase wire.
2. Close the clip with a slight “click” sound to make sure the clip firmly grips the wire.



Note:

- Do not place Phase wire and Neutral wire within a single current transformer.



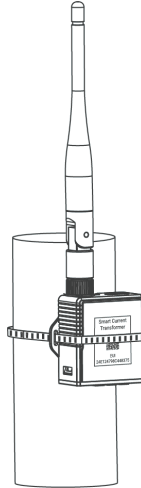
Transceiver Installation

Prerequisites:

- Cable-ties

Steps:

1. Put or hang in any suitable position or to be fixed via cable-ties.

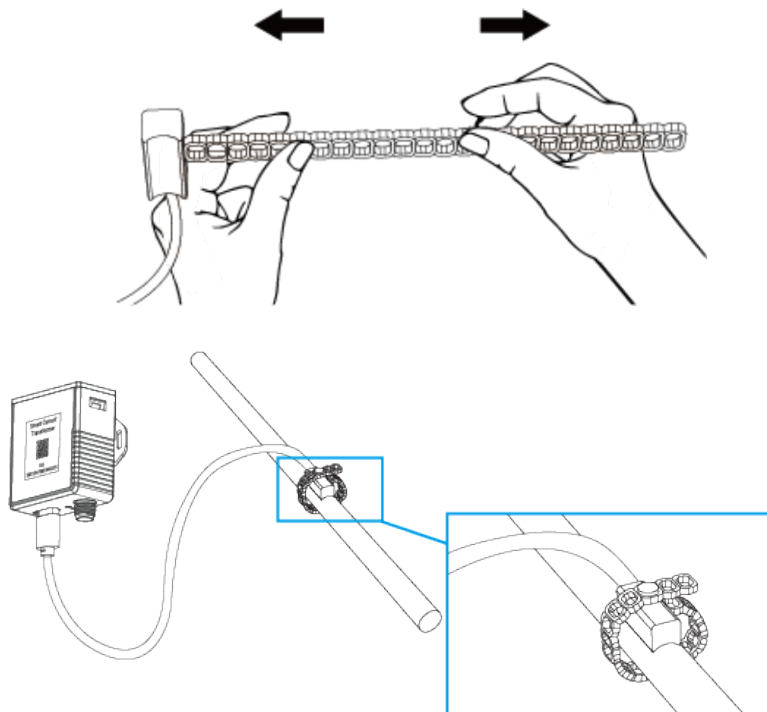


USB-C NTC Sensor Installation (Optional)

The device can monitor the temperature of the wire through the USB-C NTC Sensor, it will alarm when the temperature exceeds the threshold.

Steps:

1. Pass the USB-C NTC Sensor around the tested wire, positioning it as close to the wire connector as possible for accurate temperature detection.
2. Tighten the buckle.
3. Connect the other end to the CT device via the USB Type-C.



Chapter 5. Uplink Packets and Downlink Commands

All messages follow the following format (HEX), the Parameter/Data field must follow **little-endian** byte order:

Channel1	Type1	Data1	Channel2	Type2	Data2	Channel3	...
1 Byte	1 Byte	N Bytes	1 Byte	1 Byte	N Bytes	1 Byte	...

For decoder and encoder examples, please find files on <https://github.com/Milesight-IoT/SensorDecoders>. For details of uplink reports and downlink commands please refer to the sections below.

Uplink Packets

This section describes the uplink packets reported by the device.

Basic Information Packet

After joining the network, the device reports a packet containing the basic device information.

Packet description:

Item	Channel	Type	Byte	Description
Power On	ff	0b	1	Device is on
Protocol Version	ff	01	1	Example: 01=V1
Hardware Version	ff	09	2	Example: 03 10 = V3.1
Software Version	ff	0a	2	Example: 03 01 = V3.1
Device Type	ff	0f	1	00: Class A, 01: Class B, 02: Class C, 03: Class C to B
Serial Number	ff	16	8	16 digits
TSL Version	ff	ff	2	Example: 01 00=>V1.0

Example:

ff0bff ff0101 ffff0101 ff166746d48016300014 ff090200 ff0a0101 ff0f00		
Channel	Type	Value
ff	0b	Power On: ff(Reserved)
ff	01	Protocol Version: 01=>V1
ff	ff	TSL Version: 0101=>V1.1
ff	16	SN: 6746d48016300014
ff	09	Hardware Version: 0200=>V2.0
ff	0a	Software Version: 0101=>V1.1
ff	0f	Device Type: 00=>Class A

Periodic Data Packet

The device reports a data packet at a configured reporting interval.

Packet description:

Item	Channel	Type	Byte	Description
Total Current	03	97	4	UINT32/100, Unit: Ah  Note: when it reaches to max value FFFFFFFF (42949672.95), it will clear to 0 automatically.
Current	04	98	2	UINT16/100, Unit: A  Note: FFFF means collection failure.
Temperature	09	67	2	INT16/10, Unit: °C

Item	Channel	Type	Byte	Description
				 Note: 1. This data packet will be reported only when the NTC sensor is installed. 2. FFFD means overrange temperature; FFFF means collection failure.
Total Energy Consumption	10	99	4	UINT32/100, Unit: kWh  Note: when the total current reaches to max value FFFFFFFF (42949672.95), it will clear to 0 automatically.

Example:

09673401 109910270000		
Channel	Type	Value
09	67	Temperature: 34 01=>01 34=308/10=30.8°C
10	99	Total Energy Consumption: 10 27 00 00=>00 00 27 10=10000/100=100.00 kWh

Alarm Report

The device reports the following types of alarm packets.

Packet description:

Item	Channel	Type	Byte	Description
Current Alarm	84	98	7	Byte 1-2: Max. Current Byte 3-4: Min. Current Byte 5-6: Latest Current

Item	Channel	Type	Byte	Description
				Byte 7: Alarm Status • 01: Threshold alarm • 02: Threshold alarm dismiss • 04: Overrange alarm • 08: Overrange alarm dismiss • 05: Threshold alarm + Overrange alarm • 0a: Threshold alarm dismiss + Overrange alarm dismiss  Note: Max./Min. Current means the maximum or minimum value between last report and current report.
Temperature Alarm	89	67	4	Byte 1-2: Temperature, INT16/10, Unit: °C Byte 3: 01-Threshold alarm; 00-Threshold alarm dismiss
Low Voltage1 Alarm	13	73	1	01

Examples:

1. Current threshold alarm is triggered.

8499 b80b d007 c409 01		
Channel	Type	Value
84	98	Max. Current: b8 0b=>0b b8=3000/100=30A Min. Current: d0 07=>07 d0=2000/100=20A Latest Current: c4 09=>09 c4=2500/100=25A Alarm Status: 01=>Threshold alarm

2. When the voltage continues to drop and the device switches from normal mode to low voltage mode, it will report a low-voltage alarm packet.

137501		
Channel	Type	Value
13	75	01

Downlink Commands

Downlink commands can be used for remote control of device through a network server. The downlink port (application port) is 85 by default and can be configured through ToolBox.

For details of downlink commands please refer to the sections below.

Commands for General Setting

The device supports multiple commands for general settings.

Command description:

Item	Channel	Type	Byte	Description
Reboot	ff	10	1	ff
Clear Accumulated Current	ff	27	1	01  Note: when it reaches to max value FFFFFFFF (42949672.95Ah), it will clear to 0 automatically.
Query Periodic Report	ff	28	1	ff
Report Interval	ff	8e	3	Byte 1: 00 Byte 2-3: UINT16, Unit: minute
Cumulative Data Type	ff	d0	2	00: Kiloampere Hour 01: Energy Consumption

Item	Channel	Type	Byte	Description
Voltage	ff	ce	2	UINT16/100, Range: 0-600, Unit: V
Power Factor	ff	cf	1	UINT8/100, Range: 0-1

Example:

1. Reboot the device.

ff10ff

2. Set report interval as 20 minutes.

ff8e001400		
Channel	Type	Value
ff	8e	1400=>0014=20minutes

Related information

[Configure General Parameters](#)

Command for Threshold Setting

The device supports a command for threshold setting.

Command description:

Item	Channel	Type	Byte	Description
Threshold Alarm	ff	06	9	Byte 1: • Bit0~Bit2: ◦ 000-disable ◦ 001-below (minimum threshold) ◦ 010-over (maximum threshold) ◦ 011-within ◦ 100-below or over

Item	Channel	Type	Byte	Description
				- Bit3~Bit5: 001-Current 100-Temperature - Bit6~Bit7: 00 Byte 2-3: Min. value, Unit: A or 0.1°C Byte 4-5: Max. value, Unit: A or 0.1°C Byte 6-7: Alarm Reporting Times, Range: 1~1000 Byte 8-9: Alarm Reporting Interval, Unit: min
Alarm Re- porting Interval	ff	02	2	Unit: min, Range: 1~1440
Alarm Re- porting Times	ff	f2	2	Range: 1~1000

Example:

Enable current threshold alarm and set maximum threshold as 60A, reporting times as 2 and reporting interval as 5 minutes.

ff 06 0a0000 3c00 02000500		
Channel	Type	Value
ff	06	0a=00001010=>over current maximum threshold Min. value: 00 00=0 Max. value: 3c 00=> 00 3c=60 A Alarm Reporting Times: 02 00=>00 02 =2 Alarm Reporting Interval: 05 00=>00 05=5 mins

Related information

[Configure Threshold Parameters](#)

Chapter 6. Services

Milesight provides customers with timely and comprehensive technical support services. End-users can contact their local dealer to obtain technical support. Distributors and resellers can contact Milesight directly for technical support.

Technical Support Mailbox: iot.support@milesight.com

Online Support Portal: <https://support.milesight-iot.com>

Resource Download Center: <https://www.milesight.com/iot/resources/download-center/>

MILESIGHT CHINA

TEL: +86-592-5085280

FAX: +86-592-5023065

Add: Building C09, Software Park Phase III, Xiamen 361024, Fujian, China