

# Wireless Light Sensor and 3-Phase Current Meter with 3x250A Clamp-On CT

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Wireless Sensor Network Based on LoRa Technology



Figure1 R718NL325 Appearance

## R718NL325 Data Sheet

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## Introduction

The NETVOX Wireless Light Sensor and 3-Phase Current Meter with 3x250A Clamp-On CT is used to detect three-phase electrical input current and ambient light intensity detection.

The device is compatible with the LoRaWAN protocol, and integrates a chip module that conforms to the LoRaWAN wireless protocol to display the collected data in the gateway.

The device adopts the split-core current transformer, which can be conveniently connected to the measuring device.

## Working Principle

This device is equipped with an external current transformer. The current transformer is a transformer that produces a proportional secondary low-side current to the primary high-side one to sense the current. This device guarantees users' safety, as it monitors the secondary low-side current and built-in a light sensor to detect ambient light intensity.

## Main Characteristics

- Apply SX1276 wireless communication module
- 2 section of ER14505 battery (3.6V / section) in parallel
- Protection level: Main body IP53; Clamp-On CT IP30
- The base is attached with a magnet that can be attached to a ferromagnetic material object
- The clamp-on CT allows easier installation to the device you would like to detect the current from
- LoRaWAN™ Class A compatible
- Frequency Hopping Spread Spectrum (FHSS)
- Third-Party online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email (optional)
- Available third-party platforms: Actility/ ThingPark, TTN, MyDevices/ Cayenne
- Low power consumption and longer battery life

Battery Life:

Please refer to web: [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.com.tw/electric/electric_calc.html)

At this website, users can find battery lifetime for various models at different configurations.

1. Actual range may vary depending on the environment.
2. Battery life is determined by sensor reporting frequency and other variables

## Applications

- Indoor current detecting devices for homes, hotels, office buildings, shopping malls, etc.
- The environment that needs to detect the light intensity
- Smart city
- Thermal system devices

## Electrical Characteristics

|                                 |  |
|---------------------------------|--|
| Power supply                    | 2 sections of ER14505 lithium battery in parallel<br>(3.6V 2200mAh/ section)   |
| Battery life                    | 5 years<br>(condition: ambient temperature 25 °C, report once every 30 mins, txpower = 20dBm, LoRa spreading factor SF = 10) |
| Stand-by current                | 32uA   |
| Wake-up current                 | 7mA  |
| Battery measurement accuracy    | ± 0.1V   |
| Current measurement error value | <± 1%  |
| Current resolution              | 1mA  |
| Current measurement accuracy    | 1A to 250 A<br>(varies according to the configuration of the current transformer)  |

## R100H Module Characteristics

|                      |                   |
|----------------------|-------------------|
| Wake up current      | (0.8mA-8mA)/ 3.3V |
| RF receiving current | 11 mA / 3.3V      |
| RF emission current  | 120 mA / 3.3V     |

\*Specific electrical characteristics may vary depending on the power supply voltage

## Frequency

|                        |   |
|------------------------|---|
| Frequency range        | 863MHz-928MHz 470MHz-510MHz   |
| TX Power               | US915 20dbm;<br>AS923 16dbm;<br>AU915 20dbm;<br>CN470 19.15dbm;<br>EU868 16dbm;<br>KR920 14dbm;<br>IN865 20dbm;                     |
| Receiving sensitivity  | -136 dBm<br>(LoRa, Spreading Factor = 12, Bit Rate = 293bps);<br>-121 dBm<br>(FSK, Frequency deviation = 5kHz, Bit Rate = 1.2kbps)  |
| Antenna type           | Built-in antenna  |
| Communication distance | 10 km<br>(the actual transmission distance depends on the environment. )  |
| Data transfer rate     | 0.3kbps ~ 50 kbps (LoRaWAN)<br>1.2 kbps ~ 300 kbps (FSK)  |
| Modulation system mode | LoRa / FSK (Note: you can choose one of them)   |
| Available LoRaWAN Band | EU863-870, US902-928, AU915-928, KR920-923, AS923,<br>CN470-510, IN865<br>(Note: optional, to be done in the factory configuration) |

## Split-core Current Transformer Parameters

|                                |   |
|--------------------------------|---|
| Rated primary input current    | 200A, 50Hz ~ 60Hz                       |
| Rated secondary output current | 66.66mA                                 |
| Saturation current             | ≥250A                                   |
| Transformation ratio           | 3000: 1                                 |
| Load resistance                | 10 Ω                                    |
| Accuracy                       | 1% (1A-250A)                            |
| Isolation withstand voltage    | 3000V                                   |
| Housing material               | Flame retardant grade 94-V0 UL material |
| Environmental protection       | ROHS compliant                          |
| Operating temperature          | -40 °C ~ + 85 °C                        |

### Light Sensor

|                      |  |
|----------------------|--|
| Supply Voltage Range | 1.7VDC-3.6VDC  |
| Light Sensor Model   | LTR-308ALS-01 (LITEON)   |
| Illuminance Range    | 0.01 LUX - 157K LUX  |
| Illuminance Accuracy | ± 20%: Under sunlight.<br>± 10%: Under stable and controlled light source conditions, such as white LED lamp, 6500K, room temperature. |
| Communication Method | I2C communication  |

### Physical

|                                     |   |
|-------------------------------------|---|
| Dimension                           | Main body: L:112 mm * W:88.19 mm * H:32 mm<br>CT Sensor: H:66mm*L:46mm*W:34mm |
| Main Body Weight                    | 141 g   |
| CT Sensor Weight                    | 150.6 g * 3   |
| CT Sensor External Wiring Length    | 900mm   |
| Ambient Operating Temperature Range | -20°C ~ 55°C  |
| Ambient Storage Temperature Range   | -40°C ~ 85°C  |
| Ambient Humidity Range              | <90% RH (No condensation)   |
| Fixed Way                           | Screw / magnet  |

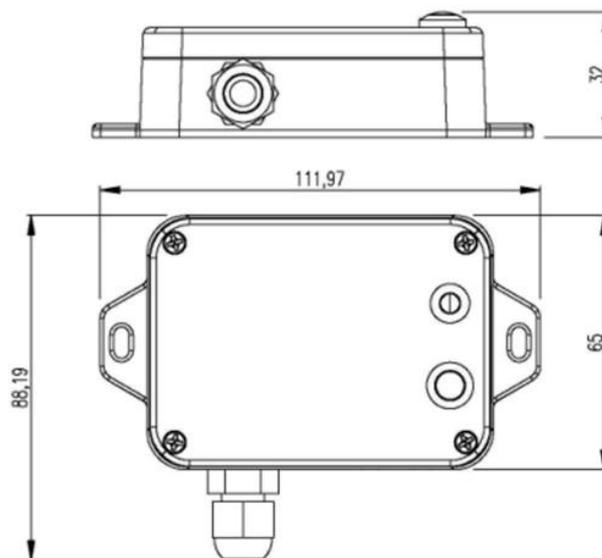


Figure2 Main Body Dimension

L:112 mm \* W:88.19 mm \* H:32 mm

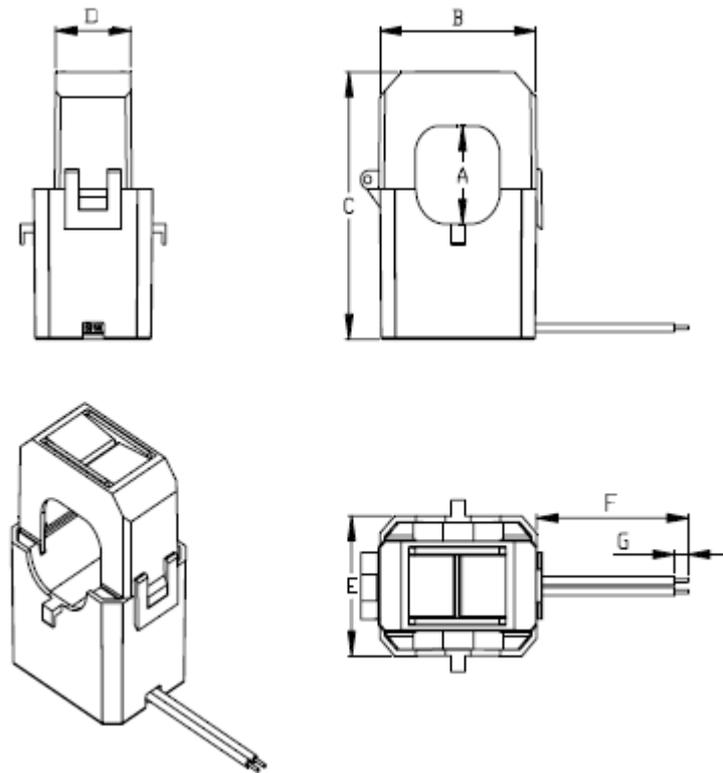


Figure3 Clamp-on CT Dimension

H:66mm\*L:46mm\*W:34mm

| A        | B      | C      | D      | E      | F      | G   |
|----------|--------|--------|--------|--------|--------|-----|
| 24.3±0.5 | 46 max | 66 max | 22 max | 34 max | 900±30 | 6±1 |