Installation instructions

Environmental Monitoring Probe EMPDT1H1C2

English

1 Description and features

> ⚠ EMPDT1H1C2 is compatible with G3, G3+ and High Density range of **rack PDU using a firmware version 4.x or later.**
> **Latest firmware is available here:** www.eaton.eu/RackPDUfirmware

The optional Environmental Monitoring Probe (EMP) enables you to collect temperature and humidity readings and monitor the environmental data remotely.

You can also collect and retrieve the status of one or two dry contact devices (not included).

Up to 3 Environmental Monitoring Probe can be daisy chained on one device.

You can monitor readings remotely using SNMP or a standard Web browser through the Network module.

This provides greater power management control and flexible monitoring options.

The EMP device is delivered with a screw and screw anchor, magnets, nylon fasteners, tie wraps, and magnets. You can install the device anywhere on the rack or on the wall near the rack.

> ⓘ For more information, refer to the device manual.

The EMP has the following features:

- The hot-swap feature simplifies installation by enabling you to install the probe safely without turning off power to the device or to the loads that are connected to it.
- The EMP monitors temperature and humidity information to help you protect critical equipment.
- The EMP measures temperatures from 0°C to 70°C with an accuracy of ±2°C.
- The EMP measures relative humidity from 10% to 90% with an accuracy of ±5%.
- The EMP can be located some distance away from the device with a CAT5 network cable up to 50m (165 ft) long.
- The EMP monitors the status of the two user-provided contact devices.
- Temperature, humidity, and contact closure status can be displayed through a Web browser through the Network module or LCD interface (if available)
- A Temperature and Humidity Offset can be set.

2 Unpacking the EMP

The sensor will include the following:

- EMPDT1H1C2 sensor
- Dry contact terminal block
- Quickstart
- USB to RS485 converter
- RJ45 female to female connector
- Wall mounting screw and anchor
- Rack mounting screw nut and washer
- Tie wraps (x2)
- Nylon fastener

> ⓘ Packing materials must be disposed of in compliance with all local regulations concerning waste.
> Recycling symbols are printed on the packing materials to facilitate sorting.

3 Installing the EMP

## 3.1 Defining EMPs address and termination

3.1.1 Manual addressing

> ⚠ Address must be defined before the EMP power-up otherwise the changes won't be taken into account.
> Do not set Modbus address to 0, otherwise the EMP will not be detected.

Define **different address** for all the EMPs in the daisy-chain.

Set the RS485 termination (TER) to 1 on the last EMP of the daisy chain, set it to 0 on all the other EMPs.

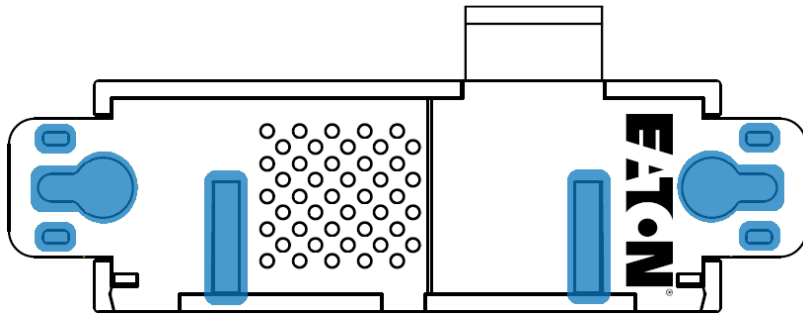A- **Example:** manual addressing of 3 EMPs connected to the Device
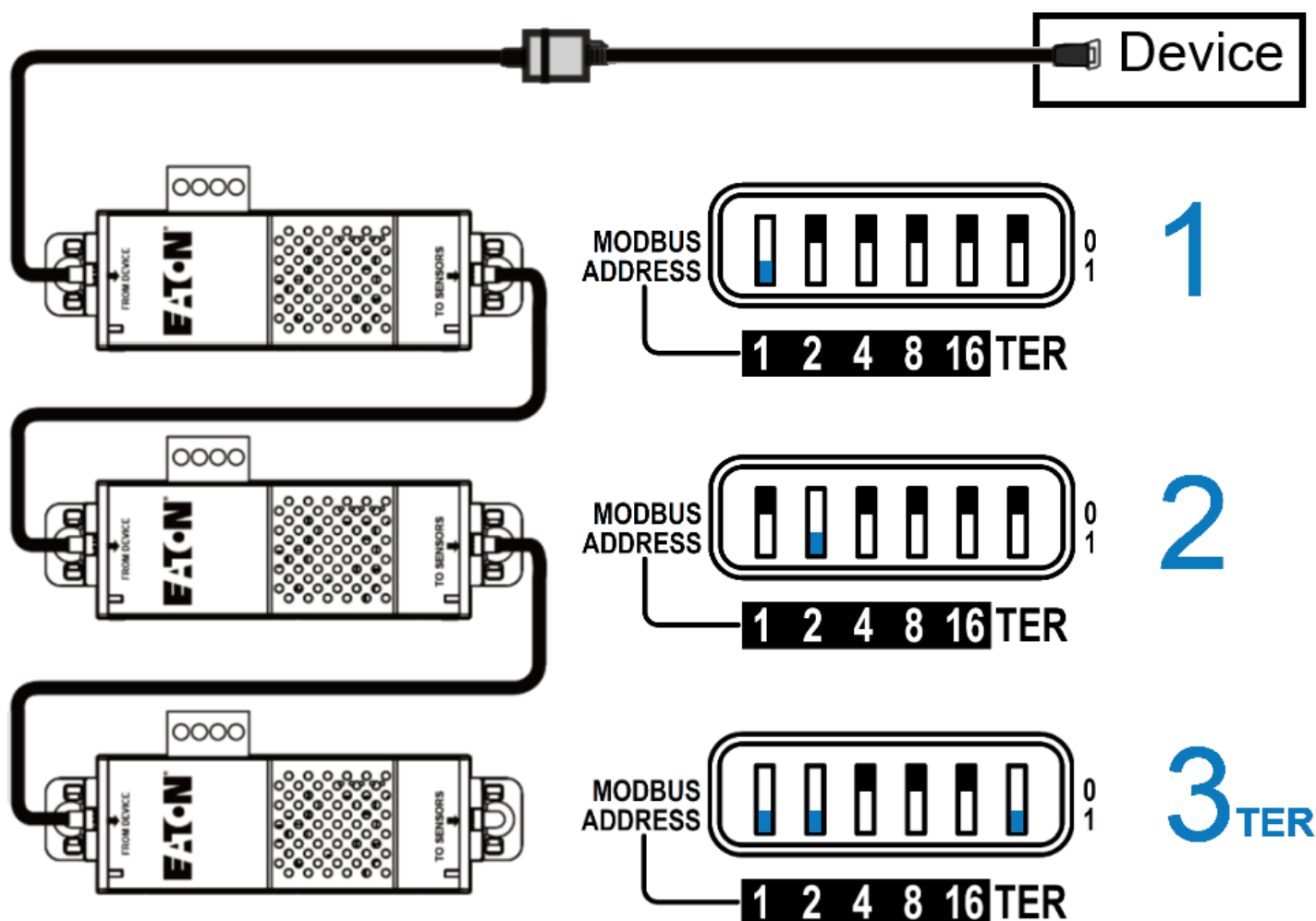
> ⓘ Green LED of the TO DEVICE RJ45 connector shows if the EMP is powered by the Network module.

3.2 Mounting the EMP

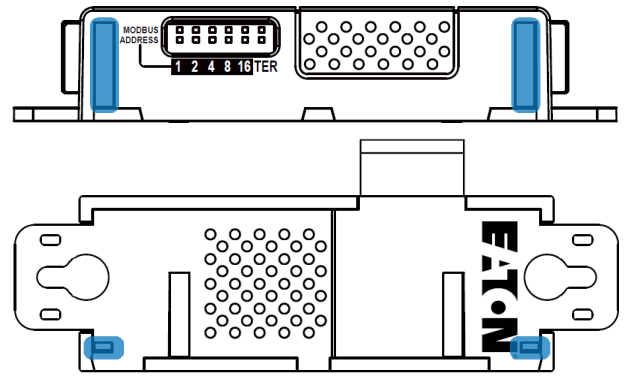The EMP includes magnets, cable ties slots and keyholes to enable multiple ways of mounting it on your installation.

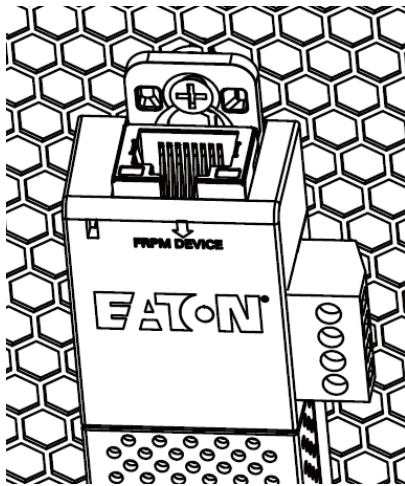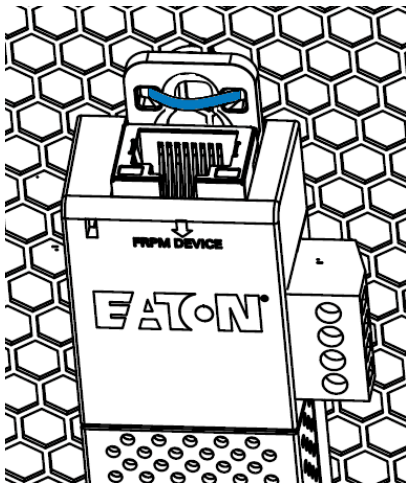| Bottom mounting capabilities:	Side mounting
- magnets - keyholes - tie wraps - nylon fastener	- magnets - tie wraps

3.2.1 Rack mounting with keyhole example

To mount the EMP on the rack, use the supplied screw, washer and nut. Then, mount the EMP on the screw and tighten it.
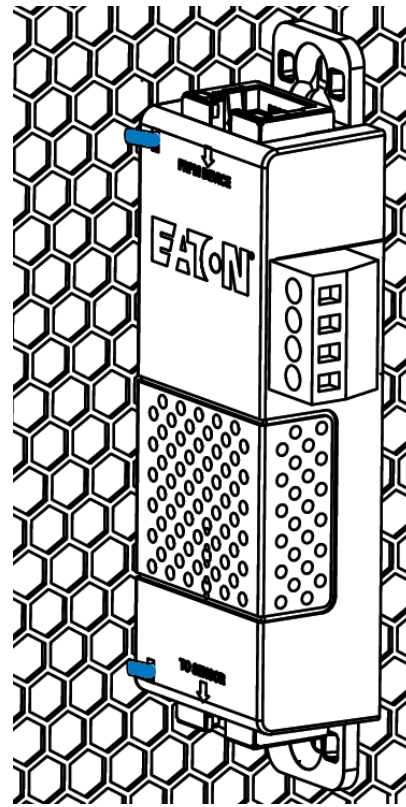

3.2.2 Rack mounting with tie wraps example

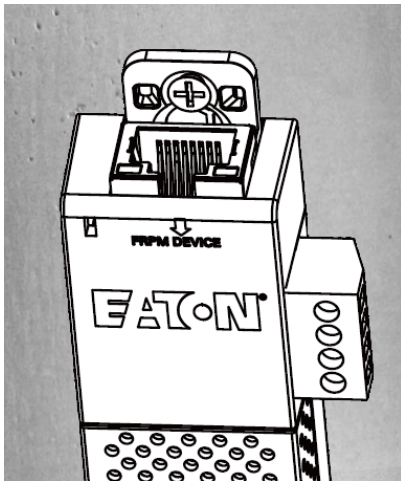To mount the EMP on the door of the rack, use the supplied cable ties.

Bottom mounting	Side mounting

3.2.3 Wall mounting with screws example

To mount the EMP on the wall close to the rack, use the supplied screw and screw anchor. Then, mount the EMP on the screw and tighten it.


3.2.4 Wall mounting with nylon fastener example

To mount the EMP within the enclosure environment, attach one nylon fastener to the EMP and the other nylon fastener to an enclosure rail post. Then, press the two nylon strips together to secure the EMP to the rail post.

ⓘ Cut nylon fastener and stick it on the EMP bottom on the location highlighted below, this will prevent to interfere with the EMP data acquisition parts.
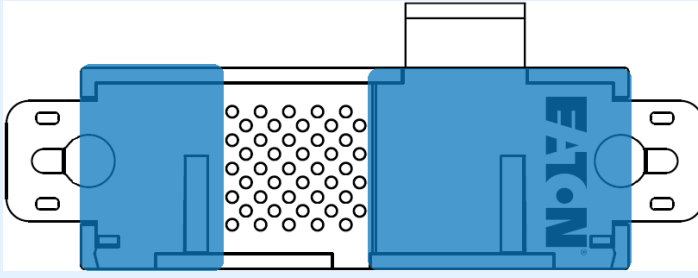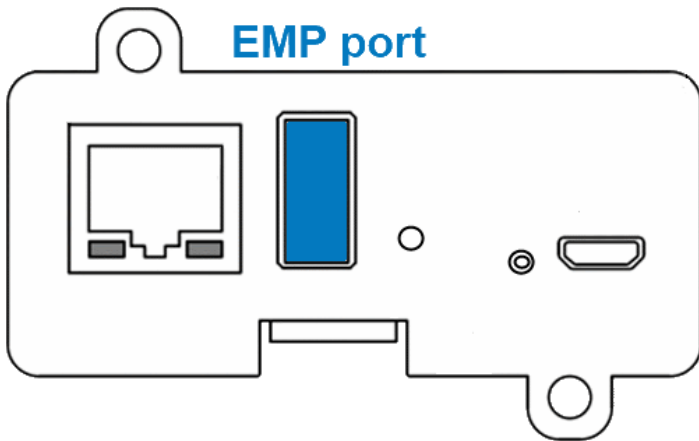
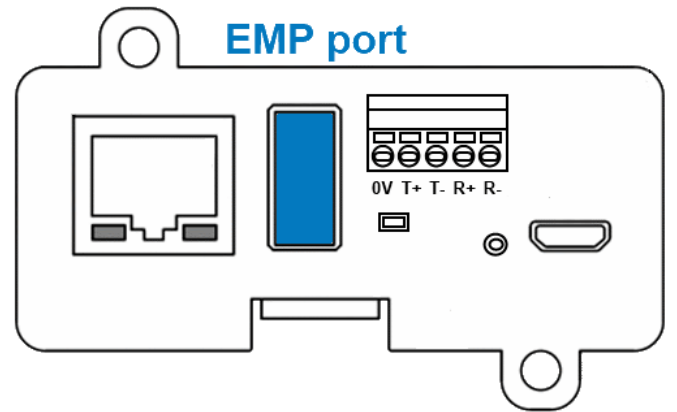# 3.3 Cabling the first EMP to the device

3.3.1 Available Devices

A- Network-M2 and INDGW-M2

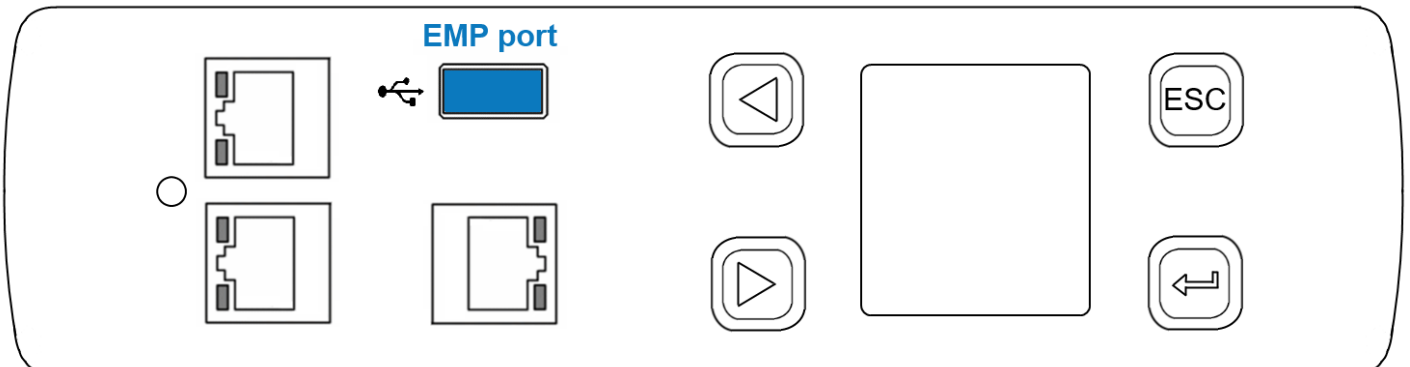| Network-M2	INDGW-M2

B- ePDU control module

⚠ EMPDT1H1C2 must be connected to the **ePDU USB port** using the USB to RS485 converter supplied on the box
The EMP001 and EMPDT1H1C2 can not be used on the same device

3.3.2 Connecting the EMP to the device

> ⚠ Address must be defined before the EMP power-up otherwise the changes won't be taken into account.
> Do not set Modbus address to 0, otherwise the EMP will not be detected.

A- Material needed:

- EMP
- RJ45 female/female connector (supplied in EMP accessories)
- USB to RS485 converter cable (supplied in EMP accessories)
- Ethernet cable (**not supplied**).
- Device

B- Connection steps
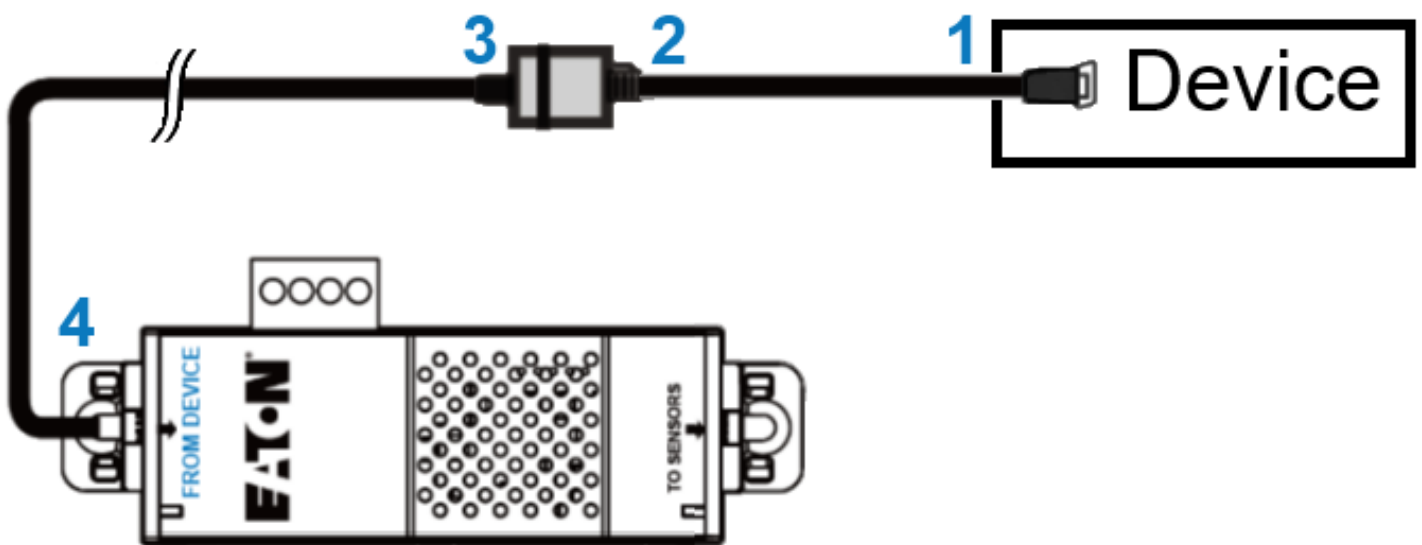
Step 1 – Connect the "USB to RS485 converter cable" to the USB port of the Device.

Step 2 – Connect the "USB to RS485 converter cable" to the RJ45 female/female connector.

Step 3 – Connect the Ethernet cable to the other end of the RJ45 female/female connector.

Step 4 – Connect the other end of the Ethernet cable to the RJ-45 port on the EMP (FROM DEVICE).

> ⓘ Use the supplied tie wraps to secure the "RS485 to USB cable" to the Network cable.
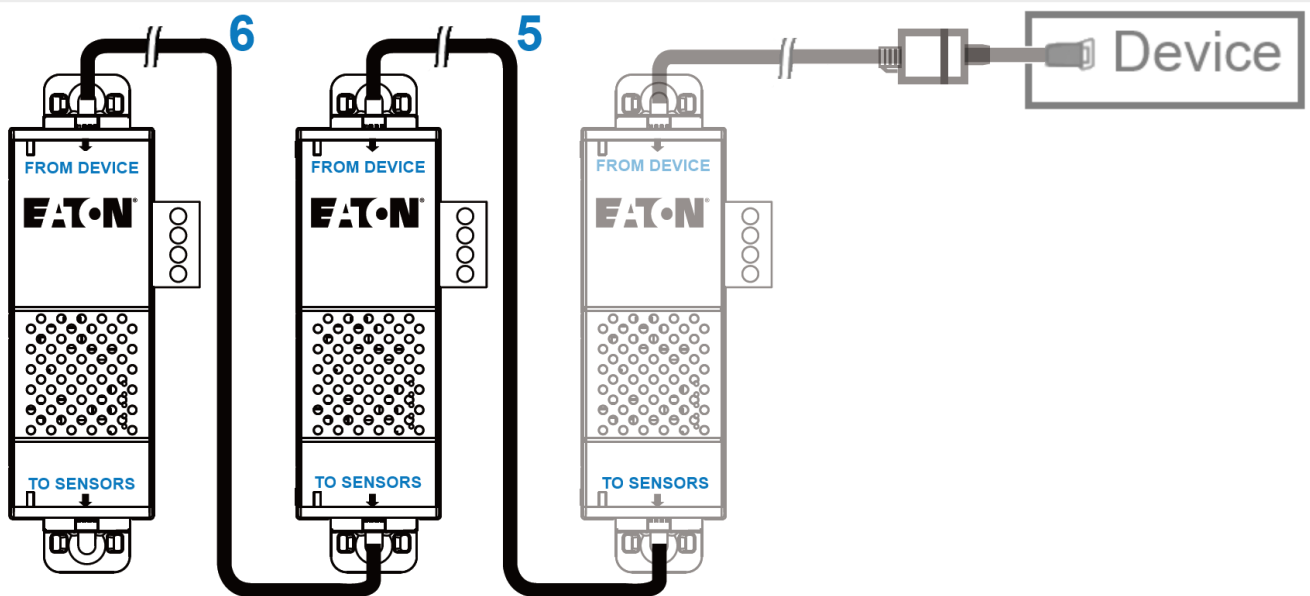
3.4 Daisy chaining EMPs

> ⚠ Address must be defined before the EMP power-up otherwise the changes won't be taken into account.
> Do not set Modbus address to 0, otherwise the EMP will not be detected.

3.4.1 Material needed:

- First EMP connected to the device (refer to previous section)
- Additional EMPs
- 2 x Ethernet cable (**not supplied**).
- Device

3.4.2 Steps

> ⚠ Up to 3 EMP can be daisy chained on one device.

STEP 5 – Connect the Ethernet cable to the "TO SENSORS" port of the first EMP, and to the "FROM DEVICE" port of the second EMP.

STEP 6 – Connect the Ethernet cable to the "TO SENSORS" port of the second EMP, and to the "FROM DEVICE" port of the third EMP.

3.5 Connecting an external contact device
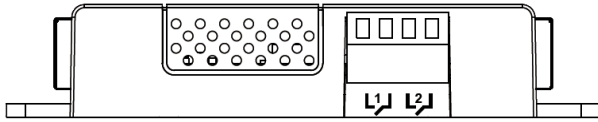
To connect an external device to the EMP:

1- Connect the external contact closure inputs to the terminal block on the EMP (see the table and the figure below):

- External contact device 1. Connect the return and signal input wires from device 1 to screw terminals 1.
- External contact device 2. Connect the return and signal input wires from device 2 to screw terminals 2.

2- Tighten the corresponding tightening screws on top of the EMP to secure the wires.

4 Commissioning the EMP

4.1 On the Network-M2 device

STEP 1: Connect to the Network Module

- On a network computer, launch a supported web browser. The browser window appears.
- In the Address/Location field, enter: https://xxx.xxx.xxx.xxx/ where xxx.xxx.xxx.xxx is the IP address of the Network Module.
- The log in screen appears.
- Enter the user name in the User Name field.
- Enter the password in the Password field.
- Click **Sign In**. The Network Module web interface appears.

STEP 2: Navigate to **Cards/Commissioning** page

STEP 3: Proceed to the commissioning (refer to the contextual help for details: Cards>>>Commissioning (Sensors)

- Click **Discover**. The EMP connected to the Network module appears in the table.

> ⓘ When discovered, the orange LEDs of the EMP RJ45 connectors shows the data traffic.

- Press the pen logo to edit EMP information and access its settings.
- Click **Define offsets** to define temperature or humidity offsets if needed.

STEP 4: Define alarm configuration (refer to the contextual help for details: Sensors>>>Alarm configuration)

- Click on the **Sensors** menu that has just appeared on the left bar after the EMP discovery.
- Select the **Alarm configuration** page.
- Enable or disable alarms.
- Define thresholds, hysteresis and severity of temperature, humidity and dry contacts alarms.
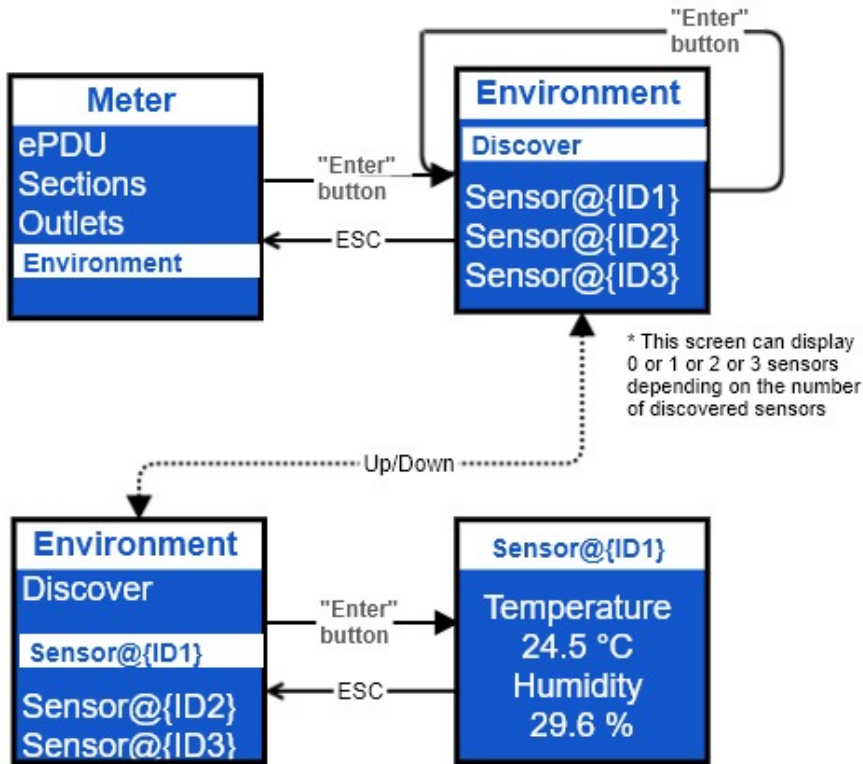
4.2 On the ePDU G3 device

Sensors must be discovered manually once connected to the ePDU.

3 ways to setup the sensor to the ePDU: via the ePDU **LCD**, via the **Web Interface** or via **CLI command**.

> ⓘ Before connecting the sensor to the Rack PDU make sure the firmware version is 4.x or later .

4.2.1 Discover the sensor via the LCD

4.2.2 Discover the sensor via the Web Interface

Connect to the Web pages with the ePDU IP address

In the "Environment" menu, click the **"Discover" button**

Discover button => Search for sensors =>X USB senosor(s) discovered

> ⓘ The Environment menu appears only when an EMP is connected to the Rack PDU

4.2.3 Discover the sensor using CLI command

Use a tool as Putty and connect with the IP address in "Telnet", "SSH" or "serial" mode

To check the availability place for the new sensor, use the command :
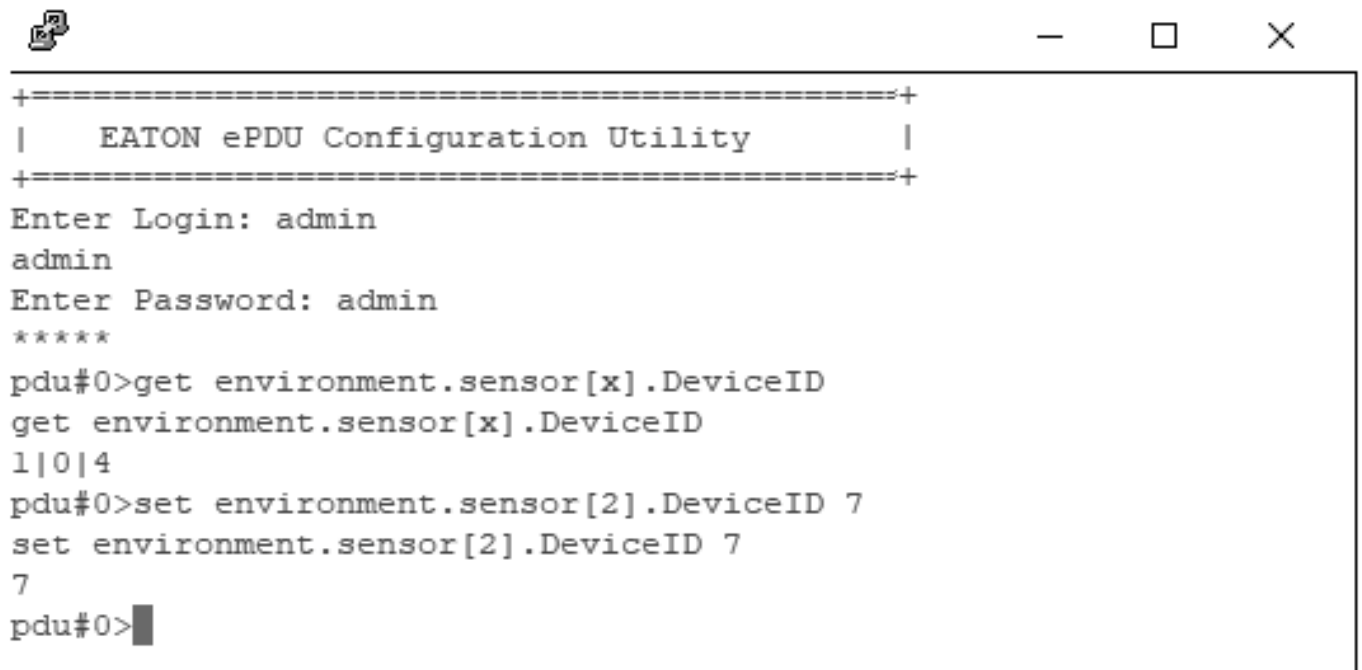
```
get environment.sensor[x].DeviceID
```

In this situation the position 2 is available for use the new sensor. (see screenshot below)

To reset the SerialNumber, use the command line :

```
set environment.sensor[x].iSerialNumber {1 space only to be set}
 - {x} is the position chosen previously.
```

To set the address, use the command line :

```
set environment.sensor[x].DeviceID {address}
 - {address} is the address of the Usb sensor defined by the DIP switch.
 - {x} is the position chosen previously.
```

```
+===============================================+
|     EATON ePDU Configuration Utility          |
+===============================================+
Enter Login: admin
admin
Enter Password: admin
*****
pdu#0>get environment.sensor[x].DeviceID
get environment.sensor[x].DeviceID
1|0|4
pdu#0>set environment.sensor[2].DeviceID 7
set environment.sensor[2].DeviceID 7
7
pdu#0>
```

Valid this new sensor with the command line :

```
set Environment.Sensor[x].PresentStatus.Used 1
```

```
Environment.Sensor[x].PresentStatus.Present
1|0|1
Environment.Sensor[x].PresentStatus.Used
1|0|1
Environment.Sensor[x].Temperature[1].ChangedStatus.OverThreshold
0|0|0
Environment.Sensor[x].Temperature[1].Measure
299.0|0.0|299.9
Environment.Sensor[x].Temperature[1].Offset
0.0|0.0|0.0
Environment.Sensor[x].Temperature[1].OverThreshold[1].Threshold
283.1|283.1|283.1
Environment.Sensor[x].Temperature[1].OverThreshold[2].Threshold
278.1|278.1|278.1
Environment.Sensor[x].Temperature[1].OverThreshold[3].Threshold
323.1|323.1|323.1
Environment.Sensor[x].Temperature[1].OverThreshold[4].Threshold
338.1|338.1|338.1
Environment.Sensor[x].Temperature[1].PresentStatus.OverThreshold
0|0|0
pdu#0>set Environment.Sensor[2].PresentStatus.Used 1
set Environment.Sensor[2].PresentStatus.Used 1
1
pdu#0>
```

The new sensor appears in the Web page after 1min