FC0000-3-15-CM_LoRa-00-DO-1.5

CM868LRxx & CMUS915LRxx Magnetic contact Programming manual

0.1 Table of Contents

1 Document history

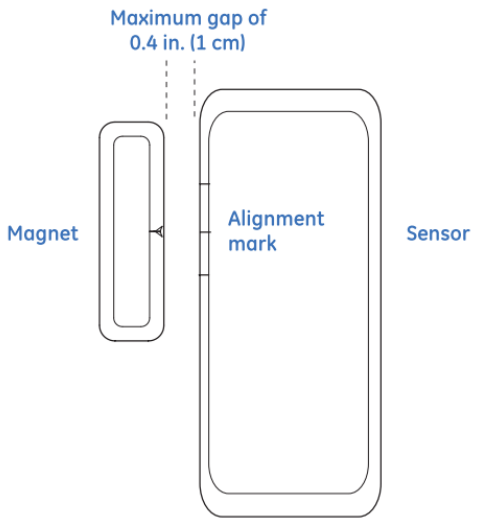
Rev.	FW rev	Author	Note / remarks	Date
1.0	v0.7	R&D laboratory GM	Document created. Preliminary version (DRAFT)	Nov. 10, 2015
1.1	v0.7	R&D laboratory GM	Added new feature on Hardware re. B	March 4, 2016
1.2	v0.7	R&D laboratory GM	Added OPCNT on Alive description on chapter 3; Added CNFGRGST definition; Added ACK/NACK messages on port 10 from sensor to server; TMELPS [24 bit] increased to 16777215 sec; Added Hysteresis values HYSTH and HYSTT; Added threshold setting parameter NUMTHRL for temperature and humidity; New structure of message from server to sensor: 1 byte header and 1 byte footer introduced; added TMALIVE [16 bit]	April 23, 2016
1.3	v0.7	R&D laboratory GM	Added FLAGS features: LED always OFF, Stop Blinking LED	May 9, 2016
1.4	v0.8	R&D laboratory GM	Text correction on port 6 and 7 on chapter 4 Text correction on port 6 and 7 on chapter 4 Added more info to parameters in ch.3 Added LED blinking description message on port 20 on ch.4 Added payload information on port 12 specification – ch 5 Added graphical information on message from server to sensor on ch. 5	May 25, 2016
1.5	V0.8	R&D laboratory GM	Changed minimum battery level at 25%	June 27, 2016

2 Introduction

This is the Door/Window Sensor installation instructions for models CM868LR, CM868LRTH CMUS915LR and CMUS915LRTH.
You can install the sensor on doors, windows, and many other objects that can be opened and closed. The sensor transmits signals to the Lora™ network when a magnet mounted near to the sensor is moved away from or closer to the sensor. In the sensor, there are two reed switches for easy installation in many applications type. **Do not enable both reed simultaneously**.
The sensor is equipped with a cover tamper for added security.
CM868LR (868MHz) and CMUS915LR (915MHz) are contact magnetic sensors for European and US frequency bands.
CM868LRTH and CMUS915LRTH are special versions of the above with additional temperature and humidity sensors.
CM868LR, CM868LRTH CMUS915LR and CMUS915LRTH are equipped with an internal red LED that blinks for 100ms every 15s if MODE 2 is set and when the number of reed counter equals the threshold CNTELPS. This gives a visual indication when a certain number of detections that can be set is reached.

2.1 Installation guidelines

Use the following installation guidelines:
• Mount the sensor on the doorframe and the magnet on the door. If the sensor is used on double doors, mount the sensor on the least-used door and the magnet on the most-used door.
• Make sure the alignment arrow on the magnet points to the alignment mark on the sensor (Figure 2).
• Place sensors at least 4.7 in. (12 cm) above the floor to avoid damaging them.
• Avoid mounting sensors in areas where they will be exposed to moisture or where the sensor operating temperature range of -4 to 120°F (-20 to 55°C) will be exceeded.



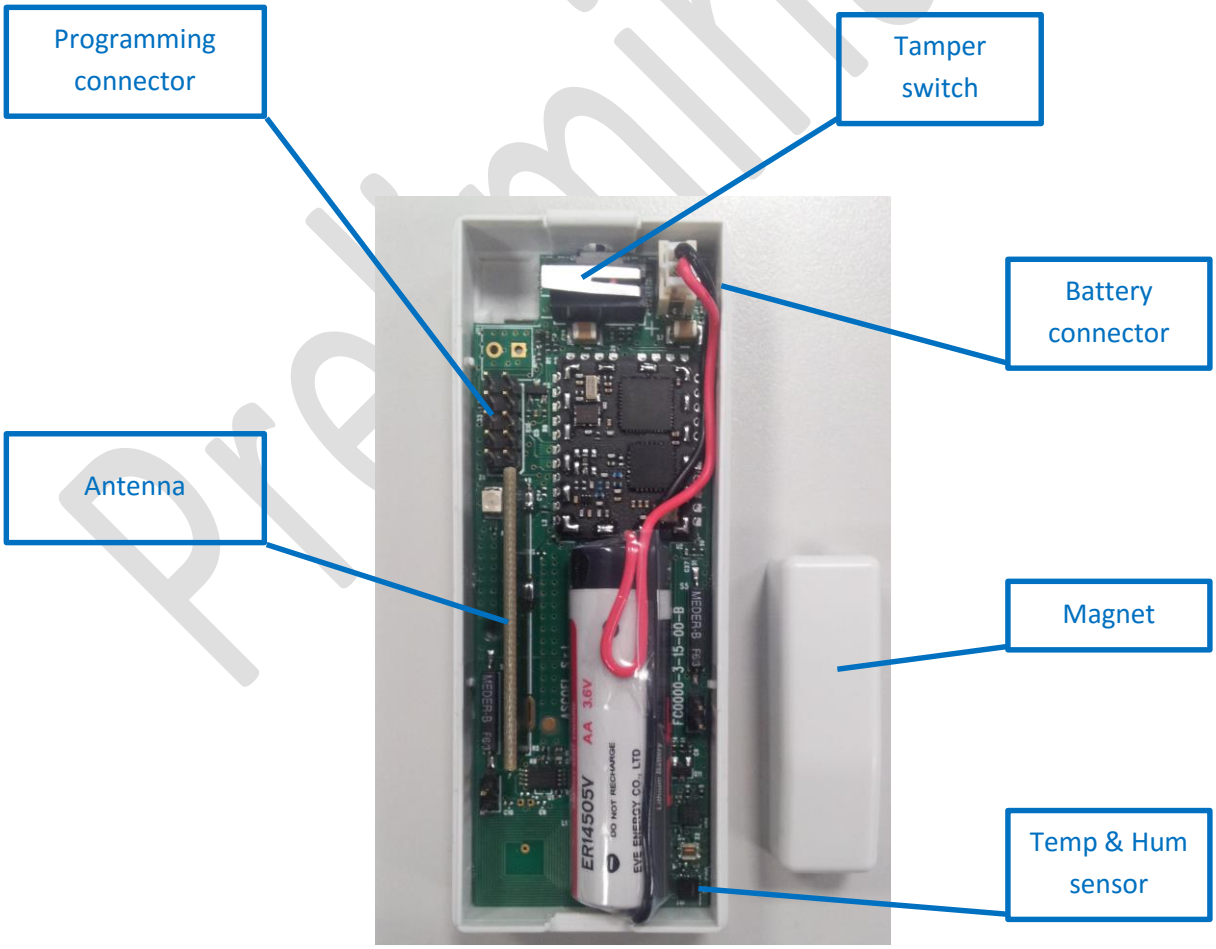
2.2 Battery replacement

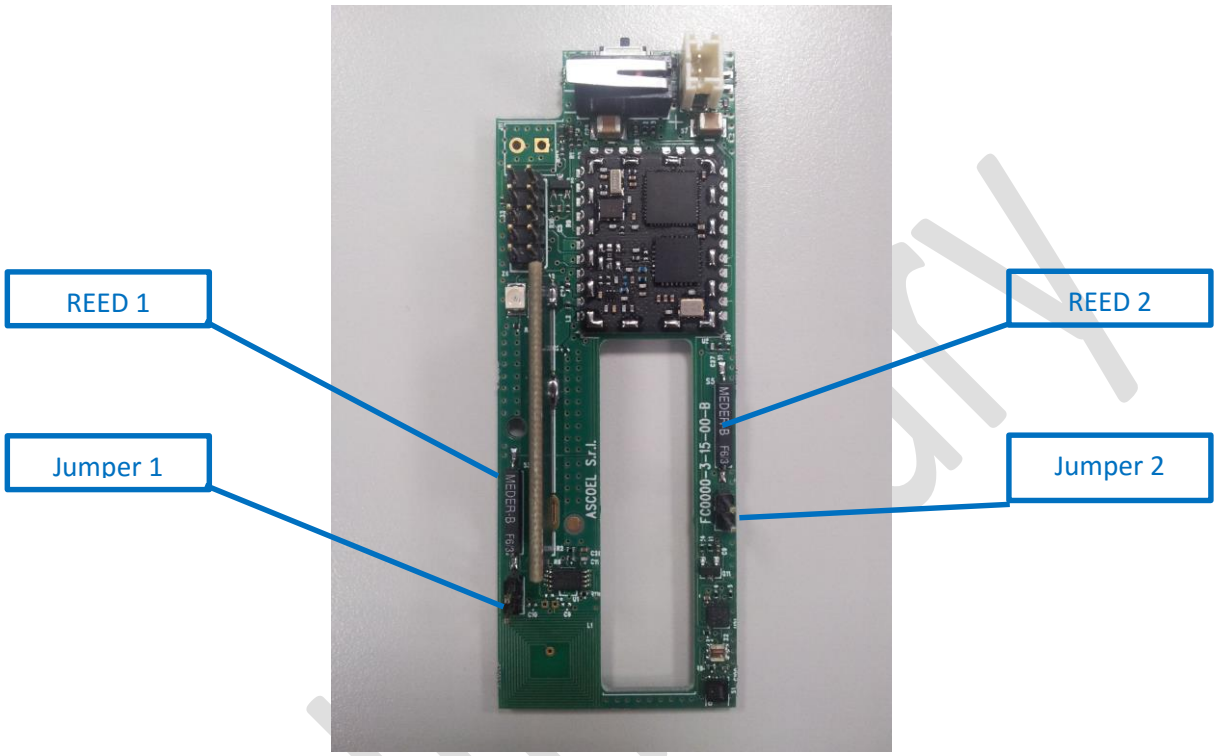
When the system indicates the sensor battery is low, replace it immediately.
Use the recommended replacement batteries (see Table 1 Technical Specification) or contact technical support for more information.
To replace the batteries, do the following:

1. To remove the sensor cover, press a small flathead screw-driver into the slot on both sides of the sensor. This will disengage the clips holding the cover and base.
2. Disconnect the battery cable from the board. Remove the old battery and replace it with another one as per battery specification reported in chapter 2.
3. Insert the replacement battery and plug the cable in to connector (see below picture)

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Only authorized and qualified personnel may do any of the assembly, disassembly, installation and commissioning work.





To select the desired reed, install the relative jumpers.
Do not enable both the reed at the same time

3 Technical Specification

Specifications				
Parameters	**Min**	**Typ**	**Max**	**unit**
Frequency band CM868LRxx	-	867.1 < f < 868.5	-	MHz.
CMUS915LRxx	-	902 < f < 928	-	MHz
RF power (EU868)	2	-	14	dBm EIRP
RF power (EN915)	2		18	dBm EIRP
Modulation		LoRa ™		
Protocol	LoRaWan 1.0 Class A Client 3.4.1			
RX sensivity			-138	dBm
Battery	1pz AA 3.6V lithium-thionyl 2700mA By EVE P/N ER14505V			
Temperature range	-20°	+25°C	+55°C	degree
Antenna	-	PCB printed	-	
Power supply	2.1	3	3.6	Vdc
Consumption standby	13	15	17	uA
Consumption TX	60	70	80	mA
Dimension	97 x 38 x 25			mm
Reference standards	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 - EN 62311:2008 EN 301 489-1 V1.9.2 EN 301 489-3 V1.6.1; Part 3 EN 300 220 V2.4.1			

Table 1 Technical Specification

4 Parameter Definition

ALIVE

The payload is in raw format.

The ALIVE message is composed by:

CM868LR and CMUS915LR (4 Byte total):

Name	Type	Function
BATTERY	Unsigned char (8 bits)	Report type and percentage of battery level
EVENT	Unsigned char (8 bits)	Event flag. See below
OPCNT	Unsigned Int (16bits)	Opening counter

CM868LRTH and CMUS915LRTH (10 Byte total):

Name	Type	Function
BATTERY	Unsigned char (8 bits)	Report type and percentage of battery level
EVENT	Unsigned char (8 bits)	Event flag. See below
TVALUE	Float (4 bytes)	Temperature value
RHVALUE	Float (4 bytes)	Relative Humidity value

BATTERY

1 Byte unsigned char. This parameter contains the information on type and percentage of the battery level:

	MSB 7	6	5	4	3	2	1	0 LSB
Bit value	x	X	x	x	x	x	x	x

[7] Battery Type
1 = 3.6V Lithium-thionyl
0 = 3.0V Alkaline Battery

[6:0] battery level expressed as a percentage of charge

The battery voltage can be derived as follows:

Batt_LOW_LVL + (((Batt_HIGH_LVL - Batt_LOW_LVL) * percentage)) / 100)

Where:

Batt_LOW_LVL = 2100mV
Batt_HIGH_LVL = 3000mV if battery type is Alkaline

Batt_HIGH_LVL = 3600mV if battery type is Lithium-thionyl
Percentage = the value of bit [6:0] *(cannot have the value 0)*

EVENT

1 Byte unsigned char.

	MSB 7	6	5	4	3	2	1	0 LSB
Bit value	**0**	**0**	**0**	**x**	**x**	**x**	**x**	**x**

[7:5] reserved

[4:3] **External input status** (still not implemented in current FW revision)
1:1 = line open
1:0 = line short circuit
0:1 = alarm
0:0 = OK

[2] **Battery status**
1 = low battery event
0 = battery OK

[1] **Tamper**
1 = Tamper alarm
0 = Tamper no alarm

[0] **REED sensor**
1 = Intrusion alarm
0 = Intrusion no alarm

If Low battery, tamper, reed event occurred the sensor will transmit a spontaneous message on port 30 (see ch 4)
More events are possible at the same time

TVALUE

Temperature value composed by 4 byte with 2digit, 2 digit format (e.g. 22,06°C)

RHVALUE

Relative humidity value composed by 4 byte with 2digit, 2 digit format (e.g. 56,82%)
TVALUE and RHVALUE are specific parameters used only by CM868LRTH and CMUS915LRTH.

To convert the four bytes in float value (little endian) a brief example in C language is reported:

```
union temperature
{
        unsigned char temp[4];
        float number;
}temp;

union humidity
{
        unsigned char rh[4];
        float number;
}hum;

sprintf_s(buf, "\n\rTemperature:%6.2f degree   Humidity RH:%6.2f%%", temp.number, hum.number);
```

The ALIVE message, who is sent based on TMALIVE, transmits the value of the BATTERY level, EVENT byte and TVALUE and RHVALUE.

OPCNT

16 bit unsigned counter.
Number of reed switch opening.
This counter can be resetted at the end of the transmission using CNFGRGST.

FLAGS

16 bit parameter.
First byte is for settings, the second one is for requested command to be set.

	MSB 15	*14*	*13*	*12*	*11*	*10*	*9*	*8 LSB*
Bit value	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**x**
	MSB 7	*6*	*5*	*4*	*3*	*2*	*1*	*0 LSB*
Bit value	**0**	**0**	**0**	**0**	**0**	**0**	**x**	**x**

[15:9] Unused - To be defined

[8] Setting LED always OFF
1: always OFF
0: if MODE 2 has been set the LED will blink when OPCNT=CNTELPS

[1] Setting Stop Blinking LED
1: stop blinking

[0] Reboot firmware
1 = reboot request

CNTELPS
16 bit unsigned counter.
Specify the number of times of the reed switch opening before send an uplink event.

TMELPS
24 bit unsigned seconds counter.
Specify the number of seconds between uplink events. Within this interval, the number of reed switch opening OPCNT is recorded and transmitted during the uplink.
TMELPS counter is set to 0 at the end of every transmission.
Programmed values below 15 secs, will be forced to 15
Minimum setting timing period is 15 seconds with multiple of 15 seconds.
Allowed TMELPS value is comprised from 15 to 16777215 seconds
Example:

- The server send TMELPS at 10 seconds then the sensor will force this at 15 seconds
- The server send TMELPS at 31 seconds then the sensor will force this at 45 seconds

TMALIVE
16 bit unsigned seconds counter.
Specify the number of seconds between ALIVE events.
TMALIVE counter is set to 0 at the end of every transmission.
Programmed values below 15 secs, will be forced to 15
Minimum setting timing period is 15 seconds with multiple of 15 seconds.
Allowed TALIVE value is comprised from 15 to 65536 seconds
Example:

- The server send TMALIVE at 9 seconds then the sensor will force this at 15 seconds
- The server send TMALIVE at 40 seconds then the sensor will force this at 45 seconds

TTHRHI
Float. Temperature Threshold High
Temperature value composed by 4 byte with 2digit, 2 digit format (e.g. 25,00°C)

TTHRLO
Float. Temperature Threshold Low
Temperature value composed by 4 byte with 2digit, 2 digit format (e.g. 18,50°C). This parameter is used when two thresholds are required

HTHRHI
Float. Relative Humidity Threshold High
Relative humidity value composed by 4 byte with 2digit, 2 digit format (e.g. 75,00%)

HTHRLO

Float. Relative Humidity Threshold Low

Relative humidity value composed by 4 byte with 2digit, 2 digit format (e.g. 55,50%). This parameter is used when two thresholds are required

ACK

4 bytes Char (<ACK> OR <NACK>)

Acknowledgement signal sent by the sensor to server. It can be Ack or Nack depending whether or not the message received from the server is fine. It also specifies on which protocol port the message has been received from the server. This message is sent every time the sensor receive a setting message from the server on ports 9, 12, 13, 30 and 31.

HYSTT and HYSTH

4 bytes float.

This parameter sets the hysteresis value for temperature and humidity.

Value HYSTT (temperature) is integer decimal while HYSTH (humidity) is percentage.

NUMTHRL

1 Byte integer.

This parameter sets the number of temperature and humidity thresholds (one or two) wanted

	MSB 7	*6*	*5*	*4*	*3*	*2*	*1*	*0 LSB*
Bit value	**0**	**0**	**0**	**0**	**0**	**0**	**x**	**x**

[7:2] Unused
To be defined

[1] Second threshold
1 = second threshold activated
0= second threshold deactivated

[0] First threshold
1 = first threshold activated – Default value
0 = first threshold deactivated. **Set it at 0 if second threshold is activated**

CNFGRGST

16 bit total.

This parameter is used in order to reset the OPCNT counter and to send the OPCNT value if the CNTELPS threshold is reached (only MODE 3)

	MSB 15	14	13	12	11	10	9	8 LSB
Bit value	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	MSB 7	*6*	*5*	*4*	*3*	*2*	*1*	*0 LSB*
Bit value	**0**	**0**	**0**	**0**	**0**	**0**	**x**	**x**

[15:2] Unused
To be defined

[1] OPCNT value (only for MODE 3)
1 = send OPCNT value if OPCNT=CNTELPS
0 = OPCNT value is NOT sent (defaut value)

[0] OPCNT counter reset (MODE 2 and MODE 3)
1 = reset request
0 = OPCNT is not resetted (default value)

MODE

Unsigned char (8 bits).

MODE is defined as following:

- **MODE 1** (<01>): In this mode every change of the reed switch status generates an uplink message. The opening counter OPCNT on the transmitted message is incremented by 1 and never resetted. Only the door opening is calculated, so after two events (opening and closing door) the OPCNT is incremented only by 1.

- **MODE 2** (<02>): In this mode, the sensor generates an uplink message only when the specified counter CNTELPS is reached. Allowed CNTELPS number is comprised from 1 to 65535. Only the aperture of the magnetic contact is counted. At the end of the uplink message, the OPCNT counter can be resetted using CNFGRGST

- **MODE 3** (<03>): In this mode, the sensor generate an uplink message when the specified time TMELPS is elapsed. Allowed TMELPS (24bit) number is comprised from 15 to 16777215 seconds. Programmed values below 15 secs, will be forced to 15. Minimum setting timing period is 15 seconds with multiple of 15 seconds. Only the aperture of the magnetic contact will be counted.
  The uplink message can be generated also based on CNTELPS, this means the sensor will send a message when OPCNT=CNTELPS, so independently from TMELPS.
  At the end of any uplink message, the OPCNT counter can be resetted using CNFGRGST.

5 Message from contact magnetic sensor to server

Different ports on LoRaWAN protocol are used to transmit messages to the server.

Port assignments as follow:

From sensor to server	Port #
Presentation	5
Serial Number	6
FW release, library release, HW release	7
Battery level	8
Alive	9
ACK	10
Specific Sensor Information message	30

Port 5 message specification:
The payload contains the sensor model string in ASCII format (e.g. CM868LR)
The presentation message is sent every times the magnetic contact performs a reboot.
The reboot is caused by power-on or by a server command.
The presentation message is provided also if the server send an "Enq" on port 5. See chapter 5.

Port 6 message specification:
The payload contains the serial number string in ASCII format. 8 bytes length
(e.g. AA112233445566FF)
The Serial Number message is provided if the server send an "Enq" on port 6. See chapter 5.

Port 7 message specification:
The payload of 11 bytes ASCII format contains:

- the FW release (3 bytes; e.g.: 0.5);
- the LoRaWAN client library release (5 bytes; e.g.: 3.4.1);
- the HW release (1 byte; e.g.: B)
- Fields are separated by char comma ","

Example:
the HEX payload for the above examples is
30 2e 35 2c 33 2e 34 2e 31 2c 42 (ASCII: **0.5,3.4.1,B)** (11bytes total)
The FW release, LoRaWAN client library version, HW release message message is provided if the server send an "Enq" on port 7. See chapter 5.

Port 8 message specification:
The payload of 1 byte contains battery type and current percentage charging level. Refer to BATTERY parameter definition at chapter 3.
The battery Level message is sent spontaneously on port 8 if the battery charging level is below 25%.
The Battery Level message is provided if the server send an "Enq" request on port 8. See chapter 5.

Port 9 message specification:
The payload contains the ALIVE message. Refer to ALIVE parameter definition at chapter 3
The ALIVE message is sent every 50 minutes as default timing value. Refer to chapter 5 to change this value from the server.

Port 10 message specification:
The payload is 4 bytes and contains the Ack/Nack message to be sent to the server every time a setting message is received by the sensor on ports 9, 12, 30 and 31.
If the message received from the server is fine then an Ack message is sent otherwise a Nack message is transmitted.
The string reports also the port number on which the sensor received the message from the server.
E.G.: "41636b0c" the sensor is acknowledging the server to have received a good message on port 12 in HEX form (Ack on port 12)

Port 30 **CM868LR** message specification:
The payload is in raw format (3 Bytes)

Name	Type	Function
EVENT	Unsigned char (8 bits)	Event flag. See chapter 3
OPCNT	Unsigned int (16 bits)	Opening counter

Port 30 **CM868LRTH** message specification:
The payload is in raw format (11 Bytes)

Name	Type	Function
EVENT	Unsigned char (8 bits)	Event flag
OPCNT	Unsigned int (16 bits)	Opening counter
TVALUE	Float (4 bytes)	Temperature value
RHVALUE	Float (4 bytes)	Relative Humidity value

The sensor sends **spontaneously** a message to the server if:

- If the tamper switch change its status (only from CLOSE to OPEN)
  The tamper status is reported into the EVENT parameter transmitted

- If the battery level reaches the 25% of the full charge. If this the case the sensor will transmit every 60min the battery value after the first advise.

- If **MODE 1** has been set by the server (see chapter 3) the sensor sends OPCNT value to the server at every change of the reed switch status. OPCNT is never resetted.

- If **MODE 2** has been set by the server (see chapter 3) the sensor sends a message to the server if OPCNT = CNTELPS (the measured opening counters equals the counter threshold).

OPCNT can be resetted using CNFGRST parameter once the message has been sent to the server.

- If **MODE 3** has been set by the server (see chapter 3) the sensor sends a message to the server if
  OPCNT = CNTELPS (the measured opening counters equals the counter threshold)
  OPCNT can be resetted using CNFGRST parameter once the message has been sent to the server.

OR

  TMELPS is elapsed, the sensor sends OPCNT value
  OPCNT can be resetted using CNFGRST parameter once the message has been sent to the server.

OR

- TVALUE = (TTHRHI + HYSTT)
  (measured temperature equals high temperature threshold + HYSTT due to hysteresis value), the sensor sends TVALUE. In this case, if the measured temperature decreases the sensor sends a new TVALUE when TVALUE=TTHRHI.

OR

- If <u>NUMTHRL is set in order to have **two** temperature thresholds</u> and
  TVALUE = (TTHRLO – HYSTL)
  (measured temperature equals low temperature threshold - HYSTL due to hysteresis value), the sensor sends TVALUE. In this case, if the measured temperature increases the sensor sends a new TVALUE when TVALUE=TTHRLO.

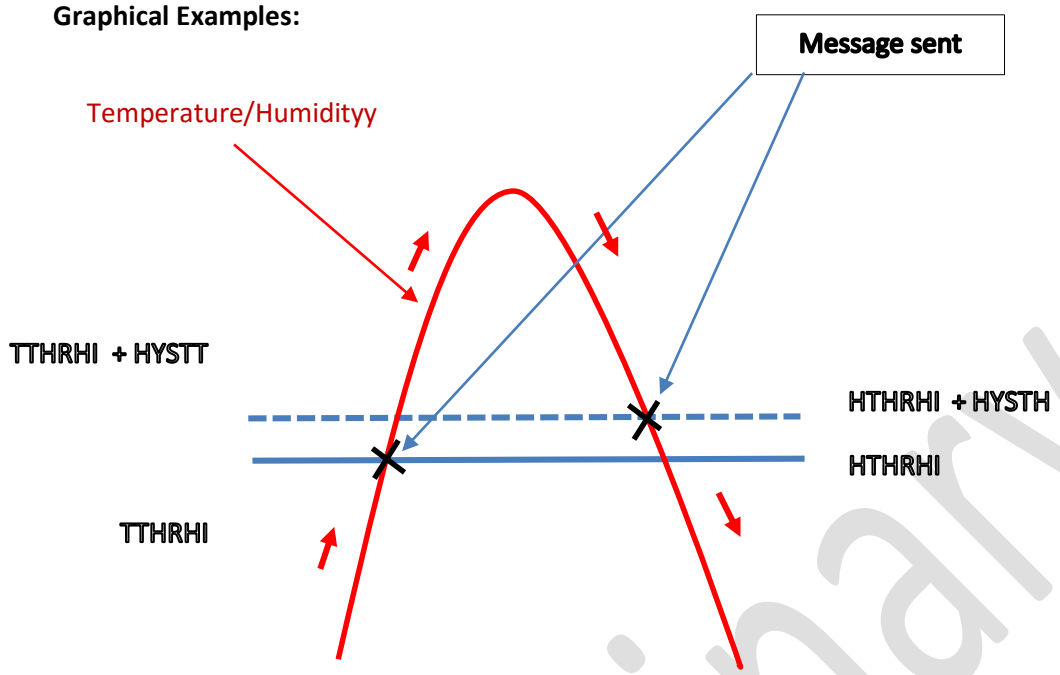
OR

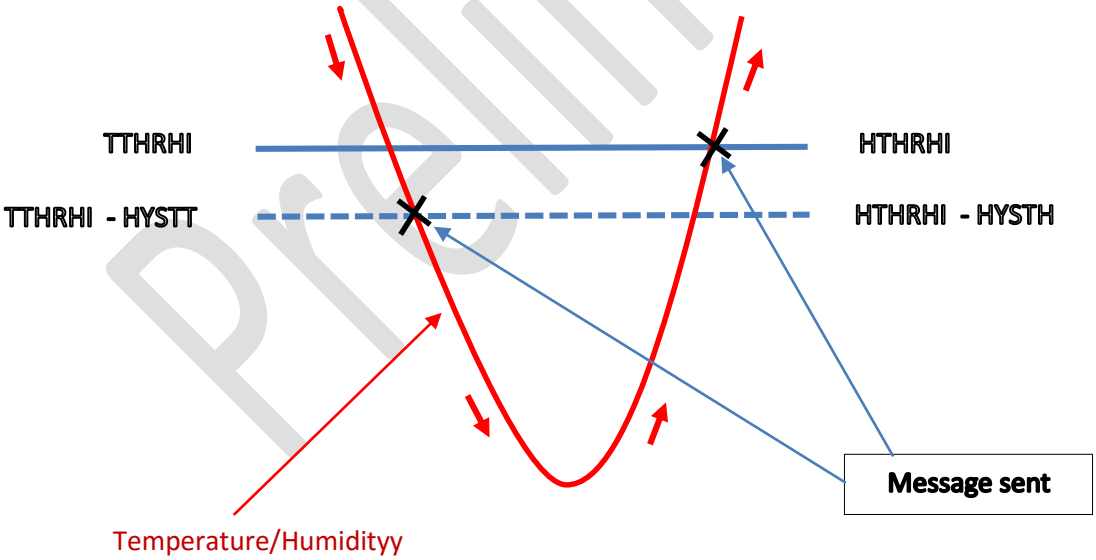
- RHVALUE = (HTHRHI + HYSTH)
  (measured humidity equals high relative humidity threshold + HYSTH due to hysteresis value), the sensor sends RHVALUE. In this case, if the measured temperature decreases the sensor sends a new RHVALUE when RHVALUE=HTHRHI.

OR

- If <u>NUMTHRL is set in order to have **two** temperature thresholds</u> and
  RHVALUE = (HTHRLO – HYSTH)
  (measured humidity equals low relative humidity threshold - HYSTH due to hysteresis value), the sensor sends RHVALUE value. In this case, if the measured temperature increases the sensor sends a new RHVALUE when RHVALUE=HTHRLO.

Graphical Examples:





6 Message from server to magnetic contact

The nature of LoraWAN class A permits to exchange messages only when the end-device transmits data to the server (uplink).
After sending the data, the end-device enable two RX windows to receive packets from the server.
In these windows, the server is able to send the data at the end node using specifics LoRaWAN protocol ports.
Downlink communications from the server at any other time different from the above mentioned RX windows, will have to wait until the next scheduled uplink occurs.

Every message from server to sensor has 1 byte header that contains the total length of the message and 1 byte footer that contains the checksum. The checksum is calculated doing a logical XOR of all the bytes on the message except the last one, which is the checksum itself. Refer to Message Builder Toll to create and verify the right message to send to the sensor.

Header (1Byte)	Message on port 5,6,7,8,9,12,13,30,31	Footer (1Byte)

Port assignments as follow:

Form server to sensor - Request for:	Port #
Presentation	5
Serial Number	6
FW release, library release, HW release	7
Battery level	8
Setting ALIVE interval	9
Setting MODE	12
FLAGS	13
Setting humidity upper and lower threshold	30
Setting temperature upper and lower threshold	31

Ports 5, 6, 7 and 8 message specification:
This message is used by the server in order to have back from the sensor the required information. A text “Enq” message (HEX 456E71) must to be sent to one of these ports to ask the sensor for the required information. The sensor will reply with a message on the same port as reported in chapter 4.

Total message length 5 byte (3Byte for the <ENQ> text message and 1Byte header and and 1Byte footer)

Example:
To send and "Enq" on port 6 in order to receive back the Serial Number of the sensor, the server sends the HEX message:

05456E715F

Where
05: total length of the message 5Byte
456E71 → Enq (HEX to ASCII)
5F: Checksum

Port 9 specification:
Setting TMALIVE sampling ALIVE time period (2 Byte). See chapter 3.
Total message length 4 byte (including header and footer)

Port 12 specification:
Setting MODE "X" (X=1,2,3).
To set MODE, the server must send to the sensor a message on port 12.
The total length of the message is 9 Byte: 1Byte header (total length of the message), 1Byte MODE, 2Byte CNFGRGST, 2Byte CNTELPS, 2B TMELPS and 1Byte footer (checksum).
The payload as per the following table:

Name	Type	Function
Header	Unsigned char (8bits)	Total length of the message
MODE	Unsigned char (8 bits)	Set the MODE: Mode 1: see chapter 3 for more details Mode 2: see chapter 3 for more details Mode 3: see chapter 3 for more details
CNFGRGST	Unsigned int (16 bits)	Set the way to use OPCNT in MODE 2 and MODE 3
CNTELPS	Unsigned int (16 bits)	Number of reed switch detections before to send the message
TMELPS	Unsigned int (16 bits)	Sampling period
footer	Unsigned char (8bits)	Checksum

Refer to chapter 3 for MODE, CNFGRGST, CNTELPS and TMELPS parameters definition

Example 1:
to set MODE 2, without resetting OPCNT counter after the uplink and when OPCNT=CNTELPS=100 so after 100 reed detections, the HEX message the server must send on port 12 is

09020000006400006F

Where
- the first byte indicates the total length of the massage (9 bytes) and the last one contains the checksum of the message (6F) as explained on chapter 5.
- 02 HEX: set mode 2
- 0000 HEX: CNFGRGST all set to 0
- 0064 HEX: CNTELPS set to 100
- 0000 HEX: TMELPS set to 0 (to be used only in MODE 3. Any value is ignored by the sensor if not in MODE 3)

Example 2:
To set MODE 3, resetting OPCNT counter after the uplink, whit a timing threshold of 100 sec, the HEX message the server must send on port 12 is:

0A030001006400006408

Where the first byte indicates the total length of the massage (0A →10 bytes) and the last one contains the checksum of the message (08) as explained on chapter 5.

Example 3:
To set MODE 3, resetting OPCNT counter after the uplink, whit a timing threshold of 120 sec and the numbers of opening CNTELPS=80, the HEX message the server must send on port 12 is:

0A030003005000007822

Where the first byte indicates the total length of the massage (0A →10 bytes) and the last one contains the checksum of the message (22) as explained on chapter 5.

Port 13 specification:
Setting FLAGS parameters. Refer to FLAGS (16 bit) definition at chapter 3.
Total message length 4 byte (including header and footer)

Example:
To set a reboot of the sensor, the server must to sent the following HEX message:
04000105

Where:
04: total length of the message 4Byte
0001 → 0000 0001 (HEX to BIN) the LSB 1 indicates the reboot request
05: checksum

Port 30 specification:

With this message the server can set the thresholds high and low for humidity and the relative wanted hysteresis. Threshold can be 1 or 2.
Total message length is 15Byte
The message is composed by:

Name	Type	Function
HTHRLO	Float (4 Bytes)	Relative Humidity Threshold Low
HTHRHI	Float (4 Bytes)	Relative Humidity Threshold High
HYSTH	Float (4 Bytes)	Hysteresis value
NUMTHRL	Unsigned int (1Byte)	Number of threshold wanted

Refer to HTHRHI, HTHRLO, HYSTH and NUMTHRL parameter definitions at chapter 3
Total length of the message is 15B (including header and footer)

Example:

To set low RH threshold at 5%, high RH threshold at 45%, hysteresis 0.5% and two thresholds the HEX message to be sent to the sensor on port 30 is:

0F0000A040000034420000003F02A4

Where:
0F: 15Bytes total length
0000A040: setting 5% as low RH threshold - float
00003442: setting 45% as high RH threshold - float
0000003F: setting 0.5% as hysteresis - float
02: setting two thresholds
A4: checksum

Port 31 specification:

With this message the server can set the thresholds high and low for temperature and the relative wanted hysteresis. Threshold can be 1 or 2.
Total message length is 15Byte
The message is composed by:

Name	Type	Function
TTHRLO	Float (4 Bytes)	Temperature Threshold Low
TTHRHI	Float (4 Bytes)	Temperature Threshold High
HYSTT	Float (4 Bytes)	Hysteresis value
NUMTHRL	Unsigned int (1Byte)	Number of threshold wanted

Float. Refer to TTHRHI, TTHRLO, HYSTT and NUMTHRL parameter definitions at chapter 3

Example:
To set low T threshold at 15°C, high T threshold at 55°C, hysteresis 0.3% and two thresholds the HEX message to be sent to the sensor on port 31 is:
0F0000704100005C429A99993E0286

Where:
0F: 15Bytes total length
00007041: setting 15°C as low T threshold - float
00005C42: setting 55°C as high T threshold - float
9A99993E: setting 0.3% as hysteresis - float
02: setting two thresholds
86: checksum

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