

# About the Sens'it Payload

# *Payload structure*









If the message is an uplink only frame, the payload contains only the 4 bytes of mode values.

If the message is an uplink with downlink request, the payload contains the 4 bytes of modes values + 8 bytes which contains the configuration of the device.

# Mode: 4 bytes



The Sens'it can be set into 6 different modes:

-  Temperature & Humidity Mode: The Sens'it will periodically send the temperature (°C and °F) and humidity (%) values
-  Light Mode: The Sens'it will periodically send the light conditions value (lux)
-  Door Opener Mode: Each time the door where the Sens'it is affixed moves, an alert message is sent
-  Vibration Mode: Each time the Sens'it moves, an alert message is sent
-  Magnet Mode: Each time the reed switch is closed, an alert message is sent
-  Button Mode: Each time the Sens'it button is pressed, an alert message is sent

# Byte 1: same for all the modes

b7

Battery level MSB  
(most significant bit)

b6    b5

Frame type  
00: Periodic frame  
01: Button frame  
(when the user double-clicks,  
payload structure of button mode)  
10: Alert frame  
11: New Mode frame  
(when device change mode)

b4    b3

Uplink period:  
time between 2 frames  
(periodic modes Temperature and Light)  
00: 10 minutes  
01: 1 hour  
10: 6 hours  
11: 1 day

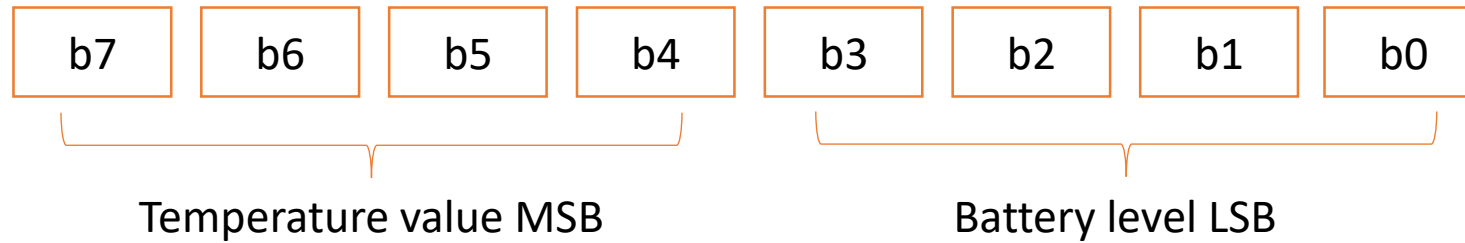
b2    b1    b0

Mode:

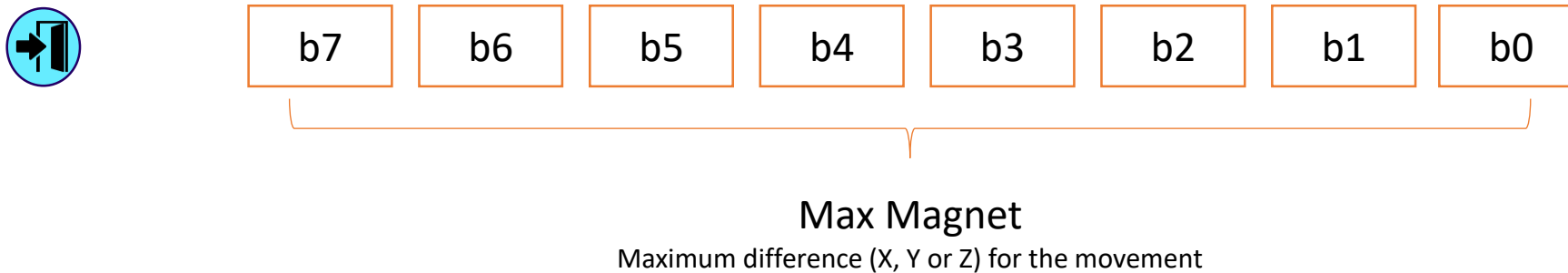
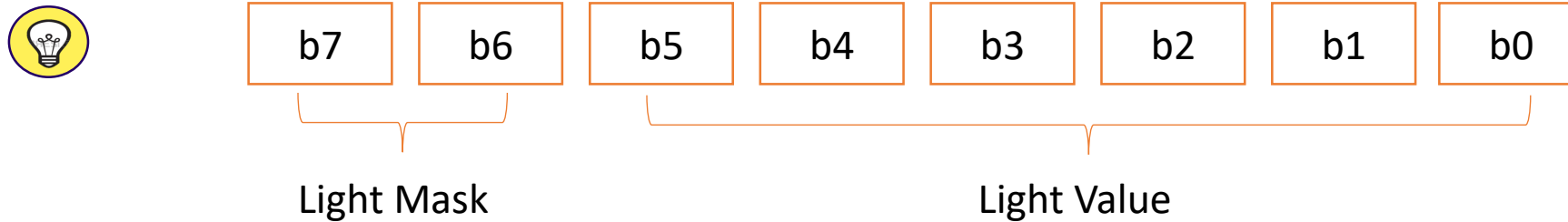
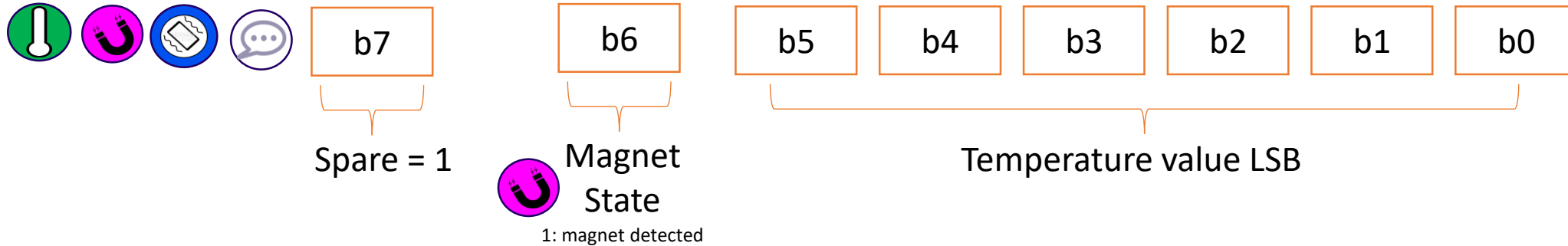
000  
001  
010  
011  
100  
101



*Byte 2: same for all the modes*



# Byte 3: Depends on the mode



# Byte 4: Depends on the mode



Humidity Value



Alert Counter

Number of events that happened

- Light mode: if the light value is out of range (more than 1 time-tested each second)
- Door/magnet/vibration mode: usually 1 because the message is sent directly. If there are too many events (exceeds the number of message limitation), the number of events is stored



Firmware version  
Major increment

Firmware version  
Minor increment

## *Battery voltage computation*

- Battery voltage = ( ( battery(5bits) \* 0.05 ) + 2.7 ) Volts



# *Temperature & Humidity computation*



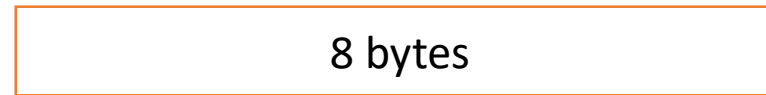
- Temperature = ( ( temperature(10bits) – 200 ) / 8 ) °C  
Temperature(10bits) = Temperature MSB <<6 | Temperature LSB
- Humidity = ( humidity(8bits) / 2 ) %



## *Light value computation*

- If Light Mask = 00
  - Light Value = ( Light(6bits) / 96 ) lux
- If Light Mask = 01
  - Light Value = ( Light(6bits) \* 8 / 96 ) lux
- If Light Mask = 10
  - Light Value = ( Light(6bits) \* 64 / 96 ) lux
- If Light Mask = 11
  - Light Value = ( Light(6bits) \* 1024 / 96 ) lux

# DownLink

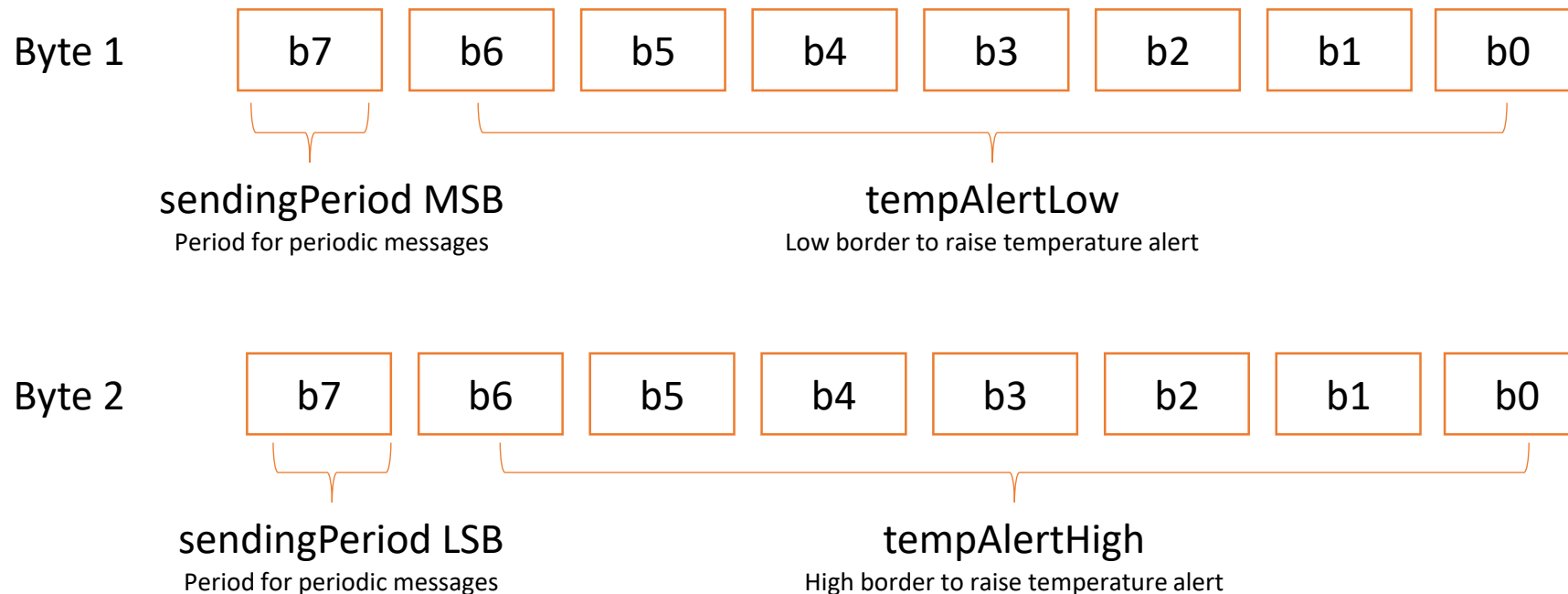


Configuration values (optional) and  
Downlink content

A downlink is required each day (86,400 ms).

The payload is extended with the configuration bytes.

The downlink message will update this configuration information by sending the new one (it is set on the platform).



Byte 3



**lightAlertLow**

Lower limit to raise light alert

Byte 4



**lightAlertHigh**

Upper limit to raise light alert

Byte 5



**accTransientThr**

Upper limit to raise light alert

