

Payload description

NB IoT thermometer DS18B20 with alarm triggers and dynamic scanning

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Payload within NBloT infrastructure consists of 4 byte long unique ID (device ID) and rest of the device specific data. The device ID range is from 0x0000001 to 0xFFFFFFFF which is defined by Solidus Tech s.r.o. in production process.

All characters within payload structure are HEX string unless otherwise stated. Whole string contains always pair of characters between 00 and FF if domain is not limited. Explanation is available in three numeric system:

1. HEX ... characters are declared in following form: 0x00 to 0xFF
2. DEC ... characters are described as usually 0 to 255
3. BIN ... characters are described in following form: 0B00000000 to 0B11111111

Payload structure

The payload for given end point is **5 bytes (10 hex characters)** long and its structure is as follows:

Byte	Meaning	Range	Note
1	Battery voltage	0x00 to 0xFF	Byte x 30 = voltage [mV]
2	Signal quality	0x00 to 0x63	0..63 – signal quality , 99 – signal quality not retrieved
3	MSB temperature	0x00 to 0xFF	value/10 = temperature [°C]
4	LSB temperature	0x00 to 0xFF	
5	Info byte	0x00 to 0xFF	

Info byte meaning – 5th Byte

MSB	6	5	4	3	2	1	LSB
Message type	Reserve	Reserve	Reserve	Reserve	Reserve	T2 reached	T1 reached
0 = periodic 1 = alarm	0,1	0,1	0,1	0,1	0,1	0=no 1= yes	0=no 1= yes

Payload example for miniUNI DS18B20:

Payload: 7318026C24

Byte	Meaning	Note
0x73	VDD = 0x73	Battery voltage VDD = 115 * 30 = 3450mV
0x18	RSSI = 0x18	RSSI = 24 – 110 = -86dB
0x02	0x026C	0x026C = 620 =>620/10 = 62,0°C
0x6C		
0x24	0x81	Alarm message, T1 reached

Special commands

Command	Note	Default
t1:xx	Defines 1st trigger, where xx is value in °C	60°C
t2:xx	Defines 2 nd trigger, where xx is value in °C	90°C
hys:xx	Defines hysteresis, where cc xx is value in °C	2°C
sensor	Measure temperature immediately and then go to sleep, UART only command	

Implemented logic description

The thermometer device runs in periodic mode which is defined by sleep and scan parameters, see general documentation for NBloT device for further details. In scan interval there is the temperature measured and compared with t1. If t1 has been reached, alarm message is sent immediately and scan is changed to 10s. If temperature in next scanning intervals return below t1 – hysteresis, then normal scanning is renewed. If temperature reach t2, another alarm message is sent and the device stay in 10s scanning.

Revision

1.0	Initial FW
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