



iMETOS NBloT Communication Terminal

Guide

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1. Purpose

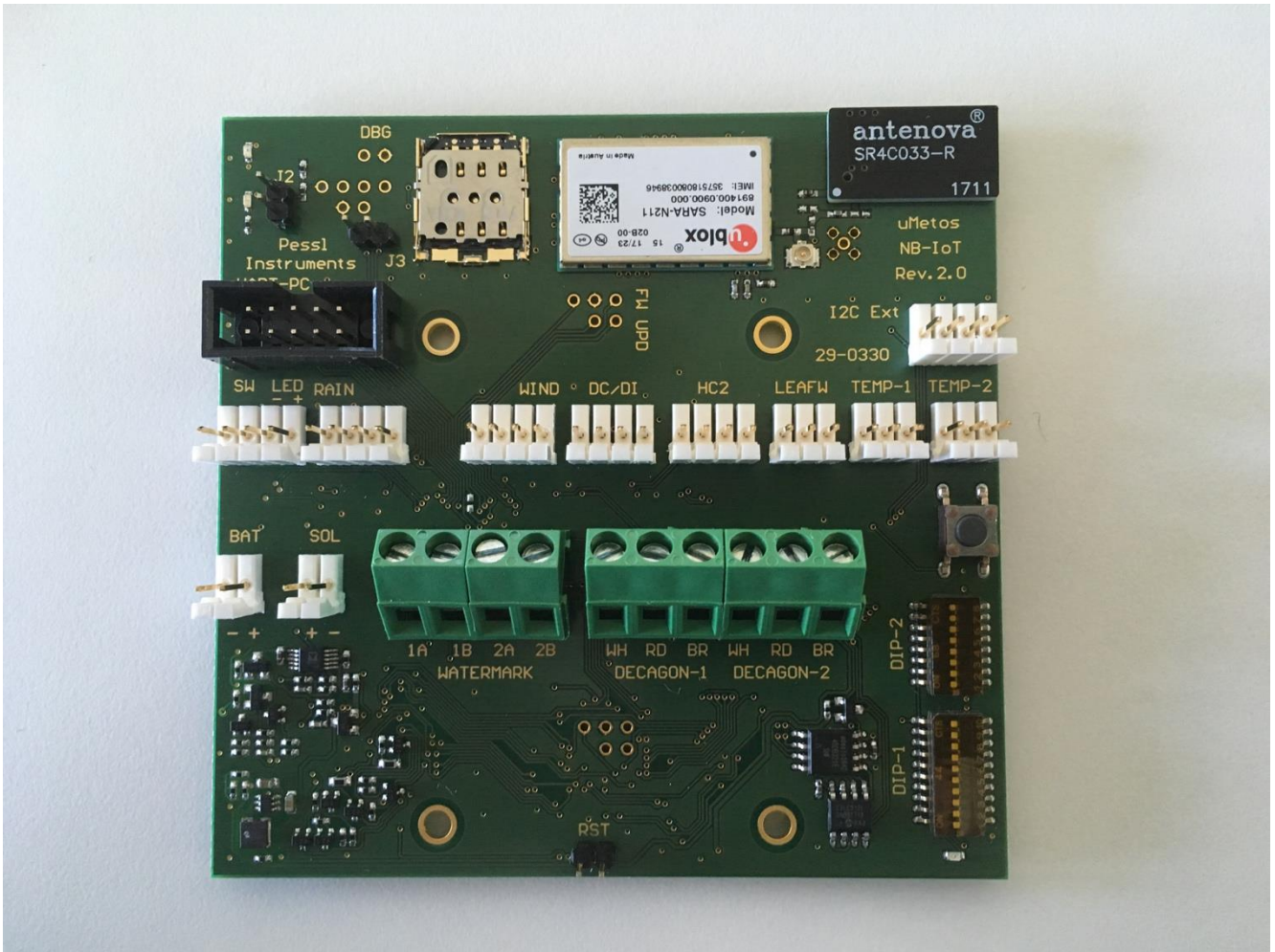
This document includes the instructions on how to connect the iMetosNBloT board to the PC and describes the options in the terminal menu.

2. Requirements

In order to be able to connect the iMETOS NBloT board to the PC and access the menu you need:

- uMetosNBloT Rev 2.0 board
- USB-to-serial cable
- PC and TeraTerm terminal application
- Battery

3. Top view of the iMETOS NB-IoT board

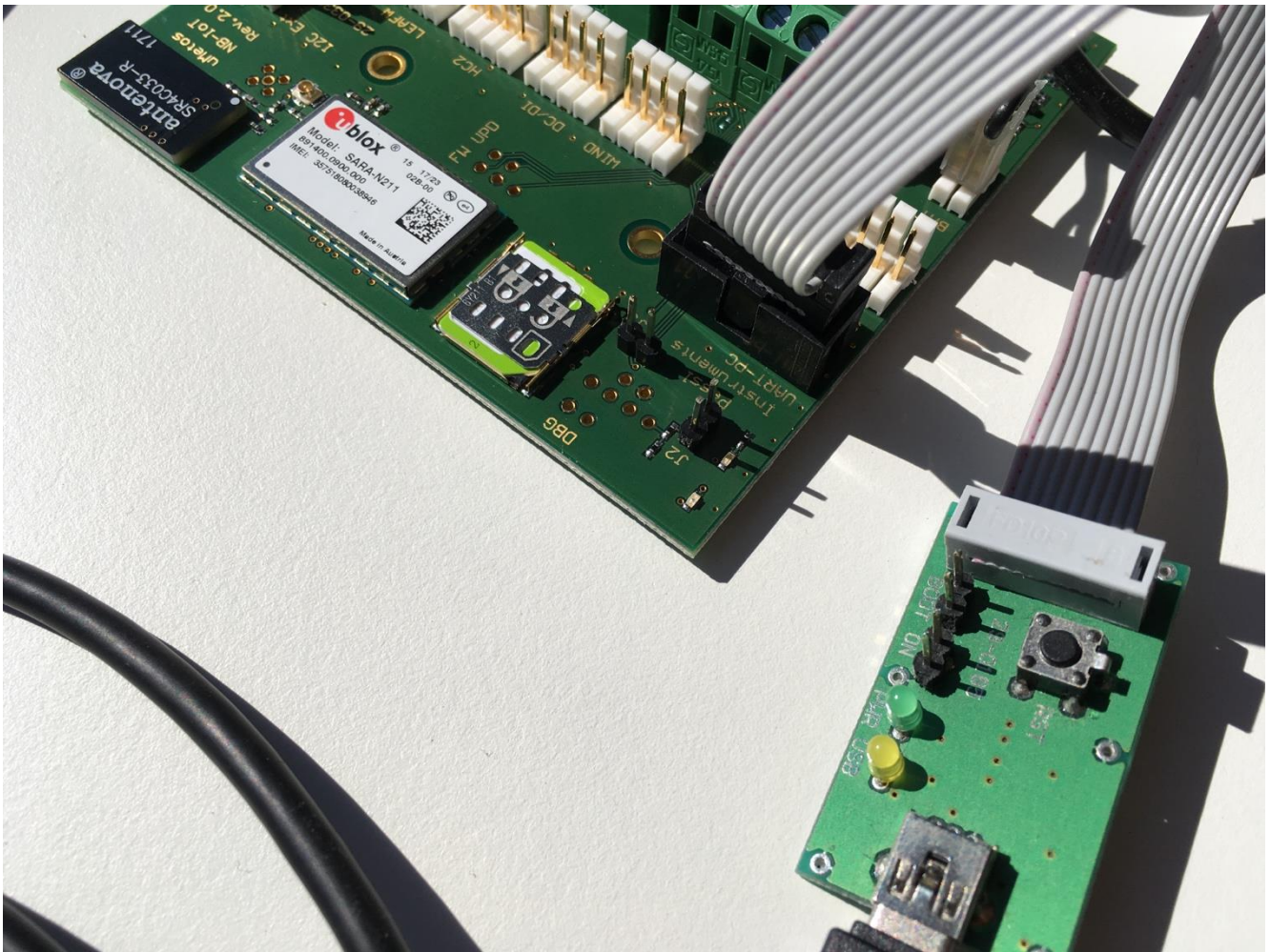


Picture 1 - Top view of the iMETOS NB-IoT Rev. 2.0 board (29-0330)

4. Connecting the iMETOS NB-IoT board to the PC

In order to access the terminal menu, user needs to connect the serial cable to the UART – PC 10 pin connector on the iMETOS NB-IoT board and the other end to the USB port of the PC.

The iMETOS NB-IoT board needs to be connected to the power source (battery).



Picture 2 - Connected cable to the iMETOS NB-IoT board

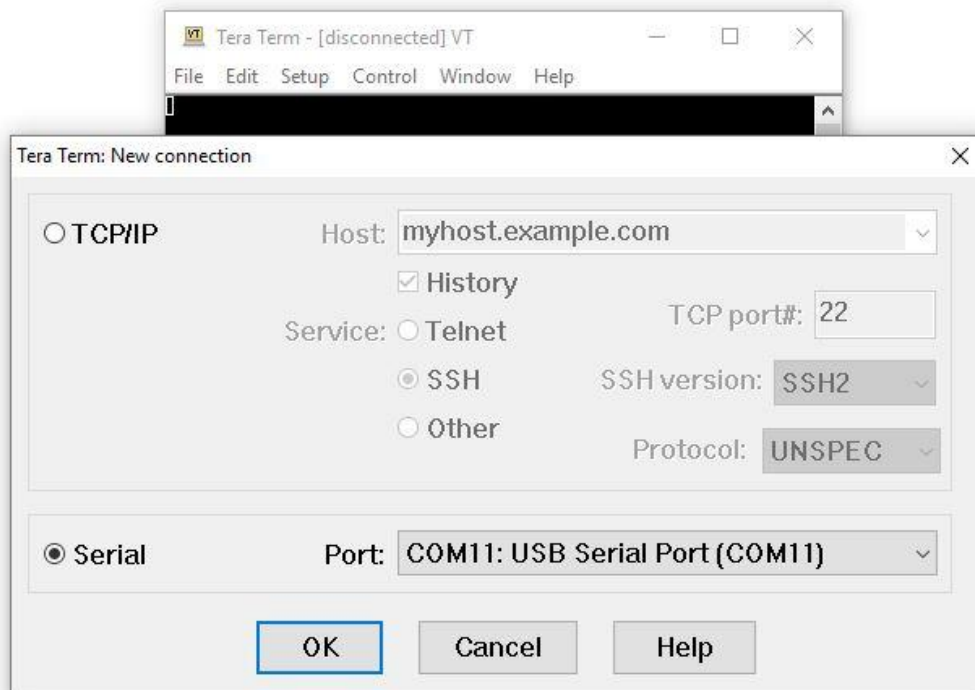
5. Accessing the terminal menu

Serial port settings

- Baud rate 9600 bps
- Data byte 8 bits
- Start bit 1 bit
- Stop bit at least 1 bit
- Parity None

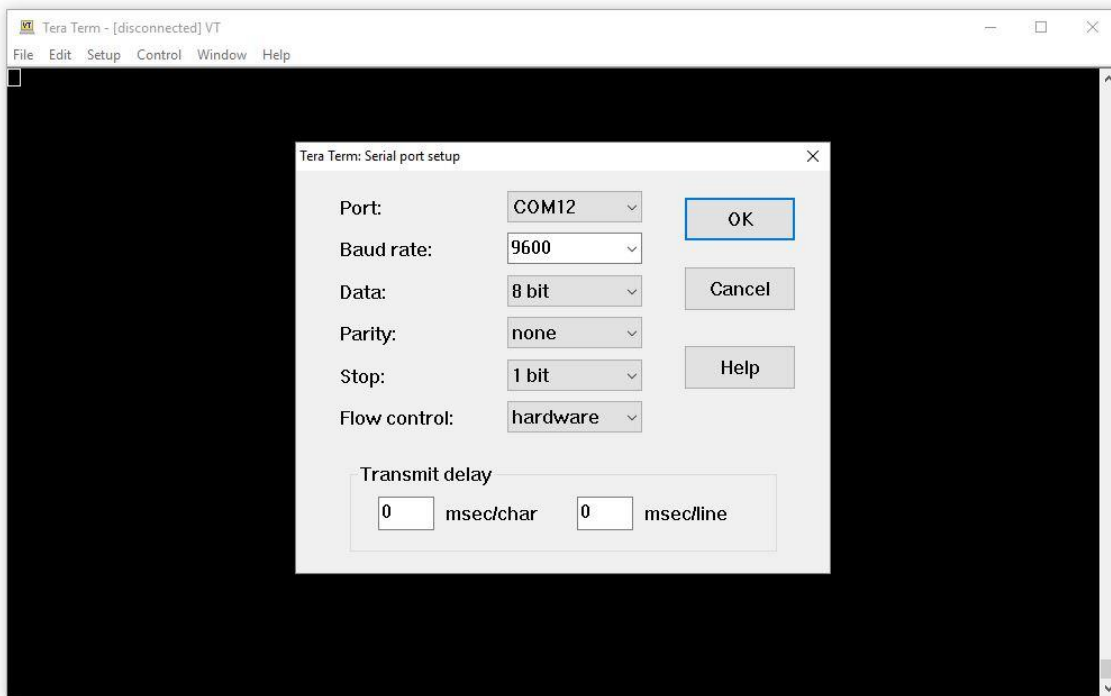
5.1 Example of setting up TeraTerm terminal application

1. Select the appropriate Serial port



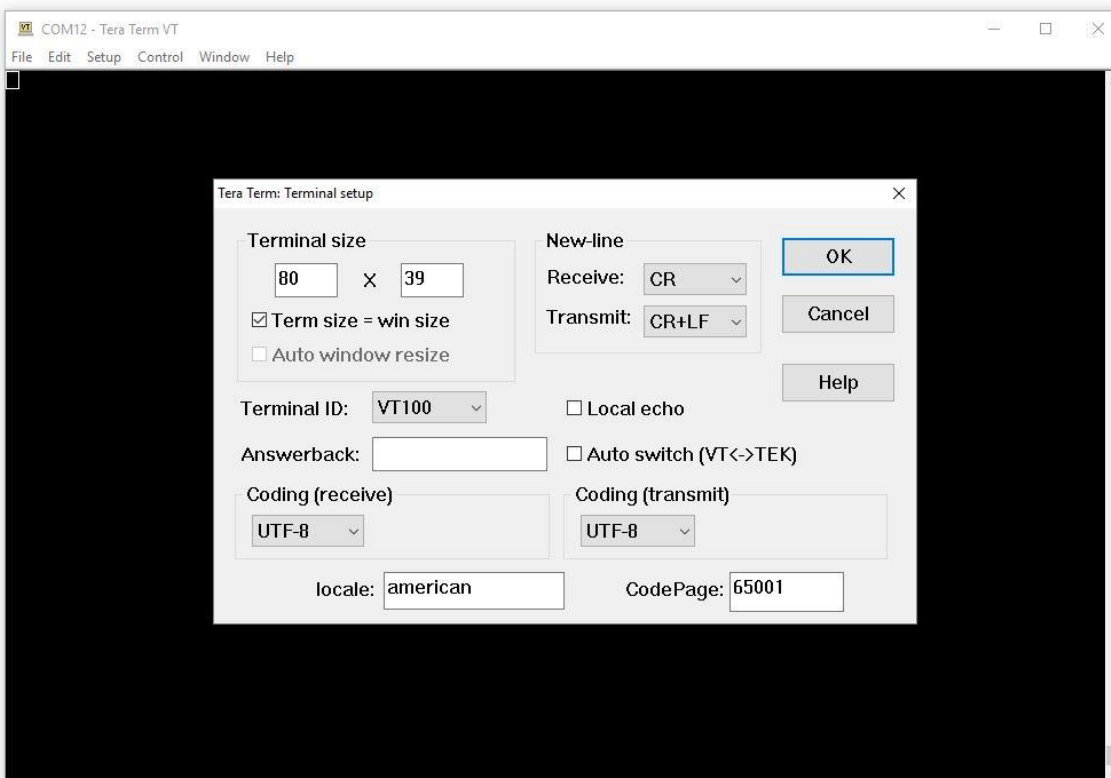
Picture 3 - Select the Serial port

2. Navigate to Setup > Serial port and set the correct settings



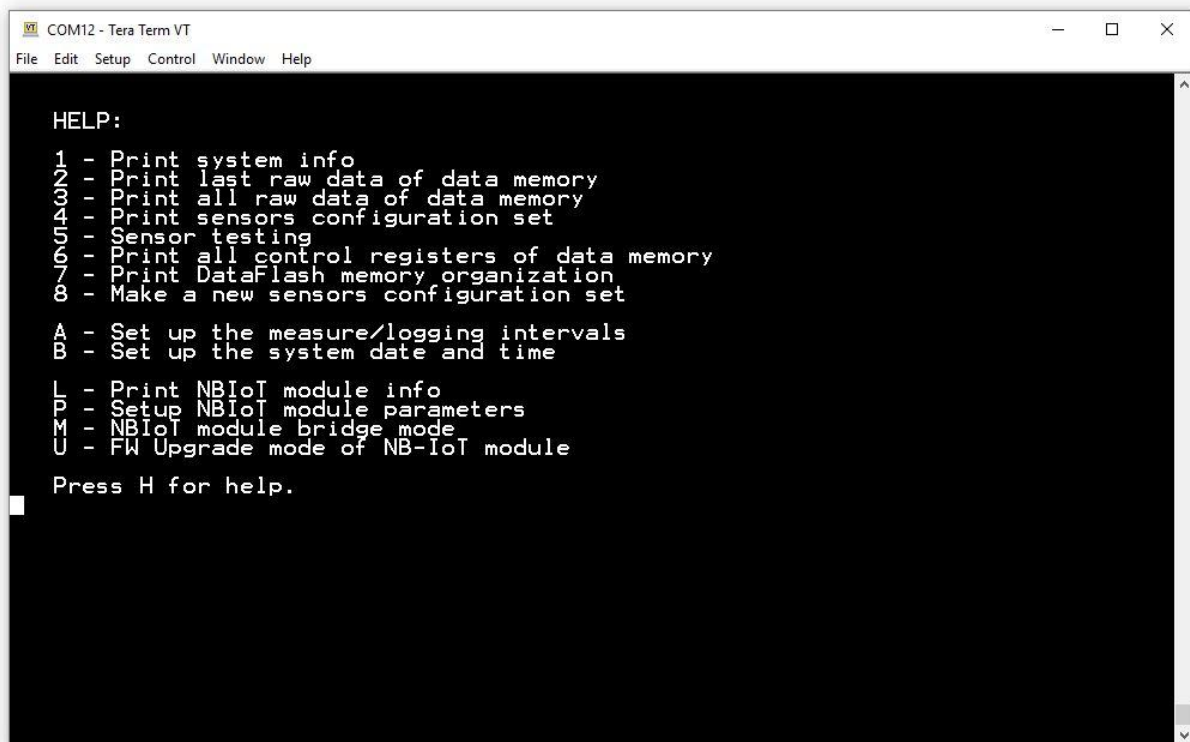
Picture 4 - Setting up correct serial port settings

3. Select Setup > Terminal and set New-line Transmit: CR+LF



Picture 5 - Setting up the line end format on Transmit

4. Press H to see the menu



```
COM12 - Tera Term VT
File Edit Setup Control Window Help

HELP:
1 - Print system info
2 - Print last raw data of data memory
3 - Print all raw data of data memory
4 - Print sensors configuration set
5 - Sensor testing
6 - Print all control registers of data memory
7 - Print DataFlash memory organization
8 - Make a new sensors configuration set

A - Set up the measure/logging intervals
B - Set up the system date and time

L - Print NBioT module info
P - Setup NBioT module parameters
M - NBioT module bridge mode
U - FW Upgrade mode of NB-IoT module

Press H for help.
```

Picture 6 - Main menu of the iMETOS NB-IoT device

6. Terminal menu

Once connected to the com port in your terminal application, press key H to see the main menu.

The main menu on the iMETOS NBloT station:

- 1 - Print system info
- 2 - Print last raw data of data memory
- 3 - Print all raw data of data memory
- 4 - Print sensors configuration set
- 5 - Sensor testing
- 6 - Print all control registers of data memory
- 7 - Print DataFlash memory organization
- 8 - Make a new sensors configuration set

- A - Set up the measure/logging intervals
- B - Set up the system date and time

- L - Print NBloT module info
- P - Setup NBloT module parameters
- M - NBloT module bridge mode
- U - FW Upgrade mode of NB-IoT module

6.1 Option 1 - Print system info

To access '1 - Print system info' press the 1 key. The option displays the general information of the system.

Example output:

```
uMetos NB IoT - System info:

Hardware version:      v2.00
Firmware version:     v1.45
Firmware revision date: 2018-04-25 12:27:00
Serial Number:        03100125
Current date and time: 2000-01-01 20:13:44

NB-IoT module power:  ON
Status of measurement: running
Next alarm time:      20:14:00
Measure interval [sec.]: 60
Logging interval [sec.]: 300 (Transmission int.)
```

6.2 Option 2 - Print last raw data of data memory

To access '2 - Print last raw data of data memory' press the 2 key.

Example output:

Last raw data records from DataFlash memory:

```
Ord.Nm.  RECORD HEADER          RAW SENSOR DATA VALUES
----->
```

6.3 Option 3 - Print all raw data of data memory

For development use only!

To access '3 - Print all raw data of data memory' press the 3 key.

Example output:

All raw data records from DataFlash memory:

Ord.Nm.	RECORD HEADER	RAW SENSOR DATA VALUES
----->		
0000001	1A 58 01 2000-01-01 00:05:00	198B 1ABA 12FF 12E1 131D 0A61 0A5D 0A68
0000002	1A 4B 01 2000-01-01 00:10:00	1977 1AC6 1314 12F5 1350 0A5D 0A5C 0A60
0000003	1A F4 01 2000-01-01 00:15:00	197E 1ACE 1329 1318 133F 0A63 0A60 0A67
0000004	1A D7 01 2000-01-01 00:20:00	1980 1AD6 1300 12F2 1309 0A64 0A63 0A67

6.4 Option 4 - Print sensors configuration set

To access '4 - Print sensors configuration set' press the 4 key.

Example output:

Sensors configuration set:

Chan.	S.Code	Full Name	Short	Unit	Size	LST	SUM	AVG	MIN	MAX
TIM	USE	AXL	-----							
1	0x0007	Battery voltage	BATTR	mV	2	X				
2	0x001E	Solar Panel	SOLPN	mV	2	X				
12	0x01FB	HC Relative humidity	HC-RH	%	2		X	X	X	
13	0x01FA	HC Air temperature	HC-TM	C	2		X	X	X	

6.5 Option 5 - Sensor testing

To access '5 - Sensor testing' press the 5 key.

Example output:

Sensor testing:

Input	Full Name Of Sensor	Short	Value	Unit	Notes
----->					
	Battery voltage	BATTR	6459	mV	
	Solar Panel	SOLPN	6803	mV	
	HC Relative humidity	HC-RH	38.50	%	
	HC Air temperature	HC-TM	24.73	C	

Done.

6.6 Option 6 - Print all control registers of data memory

For development use only!

To access '6 - Print all control registers of data memory' press the 6 key.

Example output:

Control registers of data memory:

The number of all records = 2844
 The number of prev. rec. = 1

```
The number of last records = 0
Pointer to initial record = 0
Pointer to prev. start rec.= 2843
Pointer to starting record = 2844
Pointer to next record    = 2844
Pointer of Memory Ctrl.   = 2844
Force data saving         = FALSE

Size of SD record        = 26
Max. number of rec. ptrs = 162330
Max. number of SD rec.   = 162328
Number of SD values      = 8
Number of 1k thresholds  = 2
```

6.7 Option 7 - Print DataFlash memory organization

For development use only!

To access '7 - Print DataFlash memory organization' press the 7 key.

Example output:

```
DataFlash memory organization:

DataFlash memory size = 4325376
Record Ctrl Reg. adr. = 1584
Sensor Config. Set adr. = 1597
Sensor Config. Set size = 102
SD Record memory adr. = 4752
SD Record memory size = 4220624
Events Rec. memory adr. = 4225376
Events Rec. memory size = 100000
SD Record (max. size) = 138
```

6.8 Option 8 - Make a new sensors configuration set

To access '8 - Make a new sensors configuration set' press the 8 key.

Output:

```
Do you really want to make a new sensors configuration set? [Y - Yes / N - No]

New sensors configuration set:
AWS sensor config... restored!
Static data rewritten!
Done.
```

6.9 Option A - Set up the measure/logging intervals

To access 'A - Set up the measure/logging intervals' press the A key.

Example output:

```
Set up the measure/logging interval:

Enter NEW MEASURE INTERVAL (60 sec.) [in seconds] (from 10 to 14400) = 300
Enter NEW LOGGING/TRANSMISSION INTERVAL (300 sec.) [in seconds] (from 60 to 14400) = 900
The new intervals changed!

Current status of intervals:
Measure interval [sec.]: 300
```

Logging interval [sec.]: 900 (Transmission int.)

6.10 Option B - Set up the system date and time

To access 'B - Set up the system date and time' press the B key.

Example output:

```
Set up the system date and time:  
  
Enter NEW DATE AND TIME [in format: YYYY-MM-DDThh:mm:ss] = 2018-06-14T10:49:00  
RTC upgraded.
```

6.11 Option L - Print NBIoT module info

To access 'L - Print NBIoT module info' press the L key.

Example output:

```
NBIoT module - System info:  
  
MCC+MNC code: 23203  
IP address: 91.114.24.20  
Remote port: 1992
```

6.12 Option P - Setup NBIoT module parameters

To access 'P - Setup NBIoT module parameters' press the P key.

Output:

```
SETUP THE NBIOT MODULE PARAMETERS:  
  
1 - MCC+MNC CODE  
2 - IP ADDRESS  
3 - REMOTE PORT  
  
Press ESC to return.
```

Option 1 set the MCC and MNC code of the network provider:

```
Current MCC+MNC code: 23203  
Enter new MCC+MNC code [5-6 digits]: 23203  
  
New MCC+MNC code: 23203  
Done.
```

Option 2 set the IP address of the server, where the station sends the data:

```
Current IP address: 91.114.24.20  
Enter new IP address [IPv4 format]: 91.114.24.20  
  
New IP address: 91.114.24.20  
Done.
```

Option 3 set the port number of the server, where the station sends the data:

```
Current remote port: 1992  
Enter new remote port [0-65535]: 1992  
  
New remote port: 1992  
Done.
```

Press Esc key to get back into main menu.

Note:

IP and Port values need to be of the Pessl Instruments server, where data is processed and displayed on the Fieldclimate platform.

The iMETOS NBloT weather station uses the UDP protocol for data exchange with the PI server.

6.13 Option M - NBloT module bridge mode

For development use only!

To access 'M - NBloT module bridge mode' press the M key. The NBloT module bridge mode opens the UART connection to the u-Blox Sara NBloT module, where all commands supported by that module can be manually executed. Useful for doing manual tests and setting up additional parameters, which are not supported in the main menu.

Example output:

```
Bridge mode opened (ESC - close):
```

```
at  
OK
```

```
Bridge mode closed.  
NB-IoT module power: OFF
```

6.14 Option U - FW Upgrade mode of NB-IoT module

For development use only!

7. Guide revisions

GUIDE VERSION	MODIFICATIONS
1.10	- Added connecting the board instructions.
1.00	- First release of the document.