



# **iMETOS LoRa Firmware upgrade**

*Manual*

Pessl Instruments, GmbH

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# Content

1. PURPOSE .....	2
2. REQUIREMENTS.....	2
3. IMETOS LORA MOTHERBOARD OVERVIEW .....	3
4. INITIAL STEPS.....	6
5. PROGRAMMING STEPS .....	7
6. FINAL STEPS.....	8
7. GUIDE REVISIONS .....	8

## 1. Purpose

Purpose of this document is to describe steps needed, to update the firmware on the iMETOS LoRa motherboards.

## 2. Requirements

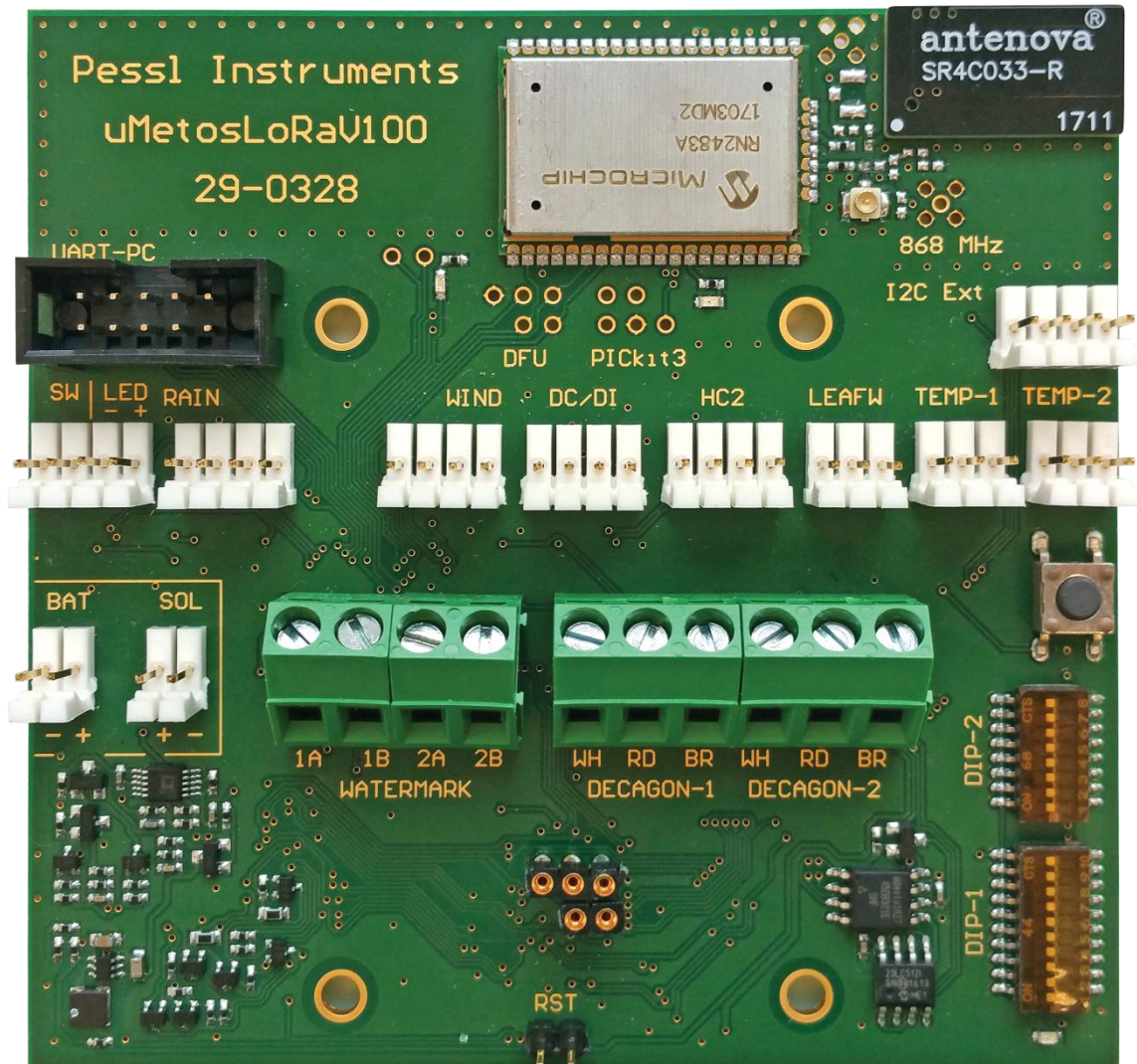
In order to update the firmware on the iMETOS LoRa motherboard you need:

- Microchip MPLAB IPE application
- Microchip PICkit3 programmer with the correct programming cable
- iMETOS LoRa motherboard
- Battery

Microchip MPLAB IPE application is part of the Microchip MPLAB(R) X suite. Download link and installation instructions are available at <http://microchipdeveloper.com/ipe:installation> .

Microchip PICkit3 programmer with the correct programming cable is delivered on request by the Pessl Instruments.

### 3. iMETOS LoRa motherboard overview



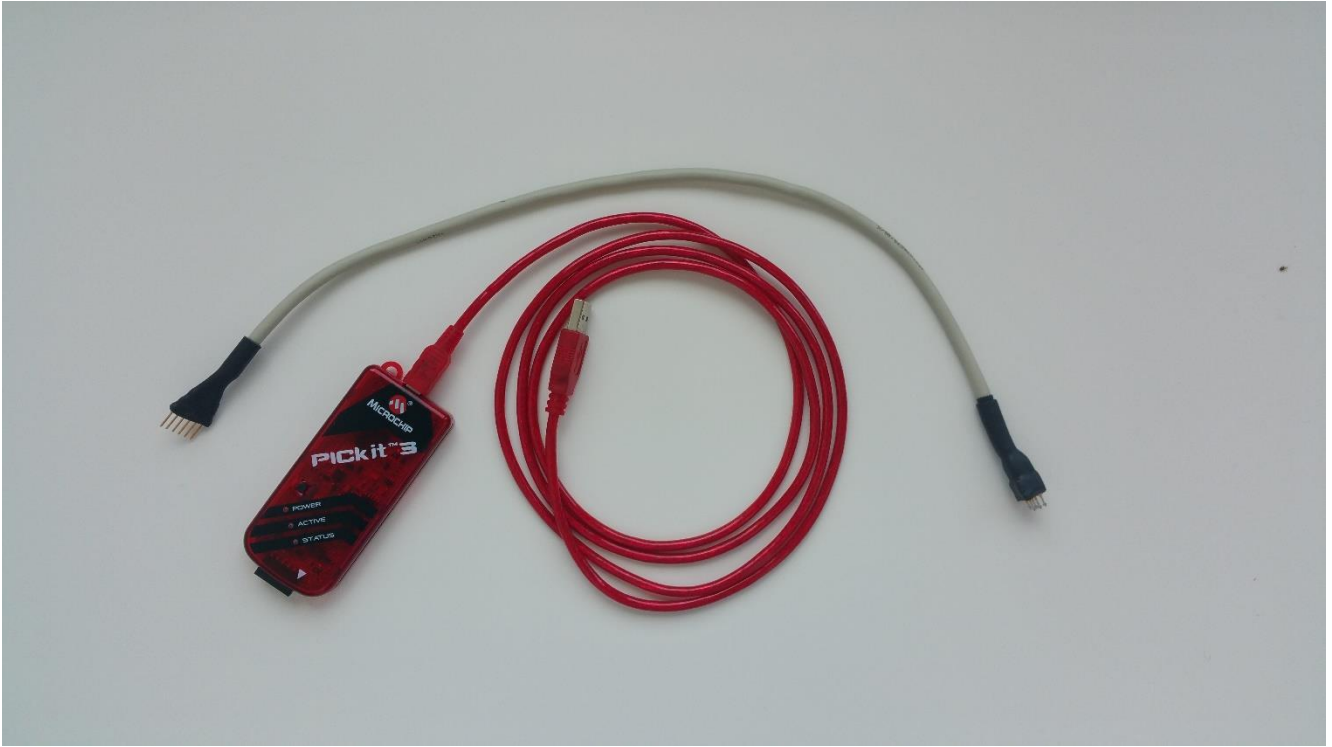
Picture 1 - Top view of the iMETOS LoRa board (29-0328)



- |  |   |                                     |
|--|---|-------------------------------------|
| 1. PC terminal connector                       | 7. Leaf wetness sensor or pressure switch | 13. Connector for 2 Decagon sensors |
| 2. External communication button with blue LED | 8. Extra temperature sensor               | 14. I2C External connector          |
| 3. Rain gauge or flow meter                    | 9. Extra temperature sensor               | 15. DIP-1                           |
| 4. Wind Speed sensor                           | 10. Lithium primary battery               | 16. DIP-2                           |
| 5. Duty Cycle sensor or Digital input          | 11. Solar panel                           | 17. Connect button                  |
| 6. HC2 temperature & relative humidity         | 12. Connector for 2 Watermark sensors     | 18. LoRa module                     |
|  |   | 19. On-board LoRa antenna           |

Picture 2 - Connectors on the iMETOS LoRa board (29-0328)

The red square with number 1 indicates the programming pins.



Picture 3 - Microchip PICkit3 programmer with correct programming cable (grey cable)

## 4. Initial steps

**First**, install the Microchip MPLAB IPE application.

**Second**, connect the programming cable to the PICkit 3 device:



Picture 4 - connecting the programming cable to the Microchip PICkit3 programmer

Make sure, the blue marked pin is connected to the right side of the programmer (marked with white arrow pointing to the correct input).

**Third**, connect the PICkit3 to the PC via USB port.

**Fourth**, connect the battery to the iMETOS LoRa motherboard.

## 5. Programming steps

**First**, open the MPLAB IPE application.

**Second**, select the correct Device (PIC18F97J94) (box 1 on the Picture 5).

**Third**, make sure the PICkit3 tool is selected (box 2 on the Picture 5).

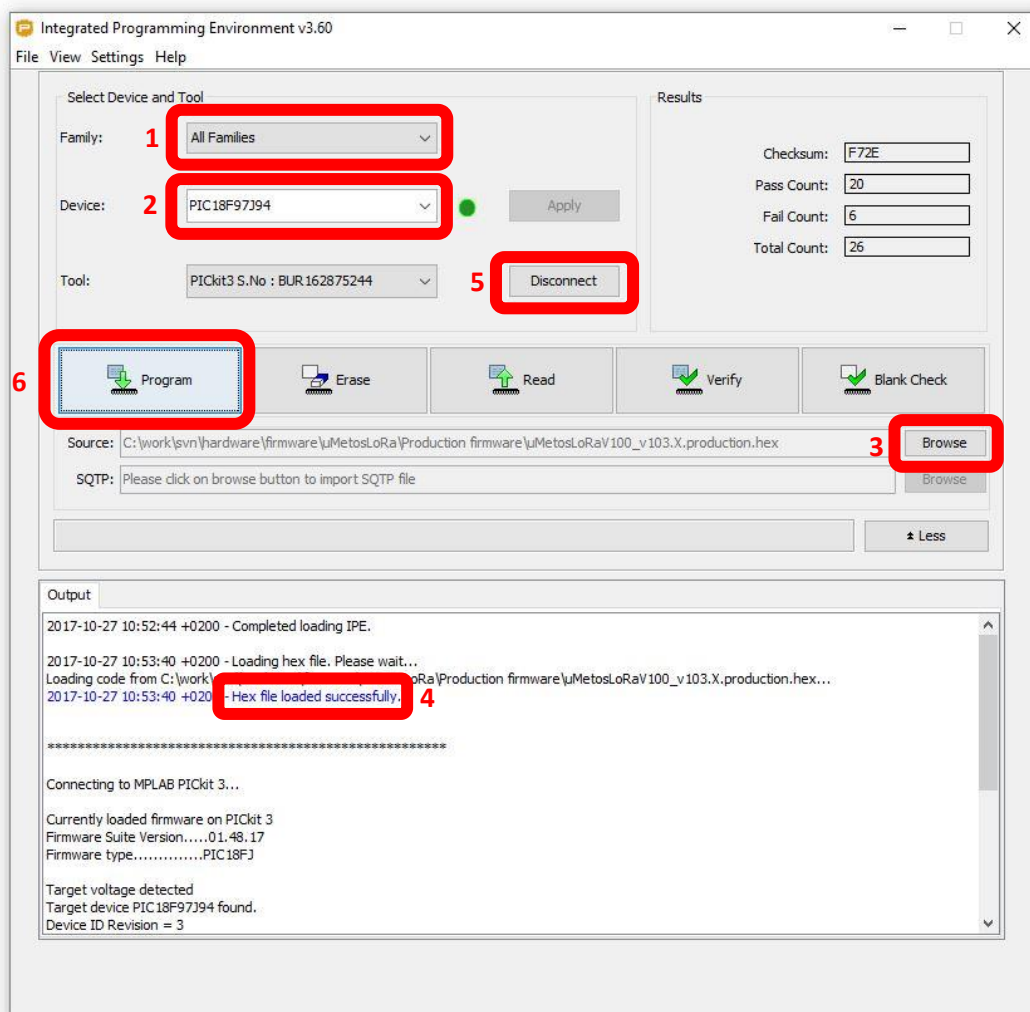
**Fourth**, click on the Browse button (box 3 on the Picture 5) and select the firmware file for this product (ex. iMETOS LoRaV100\_v103.X.production.hex). You should see the 'Hex file loaded successfully' message in the Output (box 4 on the Picture 5).

**Fifth**, with one hand, push the programming cable to the correct programming pins on the iMETOS LoRa motherboard (Picture 6). Programming pins are marked on the Picture 6.

**Sixth**, click on the Connect button (box 5 on the Picture 5).

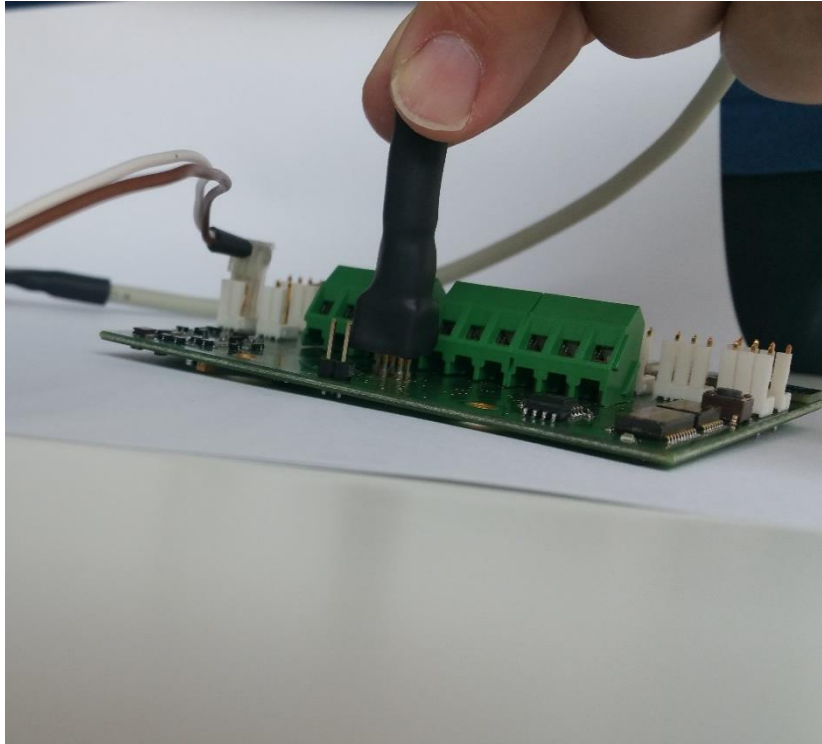
**Seventh**, click on the Program button (box 6 on the Picture 5).

**Eighth**, after successful programming, you should see 'Programming complete' message in the Output tab.



Picture 5 - MPLAB IPE app with settings





Picture 6 - Connecting the programming cable to the iMETOS LoRa motherboard

## 6. Final steps

Connect the iMETOS LoRa board to the serial cable (see iMETOS LoRa - TeraTerm terminal example v1.00.pdf and/or iMETOS LoRa - Communication Terminal v1.00.pdf). Check the station information, Firmware version, measurement and transfer interval etc. to make sure the correct Firmware was programmed and that all settings are correct.

## 7. Guide revisions

GUIDE VERSION	MODIFICATIONS
1.10	- Renaming.
1.00	- First release of the document.