LoRa Mipot USB-DONGLE USER'S MANUAL

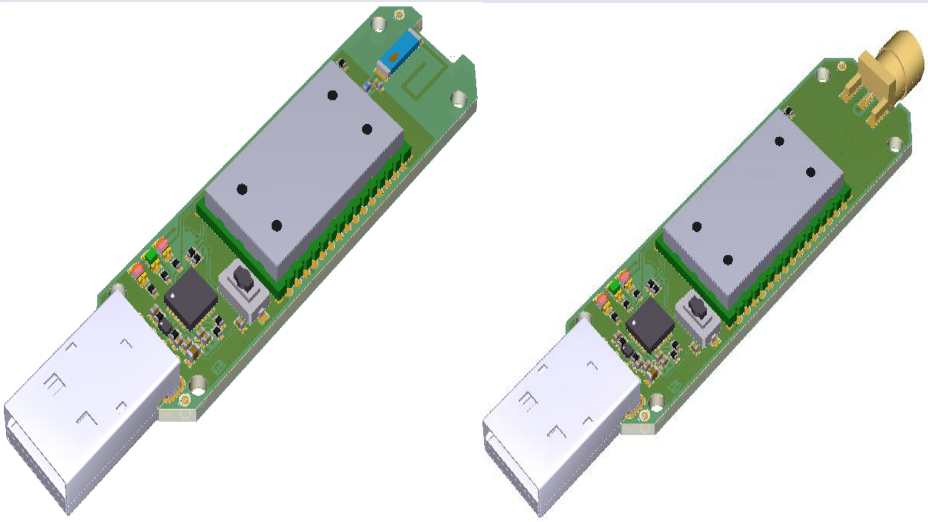
Code: 32001388

INTRODUCTION:

This USB-Dongle has been developed to test the functionality and radio parameters of the LoRa Mipot transceiver 32001345.

The unit interfaces with the PC via USB port and can be configured using a GUI.

The USB-Dongle comes in two different hardware designs. The first with 868 MHz antenna integrated on the printed circuit board and the second with the SMA connector.



1. ABSOLUTE MAXIMUM RATINGS

Power supply	+ 5.25 V
RF input (SMA connector)	+10 dBm
Storage temperature	-10 ÷ +55° C
Operating temperature	-10 ÷ +55° C

2. ELECTRICAL CHARACTERISTICS

Parameter	*Min.*	*Typ.*	*Max.*	*Unit*	*Notes*
External supply voltage on USB	4	5	5.25	Volt	
RF Output Power	0	-	14	dBm	

Please refer to 32001345 LoRa module datasheet for more information about commands, radio parameters and electrical characteristics.

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3. PRECAUTIONS

Connect the USB-Dongle to any PC USB port.

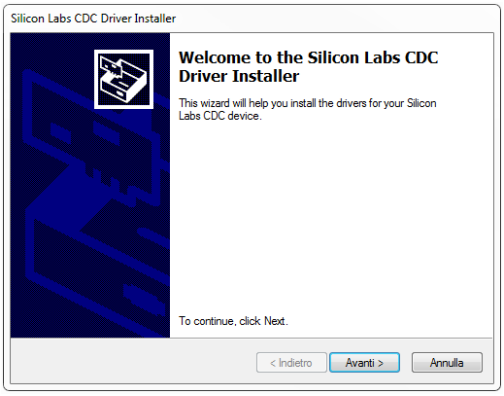
Before connecting the USB-Dongle to the USB port, make sure that the antenna is connected or the device could be permanently damaged.

4. INSTALL SILABS COM DRIVERS

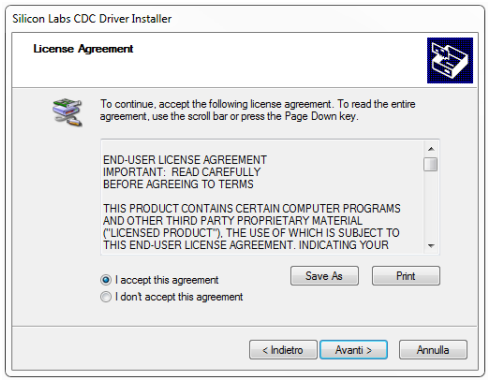
- Before starting, install the USB Silabs drivers.

Nome	Ultima modifica	Tipo	Dimensione
dpinst	05/04/2016 16:14	Documento XML	11 KB
Silabs_License_Agreement	05/04/2016 16:15	Text file	7 KB
silabs-cdc	05/04/2016 12:38	Catalogo sicurezza	9 KB
SiLabs-CDC	05/04/2016 12:34	Informazioni di in...	4 KB
SiLabs-CDCInstaller_x64	05/04/2016 16:15	Applicazione	673 KB
SiLabs-CDCInstaller_x86	05/04/2016 16:15	Applicazione	550 KB

- Choose **SiLabs-CDCInstaller_x64** if your operating system is 64 bit.
- Choose **SiLabs-CDCInstaller_x86** if your operating system is 32 bit.



- Click on **NEXT**.



- Check the box "I accept the agreement" the click on **NEXT**.

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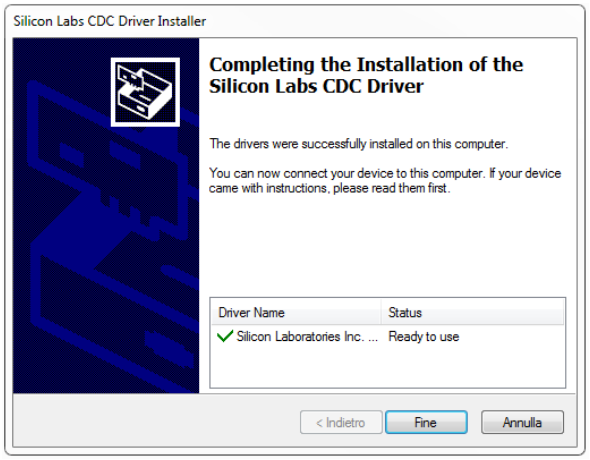

- If the drivers have been installed correctly, the **"Ready to use"** status is displayed.

5. GRAPHIC USER INTERFACE – COMMAND STRUCTURE

The GUI allows the configuration of the LoRa module parameters, according to the 32001345 module datasheet.

- Click on **READ** button to read the current parameters of the module.
- Change the parameters of the module, then click **WRITE** button to store the new configuration.
- To get an help description, click on the question mark icon near the desidered field.

6. GRAPHIC USER INTERFACE – MAIN FUNCTIONS

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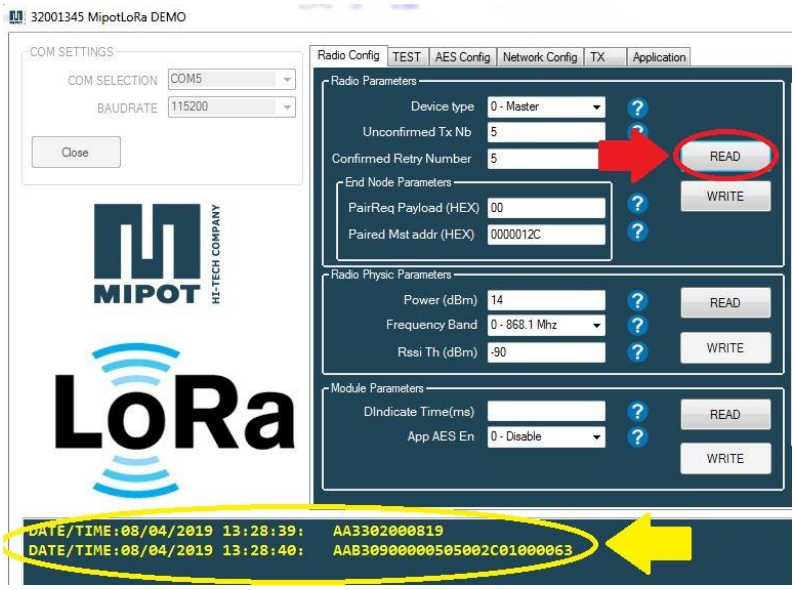
- Open the GUI by double clicking on the icon.

- Select the COM port through "COM SELECTION" tab.
- Set "BAUDRATE" to **115200** baud.
- Click on "**Open**" button. The tabs on the window on the right side become active.

NOTE: to check if a device is connected, verify that each input command has an answer in the blue box below.



In this example, **AA3302000819** is the command that performs an EEPROM read of radio parameters and then sends it through the serial COM port.

[AA] protocol header
[33] command id
[02] command lenght
[00] EEPROM start address
[08] number of bytes to be read
[18] checksum

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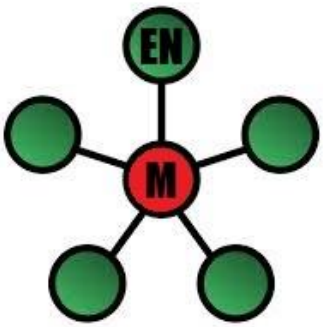
The reply **AAB30900000505002C01000063** contains requested parameters:

[AA]	protocol header
[B3]	command reply id
[09]	reply lenght
[00]	status
[00] [05] [05] [00] [2C] [01] [00] [00]	data field
[63]	checksum

Please refer to 32001345 LoRa module datasheet for more informations about commands, radio parameters and electrical characteristics.

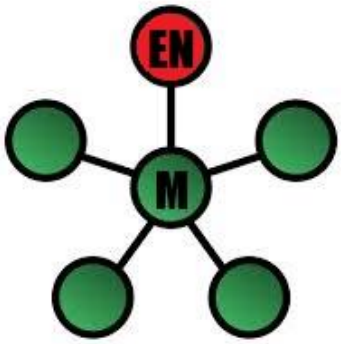
7. USB-Dongle MASTER Configuration



- Make sure the USB-Dongle is set as MASTER in **"Radio Config"** page.
- Set Power (dBm) to 14dBm in **"Radio Config"** page.
- Set Frequency Band (MHz) in **"Radio Config"** page.

The USB-Dongle is now set as MASTER.

8. USB-Dongle END-NODE Configuration



- Make sure a LoRa MASTER has been configured.
- Set the USB-Dongle as END-NODE in **"Radio Config"** page.
- Set Power (dBm) to 14dBm in **"Radio Config"** page.
- Now the END-NODE is ready to be paired to the MASTER (see section below).

9. PAIRING PROCEDURE

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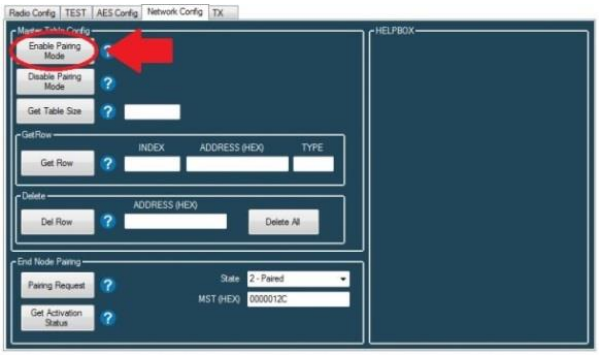
- Start one GUI application for the MASTER device and another for the END-NODE device.

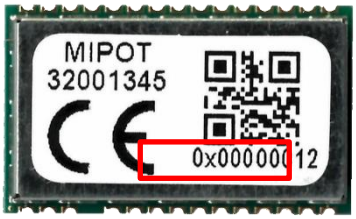
- Start the pairing mode by clicking on the **"Enable Pairing Mode"** button in "Network Config" page **(MASTER GUI)**.



- Click on the **"Pairing Request"** button on the "Network Config" page **(END-NODE GUI)**.

- Press the button **"Get Activation Status"**. If the END-NODE is correctly paired the state box should change to "paired" **(END-NODE GUI).**

If the END-NODE device is correctly paired, the serial number of the master's module is displayed in the MST(HEX) indicator Box (**END-NODE** GUI).



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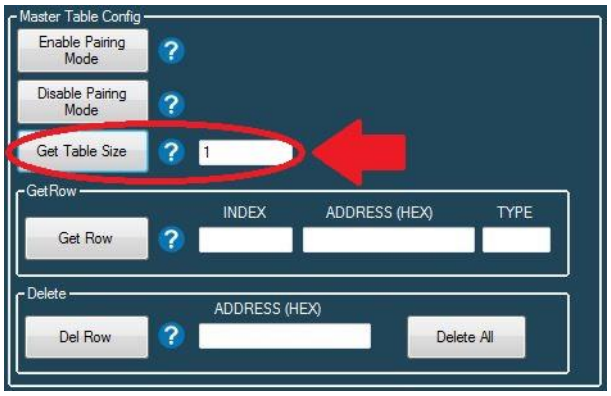
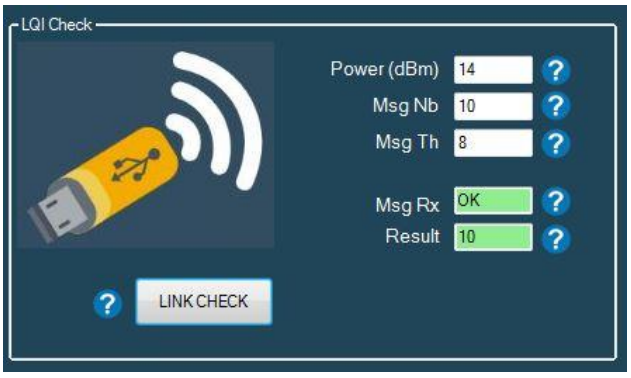
- To check the number of END-NODES devices paired to the MASTER Push **"Get Table Size"** button (**MASTER** GUI).



If table size number is equal to **0** it means that no slave device has been paired to the master yet.

10. RADIO LINK TEST (ONLY FOR END-NODE DEVICES)

- Make sure that the pairing procedure succedeed.
- Set **Power (dBm)** to 14 dBm.
- Set **Msg Nb** (message number) to 10.
- Set **Msg Th** (message threshold) to 8.
- Begin test by press the **LINK CHECK** Button and wait some seconds.



The **"Result"** box indicates the status of the test. If the number of received message is greater or equal to <Msg Th> the result of the test is positive.
If the number of received message is less than <Msg Th> the result of the test is negative.

OK = TEST PASS

KO = TEST FAIL

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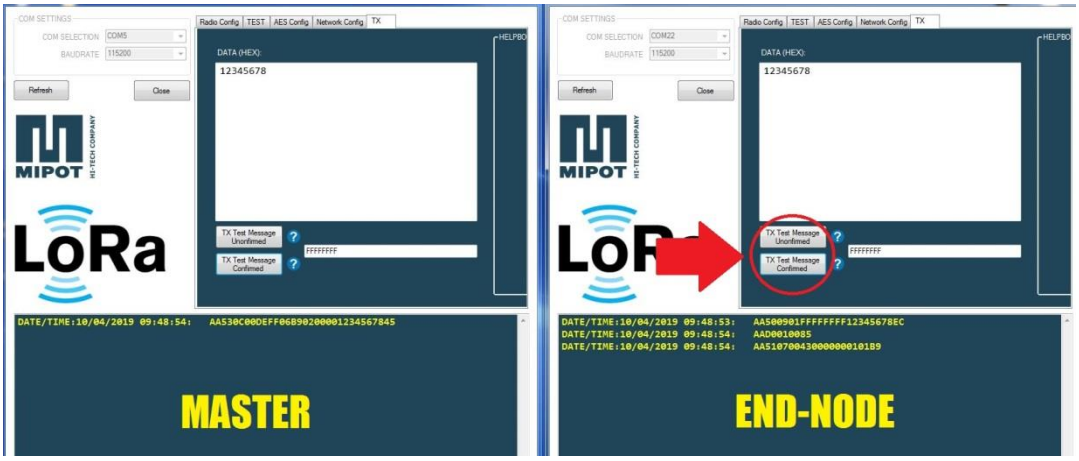
My TEST LINK result is FAIL, what could I check?
Check the pairing state of END-NODE device in the "Network config page". The state should be "paired" and the number displayed in MST(HEX) should be the MASTER serial number.
Check your message threshold value. Try with a message threshold (Msg Th) around 50%-60% of the total message number (Msg Nb).
Repeat MASTER and END-NODE pairing.

11. MESSAGE TRANSMISSION

A message transmission message is possible from MASTER to END-NODE and from END-NODE to MASTER . It can be sent in Confirmed or Unconfirmed mode.

- Complete the pairing procedure described in the previous pages.
- Set 5 in the **"Unconfirmed Tx Nb"** box in Radio Config page.
  This parameter indicates the number of times than a single unconfirmed message is sent from the transmitting device.
- Set 5 in the **"Confirmed Retry Number"** box in Radio Config page.
  This value indicates the number of times than an confirmed message is sent if ACK is not received.
- Press **" WRITE"** button to store the parameters into device.



- Write the message in HEX format in the END-NODE table **"DATA(HEX)"**.
- Send the confirmed or unconfirmed message by pushing selected buttons in the END-NODE table. Message will be displayed in the master tab.

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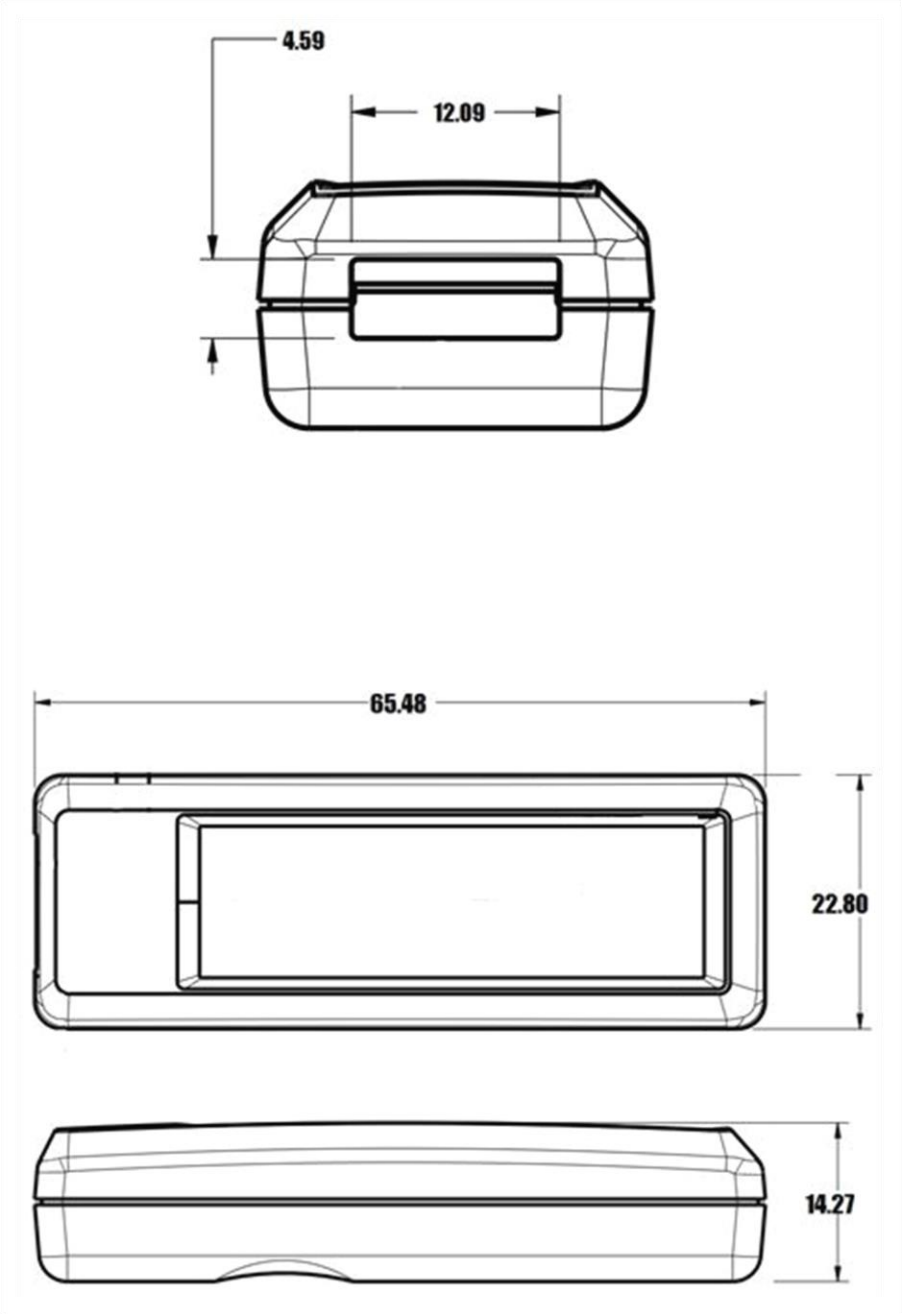
12. MECHANICAL DIMENSIONS

All mechanical dimensions are expressed in [mm].



Please refer to 32001345 LoRa module datasheet for more informations about commands, radio parameters and electrical characteristics.

13. REVISION HISTORY

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