The New Generation of Communicating Controllers

USB-ZIGBEE Dongle
UBeeBoost

User Manual

Revision: 1.00
Document reference: UM_UBEE_BOOST_20130405_001_01_00

I WARRANTY

The device supplied to the buyer and/or the recipient is guaranteed by CLEODE against any malfunctions originating from a design and/or manufacturing flaw, for a period of twelve (12) months following delivery. The buyer and/or recipient is (are) responsible for proving the existence of the said defects or flaws. This warranty is applicable in accordance with articles 1641 to 1648 of the French Civil Code and in compliance with the French statutory warranty. The warranty covers the replacement free of charge of devices and parts affected by a design and/or manufacturing flaw excluding conspicuous defects in the device that are covered by the buyer and/or the recipient.

In order to invoke the warranty, the buyer must immediately send written notice to CLEODE of the flaws that it attributes to the device. It must enable CLEODE to have access to the device to observe these defects and repair them. The warranty provided by CLEODE is strictly limited to the equipment provided and shall only have for effect the replacement or repair, at CLEODE's expense, on its own premises, of all devices or parts that are not functioning as a result of defects or flaws. CLEODE reserves the right to modify the devices in order to comply with the warranty.

The warranty does not apply to replacement or repairs that may result from normal wear and tear of devices, systems or products, damage or accidents resulting from negligence, failure to supervise or maintain, or incorrect use of the devices, systems and/or products.

The maintenance service is provided by CLEODE with all reasonable care possible and in compliance with the current state of the arts.

The exchange of parts or repairs performed under the warranty cannot result in extending the length of the warranty. In no event can the unavailability of the device due to servicing give rise to compensation for any reason whatsoever. The seller is released from all obligations relating to the warranty if the product or device has been modified without prior written consent, or if original parts have been replaced by parts which it has not manufactured without prior consent. If unforeseen damage is caused by the device, it is expressly agreed that the seller can only be liable for the reimbursement of monies received for the purchase of the device if it has been destroyed. Under no circumstances can the seller be held liable for indirect or contingent damage. The seller is released from any liability and the buyer waives any rights against it if an accident or direct or indirect damage is caused to the buyer following a defect, incorrect usage, incorrect maintenance or normal wear of the device sold.

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TABLE OF REVISIONS

Revision	Author(s)	Revision description	Date
0.1	CLEODE	Initial revision	22/03/2013
1.0	CLEODE	Validated	08/04/2013

I. INTRODUCTION

I.1 USB ZIGBEE DONGLE PRESENTATION

The USB stick called UBeeBoost allows generating a wireless mesh home networking based on the ZigBee ™ protocol and the IEEE 802.15.4 standard.

UBeeBoost is used as a ZigBee™ coordinator in home network.

With additional parts as sensors (temperature), actuators, etc., it is possible to setup a home area network that controls the lights, security system, fire system, and the heating and air conditioning.
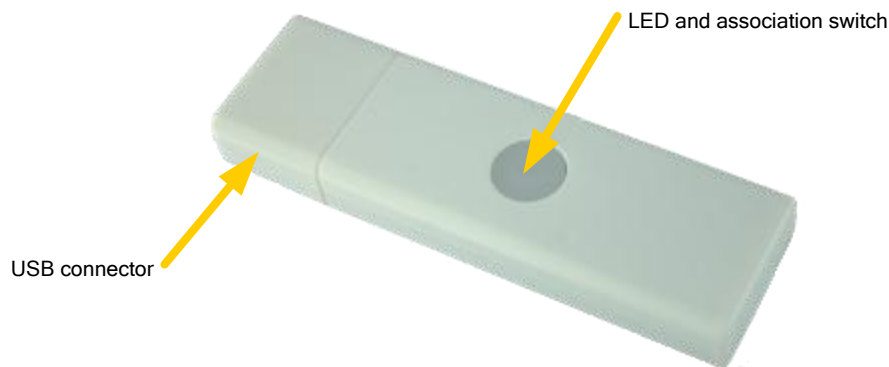
UBeeBoost has this form :

Figure 1 : UBeeBoost

Erreur ! Source du renvoi introuvable. shows UBeeBoost interfaces:

- The USB connector: used to power supply the dongle and provide the serial link between the USB host and UBeeBoost.

- The association switch : used to allow devices association in the ZigBee network

- The functional indicator: signal to user if the UBeeBoost works fine (green), the network is up (red) and if the devices are allowed to join the network (red blink).

I.2 COPYRIGHT

The CLEODE trademark and the CLEODE logo are properties of CLEODE SA, France. This document also refers to trademarks and other product names that are registered trademarks of their respective owners.

II. SOFTWARE INSTALLATION

II.1 PRELIMINARY

The required material is a PC with a Windows XP, Windows 7 or Windows 8 OS.

II.2 DRIVER INSTALLATION

II.2.1 UBeeBoost Window Driver

The UBeeBoost driver is provided on the Web Site (**www.cleode.com**) at the page Download – Drivers:

UBeeBoost Driver 1.0

When you plug the UBeeBoost in the PC, the Windows's device manager doesn't recognize the USB device, you must update the driver by selected the driver directory.
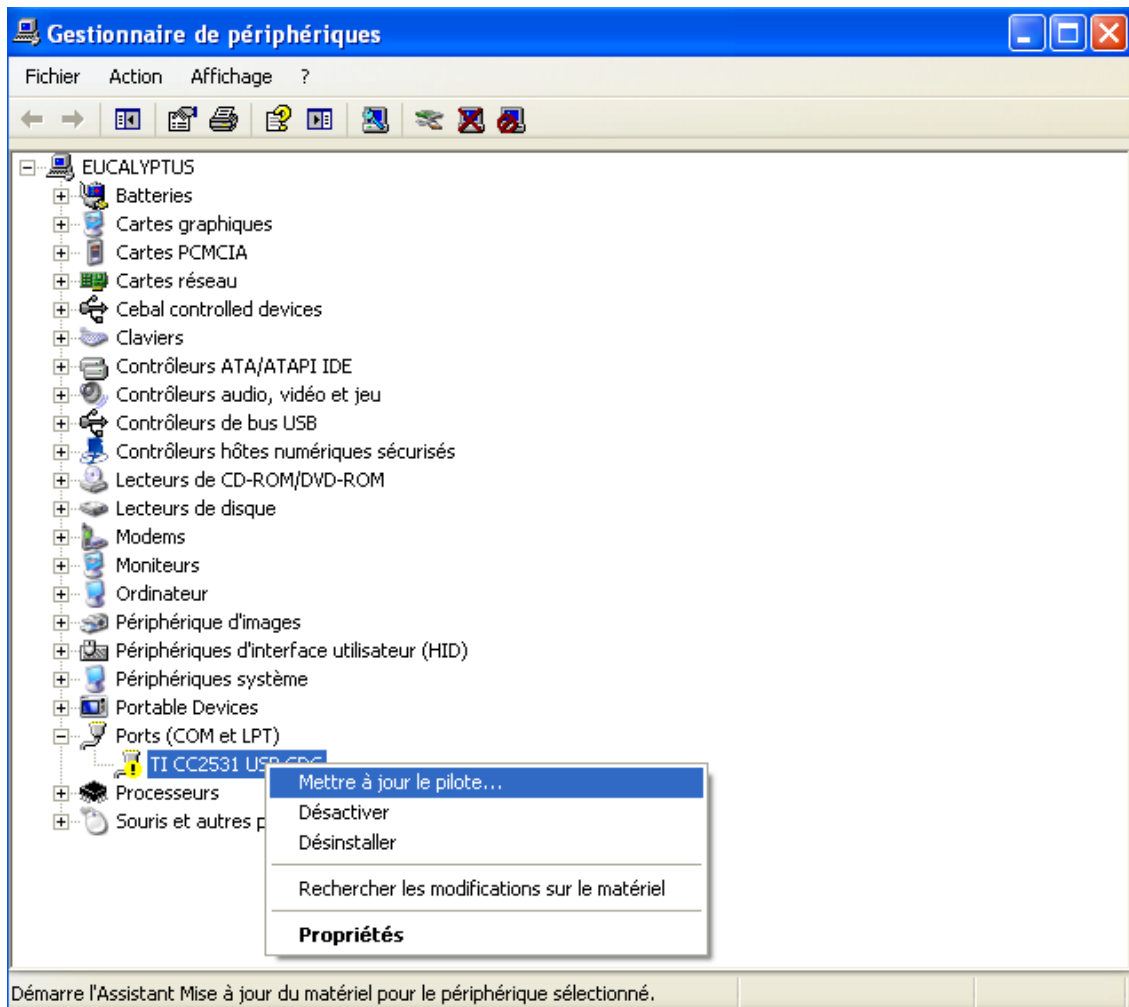
Figure 2 : Driver update

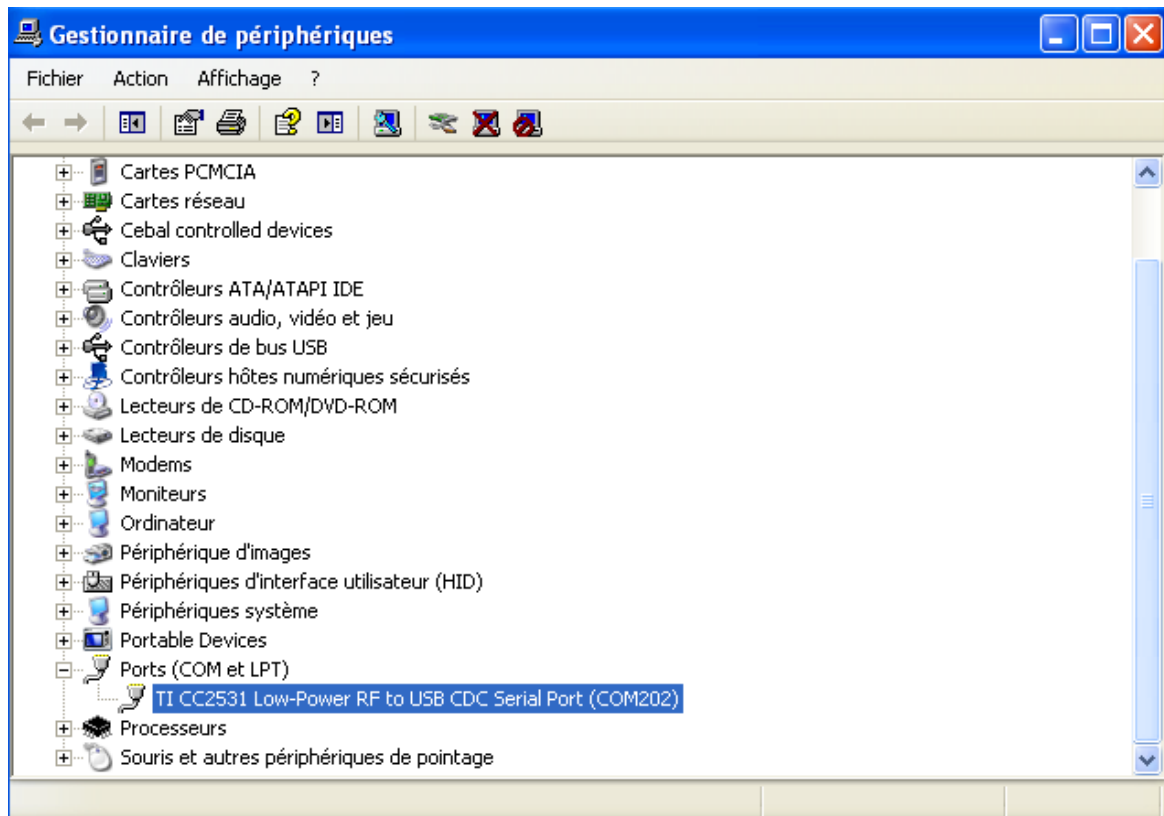You can verify the right installation by display the UBeeBoost in the Windows's device manager.

Figure 3 : UBeeBoost in Windows's device manager

The driver created a virtual COM (here COM202) port allowing easy access to the serial port of the embedded.

II.2.2 UBeeBoost Linux Driver

In most cases, the USB driver necessary for the UBeeBoost dongle is included in the Linux kernel.

The Linux codes are located under the directory: **linux-X.X\drivers\usb\serial** and includes two main files:

     - cdc_acm.c

     - cdc_acm.h

When you plugged the UBeeBoost in the PC, the driver add a new device **/dev/ttyACMx**.

To verify the installation of UBeeBoost you can type this command: **dmesg**

Following answer is displayed:

cdc_acm 5-1:1.0: ttyACM0: USB ACM Device

III. SOFTWARE INTERFACE

III.1 TEXAS INSTRUMENT API

Texas Instrument API is programmed in the UBeeBoost. This API provides a list of commands and messages which can be used to develop your own ZigBee software with UBeeBoost.

This API is described in the *Z-Stack Monitor and Test API.pdf* document provided with the Texas Instrument ZigBee Stack (ZStack 2.5.1a).

III.2 ZIGBEE DESCRIPTION

UBeeBoost is fully compliant with the ZigBee Pro 2007 specification. It is in conformance with the Home Automation profile.

UBeeBoost is a *Configuration Tool* device. Then, it supports these clusters:

Server Side	Client Side
Basic (0x0000)	Basic (0x0000)
Identify (0x0003)	Power Configuration (0x0001)
/	Device Temperature Configuration (0x0002)
/	Identify (0x0003)
/	On/Off (0x0006)
/	On/Off Switch Configuration (0x0007)
/	Level Control (0x0008)
/	Alarms (0x0009)
/	Time (0x000A)
/	Analog Input (0x000C)
/	Shade Configuration (0x0100)
/	Door Lock (0x0101)
/	Window Covering (0x0102)
/	Thermostat (0x0201)
/	Fan Control (0x0202)
/	Dehumidification Control (0x0203)
/	Thermostat User Interface Configuration (0x0204)
/	Color Control (0x0300)
/	Illuminance Measurement (0x0400)
/	Illuminance Level Sensing (0x0401)
/	Temperature Measurement (0x0402)
/	Pressure Measurement (0x0403)
/	Flow Measurement (0x0404)

Server Side	Client Side
/	Relative Humidity Measurement (0x0405)
/	Occupancy Sensing (0x0406)
/	IAS Zone (0x0500)
/	Simple Metering (0x0702)
/	Pilot Control (0xFC01)

III.2.1 Basic Cluster

Attributes and commands for determining basic information about a device, setting user device information such as location, enabling a device and resetting it to factory defaults. This following list show the attributes implemented by UBeeBoost:

Attribut	Identifiant de l'attribut
ZCLVersion	0x0000
ApplicationVersion	0x0001
StackVersion	0x0002
HWVersion	0x0003
ManufacturerName	0x0004
ModelIdentifier	0x0005
DateCode	0x0006
PowerSource	0x0007
LocationDescription	0x0010
PhysicalEnvironment	0x0011
DeviceEnabled	0x0012
AlarmMask	0x0013

III.2.2 Identify Server Cluster

This cluster is used to put a device into an Identification mode (e.g. flashing a light), that indicates to an observer. e.g. an installer - which of several devices it is, also to request any device that is identifying itself to respond to the initiator.
The indicator of UBeeBoost is flashing during the Identify Time.
Identify cluster in UBeeBoost supports this attribute:

Attribut	Identifiant de l'attribut
IdentifyTime	0x0000

III.2.3 Identify Client Cluster

This cluster is used to allow to identify all devices associated from the Ubee (all devices flash).
A long press on the switch on the Ubee allows the flashing of all devices (for 60 seconds). A second long press stops the flashing of all devices.

IV. UBEEBOOST USER GUIDE

IV.1 POWERING

The user powers on UBeeBoost by plug it on the USB host (PC or other). At power, the functional indicator show a green light.
When the UBeeBoost bring up the network, the functional indicator shows a green + red light.

IV.2 ASSOCIATION PERMIT

After UBeeBoost bring up the network, it doesn't allow the devices to join the network.
To allow devices join the network, the user has to push the switch on the UBeeBoost.
When the user pushes the switch, the indicator is flashing in red to signal that UBeeBoost permits join. The association permit stop after 15 minutes and the indicator stop to flash.

IV.3 RESET THE NETWORK PARAMETERS

The UBeeBoost saved all its network parameters in flash memory (associated devices, PANID, etc.).
To reset these parameters, the user has to proceed like this:
1. Push on the switch and maintain it
2. Plug the UBeeBoost dongle with maintain the switch until the indicator shows a red light
3. Release the switch when the indicator shows a red light

V.TECHNICAL CHARATERISTICS

Characteristic	Value
Operating frequency range	2405 – 2480 Mhz
Radio Rate	250 kbps
Serial link speed	57600 bauds
Output power (max.)	+20 dBm
Operating supply voltage	5 V (USB)
Operating supply current (max.)	200 mA
Sensitivity	-99 dBm
Range (outdoor)	1500 m at +20 dbm
Dimension (L/W/H)	64 * 20 * 9 mm
Security encryption	128 bit AES
Température	-20 ° à + 70° C

VI. REPAIR AND MAINTENANCE

Defective equipments shall be first reported to the CLEODE support team in order to be assigned an RMA number. Be prepared to state your name, company and the serial number of the defective item to the support personnel.

The item shall then be returned to CLEODE with the following documents:
- The RMA number
- A copy of the delivery slip
- A detailed description of the default and the test context

The maintenance period is typically four (4) weeks starting from the date of reception of the equipment at the CLEODE headquarters.

Remark : A FAQ (Frequently Asked Questions) is available on the **www.cleode.com** web site.

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