Bluetooth Trainer

EBL

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Technical Teaching Equipment

Computer Control System

USB communication

② Computer Control Software

Computer
(not included in the supply)

③ Cables and Accessories
④ Manuals

① Bluetooth Trainer:
Bluetooth Device 1 + Bluetooth Device 2 + Bluetooth Dongle

INTRODUCTION

The Bluetooth technology is one of the most used wireless technology standard. It was designed for exchange information between devices in shorts distances. This technology also allows configuring a complete wireless network with several devices in an easy and quick way, and it is widely used in personal computers, mobile phones, video game consoles, home remote control devices, etc.

The new updates of the Bluetooth technology are aimed to reduce power emission to reach a lower power consumption of their devices. For this propose, it was developed the Bluetooth low energy (BLE), that reduces the power emission without loss communication range.

The Bluetooth Trainer "EBL" is a complete unit to study a Bluetooth communication network between two autonomous devices and a computer through a Bluetooth Dongle.

This trainer is provided with a set of practical exercises, through which the students will familiarize with the Bluetooth technology communication standard. The students will understand the operation of a communication system based in the Bluetooth technology.

GENERAL DESCRIPTION

The Bluetooth Trainer "EBL" operates in conjunction with a computer, which is connected with the Bluetooth Dongle, that allows communicating and programming the Bluetooth Devices to perform a simple Bluetooth network.

The two Bluetooth Devices (included in the supply) have a LCD display that shows the current state of the devices (linking status, input messages, output messages, etc).

The "EBL" allows to perform a complete Bluetooth link between the computer and the Bluetooth Devices and to get familiar with all the procedure involved in the configuration of a Bluetooth link (configuring the link, scanning new devices, configuring the communication parameters, programming the Bluetooth Devices, encrypting the communication, etc).

ISO 9000: Quality Management
(for Design, Manufacturing, Commercialization and After-sales service)

CE
European Union Certificate
(total safety)

Certificates ISO 14000 and
ECO-Management and Audit Scheme
(environmental management)

Worlddidac Quality Charter Certificate and
Worlddidac Member

① EBL. Trainer:

Bluetooth Device 1 and 2:

Each one includes:

Large LCD Display.

Control Buttons: Five push buttons.

USB connector to PC.

Serial port connector to the Bluetooth Dongle.

Bluetooth Power class 2: Communication range up to 10 meters.

Low power transmitter: +4 dBm.

High sensibility receiver: -87 to -93 dBm.

External Bluetooth antenna:

Omnidirectional antenna (1/2 wavelength dipole antenna).

Antenna Centre Frequency: 2.45GHz.

Gain: 2 dBi.

Bluetooth Dongle:

2 Status LEDs.

USB connector to PC.

Serial port connector to Bluetooth device interface.

Bluetooth Power class 2: Communication range up to 10 meters.

Low power transmitter: +4 dBm.

High sensibility receiver: -87 to -93 dBm.

Programmable as master device or Bluetooth packet sniffer through the serial cable.

External Bluetooth antenna:

Omnidirectional antenna (1/2 wavelength dipole antenna).

Antenna Centre Frequency: 2.45GHz.

Gain: 2.20 dBi.

Bluetooth Device 1

Bluetooth Device 2

Bluetooth Dongle

② EBL/CCSOF. Computer Control Software:

Compatible with actual Windows operating systems.

The EBL Software is composed by two software that perform different tasks:

Bluetooth low energy packet sniffer:

The Bluetooth low energy packet sniffer works with the Bluetooth Dongle and it is used to analyze the Bluetooth low energy messages in a simple way.

The software allows to eavesdrop every message sent with the Bluetooth low energy technology and automatically classifies the type of sent message.

The software also allows to analyze the channel used to send the messages, the name of the device that send and the device that receives the message, etc.

EBL configuration software:

The EBL configuration software sets the Bluetooth Dongle as a master device and allows the user a total control over the connection with the slave devices: the inquire messages, the communication parameters, etc.

The software allows to configure the Bluetooth network. The software enables to configure the main communication parameters to establish the Bluetooth low energy network.

EBL/CCSOF

③ Cables and Accessories, for normal operation.

④ Manuals:

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.
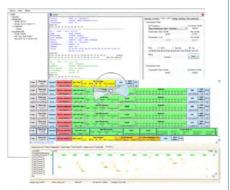
✱ References 1 to 4: EBL + EBL/CCSOF + Cables and Accessories + Manuals are included in the minimum supply for enabling a normal and full operation.

1.- Familiarization with the trainer.

2.- Study of the different Bluetooth profiles.

3.- Establish a connection between master and slave devices.

4.- Analysis of the received signal strength indicator (RSSI) of a Bluetooth low energy (BLE) connection.

5.- Analysis of the writing and reading of a character in a Bluetooth communication.

6.- Familiarization with Bluetooth low energy packet sniffer.

7.- Use the Bluetooth low energy packet sniffer to analyze the advertising and discovery events.

8.- Use the Bluetooth low energy packet sniffer to analyze the start and termination of a link.

9.- Use the Bluetooth low energy packet sniffer to analyze the reading and writing of a character between devices.

10.- Familiarization with Bluetooth control software.

11.- Establish a connection between the computer and two Bluetooth slaves.

12.- Configure the connection parameters of a Bluetooth communication.

13.- Read and Write characters from an established Bluetooth network.

14.- Protect the Low Energy Bluetooth communication from MITM (Man in the middle) attacks by encrypting the connection with a passcode.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V./50Hz or 110V./60Hz.

- Computer.

DIMENSIONS & WEIGHTS

EBL:

Bluetooth Device 1 and 2 (each one):

-Dimensions: 310 x 220 x 180 mm. approx.
(12.2 x 8.66 x 7.08 inches approx.).

-Weight: 2 Kg. approx.
(4.4 pounds approx.).

Bluetooth Dongle:

-Dimensions: 310 x 220 x 180 mm. approx.
(12.2 x 8.66 x 7.08 inches approx.).

-Weight: 2 Kg. approx.
(4.4 pounds approx.).

✴Specifications subject to change without previous notice, due to the convenience of improvements of the product.

REPRESENTATIVE: