

# MIERUZZO SERIES MANUAL

## INSTRUCTION MANUAL

### WIRELESS

## End-Device (802.15.4)

### M16-302

Thank you for purchasing our product, M16-302. Please confirm that you have the correct device by checking the product label. Please read this instruction manual carefully before using this device to ensure correct usage. Please keep this instruction manual for future reference.

## ATTENTION!

- Do not use this device near machines that emit strong electromagnetic fields or objects that store static electricity.
- Do not drop or subject this device to strong impact.
- Do not use or store this device where it will be exposed to water or any wet conditions.
- Do not attempt to disassemble or modify this device.
- Do not operate with a power source other than the one recommended in this manual or listed on the product labels.

**ATTENTION!** Please note that misuse of this device may lead to injury to the user or damage to the device. Please observe all safety precautions and warnings in this instruction manual.

Customer Service

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## ATTENTION!

- Do not install another wireless device or locate another radio device or antenna within 20cm of this transmitter.
- Co-location of antenna of this transmitter with any other antenna or transmitter is not allowed. Keep the antenna of this device at least 20cm (8 in.) away from another radio device or its antenna.
- Keep separation distance of at least 20cm (8 in.) between the antenna of this device and nearby person during device operation.
- This device is not intended for portable application.

## PRODUCT INTRODUCTION

The M16-302 Wireless End-Device provides wireless connectivity to DK-5000 Series device (sold separately). This device can transmit the data from a DK-5000 device to a host computer up to 30 meters away (without obstruction), when used together with a M16-303 Wireless Coordinator. This device communicates with the DK-5000 Series using the USB 2.0 protocol. It can power the connected device at DC5V, 100mA maximum.

### Important!

Please use a micro-B-to-A USB cable and an On-the-Go (OTG) micro-B-to-A receptacle cable to connect the M16-302 device to a DK-5000 Series device. (See Connection Diagram for reference in connection.)

This product is compatible with DK-5000 Series firmware version 11.0 or above.

To check the version number of DK-5000 device:

- Press 2 key while holding down the F key (F + 2) to go to ID settings.
- Press "# + F + 3" key, in this order, to view the firmware version.

## INSTALLATION/DEPLOYMENT GUIDELINES

It is important to consider the installation environment when deploying the Wireless End-Device. The device has to be tested at different possible locations to get the installation which gives the best signal. If it is possible, maintain line-of-sight between the End-Device and the M16-303 Wireless Coordinator. The following guidelines may also be followed if obstructions cannot be avoided.

- Do not put the device near metal objects or walls. Metal objects can highly interfere the 2.4GHz signal.
- Elevate the device higher off the floors. At least 1m elevation is advised.
- Do not install the device near a grounded surface.
- For multiple devices installation, locate the router at the center of the installation area.
- Position the device's antenna vertically (the antenna is standing straight up).

Communication range may be reduced when obstructed. Wireless signal is either reflected or absorbed when obstructed by some material, resulting to poor signal quality. It is best to put the device on direct line-of-sight (LOS) of the coordinator, for better performance.

Obstruction Material	Wood	Glass	Plaster Wall	Concrete	Metal
Effect on Signal	Low	Low	Medium	High	Very High

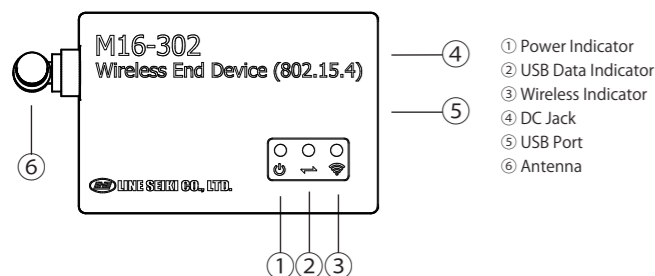
## POWER SUPPLY

Please use Line Seiki AC/DC Power Adapter for DK-5000 to power the device.

Upon initial connection to the power supply, the device will perform the start-up routine, with the data LED ( ) and wireless LED ( ) blinking *amber* for 5 ~ 7 seconds. After the start-up routine, the device will proceed to the initialization of the connected USB device then on **Active Mode**, after successful device enumeration.

(See OPERATION MODES for details.)

## LABELS



## Conformance Warnings

Contains Model XBee S2C Radio, IC: 1846A-XBS52C  
 Contains FCC ID: MCQ-XBS52C

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- this device may not cause harmful interference and
- this device must accept any interference received, including interference that may cause undesired operation.

To satisfy FCC RF Exposure requirements for mobile transmitting devices, a separation distance of 20cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance are not recommended.

These wireless devices are compliant with radio law in Japan, the United States, Canada and EU. They cannot be used in countries and regions other than Japan, the United States, Canada and EU member countries.

The violation of laws and regulations against wireless devices may result in punishment in each country and region.

## OPERATION MODES

This device has three operation modes: Standby Mode, Active Mode and Wireless Mode.

### Standby Mode

This is the default operation mode. After the start-up routine, the device automatically enters **Standby Mode** and wait for a valid USB device to be connected. The data indicator ( ) is OFF when the device is in **Standby Mode**.

#### Important!

Wireless functions will be disabled while in Standby Mode.

### Active Mode

The device enters **Active Mode** when it detects that a supported USB device (DK-5000) is connected. (See the DEVICE OPERATION section for connection details.)

If the communication between the DK-5000 device and the Wireless End-Device is successful, the data indicator will turn *green*. If an unsupported device is connected, the data indicator will change to *red* (blinking).

This mode also enables the Wireless End-Device wireless function. The communication software can only search for devices that are in **Active Mode**.

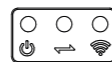
### Wireless Mode

In **Wireless Mode**, the device is visible to the communication software. A PC with a connected Coordinator device, will be able to detect the device if both units have the same network configurations. (See the DEVICE CONFIGURATION section for details.)

After the devices are successfully paired and a successful communication to the software is established, the wireless indicator will turn *green*. An *amber* wireless indicator is shown if the device is not yet paired to the coordinator.

When connected, the software will be able to request for the data and other information of the connected DK-5000 device using the Wireless End-Device. Configuring the DK-5000 device is also possible thru this mode. Refer to the user manual of the Wireless Mieruzzo Basic Software for complete instructions on how to use the software.

## INDICATOR

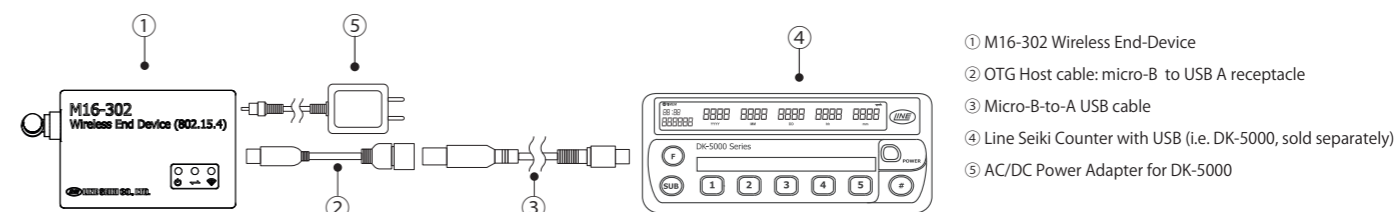


- Power: RED
- DATA: RED, GREEN, AMBER
- WIRELESS: RED, GREEN, AMBER

During device initialization or after power ON, the USB and Wireless LED blinks *amber* light for 5~7 seconds.

DATA INDICATOR	TYPE OF EVENT - CONFIGURATION
OFF	Device not connected to PC
Amber Light Blinking	Device enumeration
Amber Light ON	Device enumeration successful
Green Light ON	Device connected to Wireless Mieruzzo Basic Software
DATA INDICATOR	TYPE OF EVENT - WIRELESS MODE
Amber Light ON	No USB device connected; No device enumerated
Green Light ON	Connected device is supported
Red Light Blinking	Connected device is not supported
WIRELESS INDICATOR	TYPE OF EVENT - COMMUNICATION MODE
Amber Light Blinking	Waiting for Wireless Mieruzzo Basic Software to establish connection
Green Light ON	Connected to Wireless Mieruzzo Basic Software
Green Light Blinking	Device is sending data to Wireless Mieruzzo Basic Software
Red Light ON	Device failed to send data to software; Connection failure

## DEVICE OPERATION



The Wireless End-Device can only operate when a USB device (DK-5000) is connected. Wireless functions are disabled until a DK-5000 device is attached.

The Wireless Mieruzzo Basic Software and M16-303 Wireless Coordinator are required to enable data exchange with M16-302. This wireless system will provide wireless communication and replace the wired physical connection between a DK-5000 device and a PC.

Refer to the corresponding Wireless Mieruzzo Basic Software manual for specific instructions in using the wireless device with the communication software.

### Important!

DK-5000 Series does not need an external power supply when connected to the Wireless End-Device. Please connect the AC/DC Power Adapter to M16-302 instead.

Connect the OTG cable to the end-device and the Micro USB cable to the DK-5000 unit. Connect the USB Type A connector of the Micro USB cable to the OTG Type A receptacle.

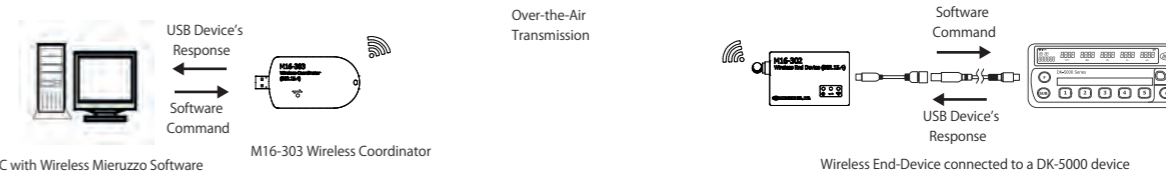
The USB cables must not be interchanged. Doing so will cause the device to malfunction.

Using a USB cable longer than 2 meters might cause communication error. Only up to 2 meter USB cable is recommended.

## SYSTEM CONFIGURATION

The Mieruzzo Wireless data transfer system is composed of a Wireless End-Device (M16-302), A DK-5000 USB device, a host PC and a M16-303 Wireless Coordinator which creates the network to provide communication link between the device and the host PC. The wireless connection should be established thru the Wireless Mieruzzo Basic Software installed in a PC. Once the device is paired to the PC, the communication software can start sending commands to the coordinator device which forwards the command to the paired end-device. The end-device receives the command from over-the-air (OTA) which then forwards it to the connected DK-5000 device. When the DK-5000 device replies to the command, the end-device receives this reply and forwards the reply to the coordinator. The coordinator passes the received response which is then processed by the software. Please refer to M16-303 Instruction Manual on how to operate the coordinator device.

The Wireless Mieruzzo Basic Software enables user to remotely download, save and delete the data saved on the memory of the connected device. The software also enables real-time data display of the displayed data on the attached device.

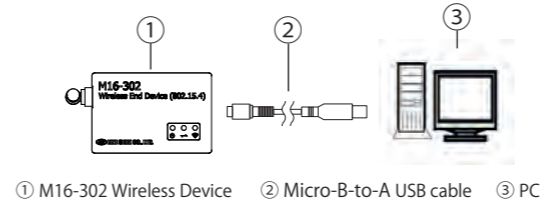


The wireless system operates at 2.4 GHz, employing IEEE 802.15.4 protocol. Up to 14 Wireless End-Device can be connected to a Coordinator device (M16-303) but only one end-device will be paired with the communication software at a certain time. Selection of end-device to be accessed can be done thru the software.

## DEVICE CONFIGURATION

### Connection to PC

Connect the end-device to an available USB port in the computer using a micro-B-to-A USB cable. Refer to the illustration below for instruction on connecting M16-302 to a computer.



### Set-up and Configuration

The device must be configured before placing into operation for the first time. Once the device has been configured, there is no need to perform configuration again unless there is a need to change the initial setup. The Wireless Mieruzzo Basic Software is needed to perform this procedure. Please install the software before proceeding to the configuration.

The following parameters will be set in the device during configuration.

#### Channel:

Sets the RF channel used to communicate with the receiver. Any value from 11 to 26.

#### Network ID:

Sets the ID of the network. The end-device and coordinator device must have matching network ID in order for the devices to see each other. Any value from 1 to FFFFFFFF.

#### ID Name:

Sets the name of the device within the network. ID Name must be unique for each device to be connected on the same network. Maximum of 20 characters, cannot be started with space.

### Important!

This device requires Wireless Mieruzzo Basic Software to perform the configuration. Please install the software and perform the configuration of the device. Please refer to the software instruction manual of the Mieruzzo USB device (DK-5000) for the detailed instructions in performing the configuration. This device should be configured at first-time usage in order for the device to work properly. This device should be power cycled after configuration to reflect the parameter changes.