MIERUZZO SERIES MANUAL

INSTRUCTION MANUAL

M16-601

Sensor Input Device + Wireless LAN

Thank you for purchasing our product, M16-601.
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 M16-601 Sensor Input Device+Wireless LAN provides interface between external sensors/inputs and Line Seiki counters with USB function (sold separately). This device reads each input and sends a command to the connected device using USB communication. The command contains the status of all inputs.

Up to 5 sensors or contact inputs can be connected to the input terminals of the Sensor Input Device. This device can provide a DC12V power supply to the connected sensors.

It also provides wireless connectivity to the connected device. It can transmit data from the DK-5000 device to a host computer up to 30 meters away (without obstruction).

The M16-601 device communicates with the counter device using the USB 2.0 protocol. It can power the connected device at DC5V, 100mA maximum.

※ Important!

This device requires WLAN Mieruzzo Software for communication. The software runs on Windows 7, 8, 8.1 or 10.

Please use a micro-B-to-A USB cable and an On-the-Go (OTG) micro-B-to-A receptacle cable to connect the M16-601 device to a DK-5000 Series device.
(See DEVICE OPERATION 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.

■ POWER SUPPLY

The device is designed to work with AC/DC Power Adapter for DK-5000.
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.)

■ 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!

Input signals are ignored by the Sensor Input Device and wireless functions are 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.)

Input signals fed to the input terminals are recognized only during **Active Mode**. The Sensor Input Device sends a command to the connected USB device and the USB device interprets the received command as either a count increment or status input. If the communication between the DK-5000 device and the Wireless LAN Adapter 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 M16-601 wireless function. The communication software can only search for devices that are in **Active Mode**.

M16-601 device does not have its own memory for logging. Logging is expected to be performed by the DK-5000 tally counter. Input count values or status can be viewed thru the connected DK-5000 device.

※ Important!

Input signals will only be processed by M16-601 when a supported USB device (DK-5000) is connected.

This device will provide external input capability to Input 1~5 of the DK-5000 Series. External inputs for Input 6~30 of 10-key or 30-key DK-5000 device are not supported.

Input keys 1~5 of the DK-5000 device are disabled while connected to M16-601. Setting Mode and Memory Recall Mode are still accessible while the devices are connected.

● Wireless Mode

In **Wireless Mode**, the device is visible to the communication software.

After a successful communication to the software is established, the wireless indicator will turn *green*. A *red* wireless indicator is shown if the device failed to connect to the wireless network.

When connected, the software will be able to request for the data and other information of the connected DK-5000 unit using the M16-601 device. Configuring the DK-5000 device is also possible thru this mode. Refer to the user manual of the WLAN Mieruzzo Basic Software for complete instructions on how to use the software.

⚠ Conformance Warnings

Contains Model XBee S6BSM Radio, IC: 1846A-S6BSM
Contains FCC ID: MCQ-S6BSM

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

(1.) This device may not cause harmful interference and

(2.) 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.

■ INSTALLATION/DEPLOYMENT GUIDELINES

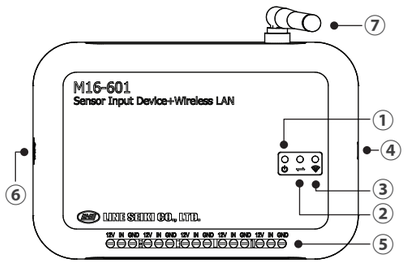
It is important to consider the installation environment when deploying the wireless device. The device has to be tested at different possible locations to get the installation which gives the best signal. If it is possible, maintain line-of-sight between the wireless device and the Wi-Fi router or access point. 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 devices 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 reflected or absorbed when obstructed by some material, resulting to poor signal quality. It is best to put the devices on direct line-of-sight (LOS) of the router, for better performance.

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

■ LABELS



① Power Indicator
② USB Data Indicator
③ Wireless Indicator
④ USB 2.0 Port
⑤ Terminal Block
⑥ 5.5mm DC Jack
⑦ Antenna

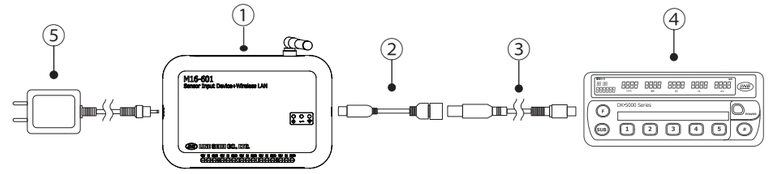
■ INDICATOR

POWER: RED
DATA: RED, GREEN, AMBER
WIRELESS: RED, GREEN, AMBER

During device initialization or after power ON, the Data 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 WLAN 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 WLAN Mieruzzo Basic Software to establish connection
Green Light ON	Connected to WLAN Mieruzzo Basic Software
Green Light Blinking	Device is sending data to WLAN Mieruzzo Basic Software
Red Light ON	Device failed to send data to software; Connection failure
Red Light Blinking	Network connection failed

■ DEVICE OPERATION



① M16-601 Sensor Input Device+Wireless LAN
② OTG Host cable: micro-B to USB A receptacle
③ Micro-B-to-A USB cable
④ Line Seiki Counter with USB (i.e. DK-5000, sold separately)
⑤ AC/DC Power Adapter for DK-5000

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

The WLAN Mieruzzo Basic Software is required to enable data exchange with M16-601. This wireless system will provide wireless communication and will replace the wired physical connection between a DK-5000 device and a PC.

See "Compatible Devices" under SPECIFICATIONS to see list of compatible devices.

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

The Mieruzzo Wireless LAN data transfer system is composed of a Wireless LAN device (M16-601), a DK-5000 USB device, a host PC and an established Wi-Fi network to provide communication link between the device and the host PC. The wireless connection should be established thru the WLAN Mieruzzo Basic Software. Once the device is paired to the PC, the communication software can start sending commands to the device.

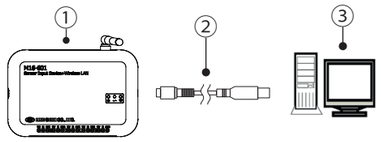
The WLAN Mieruzzo Basic Software enables user to remotely download, save and delete the data saved on the memory of the connected DK-5000 device. The software also enables real-time data display of the displayed data on the attached device.

The wireless system operates at 2.4 GHz, employing IEEE 802.11 b/g/n protocol. The number of devices that can be connected (WLAN Adapter and host PC) will be based on the size of the network.

■ DEVICE CONFIGURATION

● Connection to PC

Connect the adapter 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 M16-301 to a computer.



① M16-601 Device ② Micro-B-to-A USB cable ③ PC

● 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 WLAN Mieruzzo Basic Software is needed to perform this procedure. The following parameters will be set in the device during this procedure.

SSID:
Name of the wireless network where the device will be connected.
Authentication:
Type of security being used by the network (OPEN, WEP, WPA, WPA2)
Passphrase:
Encryption key. Contact your network administrator for information.
IP Addressing:
Network address mode to be used (DHCP or Static).
Host IP, Device IP, IP Mask and Gateway IP are not required to be set when in DHCP mode.
Host IP:
IP address of the PC where the communication software to be used was installed.
Device IP:
IP address of the Wireless LAN Adapter.
IP Mask:
Subnet mask of your network.
Gateway IP:
IP address of your gateway,
ID Name:
Sets the ID of the device. ID Name must be unique for each device to be connected on the same network. Maximum of 20 characters, cannot be started with space.
Destination Port:
TCP port number. This number should match the server port setting on the communication software.

※ Important!

This device requires WLAN Mieruzzo Basic Software to perform the configuration.
Please install the software and perform the configuration of the device.
Please refer to the software user manual of the Mieruzzo USB device 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.

● Checking for MAC Address

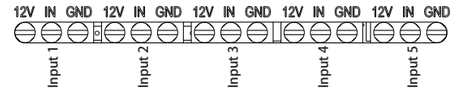
WLAN Adapter MAC Address can be checked thru the Device Manager on PC.
1. Open Device Manager. (Right-click Windows icon, select *Device Manager*.)
2. Right-click the device name under *Ports (COM&LPT)* and click *Properties*.
3. In the device properties window, click *Details* tab.
4. Select *Device Instance Path* under *Property* list.
5. Check *Value*. The digits on the rightmost part is the MAC address of the device.

※ Important!

DK-5000 series does not need an external power supply when connected to this wireless device. Please connect the AC/DC Power Adapter to M16-601 instead.
Connect the OTG cable to the wireless 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.

■ WIRING DIAGRAM

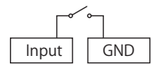
● Input Terminal Array



※ All 12V terminals are connected internally.
※ All ground (GND) terminals are connected internally.

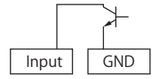
● Input Circuit: Non-voltage Input (NPN Input)

< Contact Input >



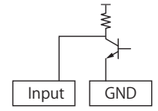
※ signal for contact input is ON.

< Open-Collector Input >



※ signal for transistor is ON.

< NPN Voltage Input>



※ signal for transistor is ON.

⚠Caution!

Maximum voltage that can be connected to the input terminals of the device is up to DC30V.
Excessive voltage may damage the internal circuitry.
There is also risk of electrical shock so please exercise caution.

■ SPECIFICATIONS

Model	M16-601
Input Mode	Contact / Open-Collector Input
Input	Non-contact Input: Open Collector (Sink Current approx. 1.5mA) L: <1.4V Contact Input: Relay, Microswitch, Others (Sink Current approx. 1.5mA)
Input Speed	Count Input: 10Hz (Duty 1:1) State Input: 1sec min. pulse width[1]
Sensor Power Supply	For External Sensor: DC12V (100mA)
Sensor Input Terminal	Terminal Screw
Power Source	AC/DC Power Adapter for DK-5000
DK-5000 Connection	USB 2.0 (USB Micro-B)
Wireless Communication	Wi-Fi standards IEEE 802.11 b/g/n
Wireless Range	Up to 30m Line-of-Sight (LOS)
Operating Frequency	ISM 2.4 - 2.5 GHz
Operating Channel	Automatic
Operating Humidity	35 ~ 85% RH (Non-condensing)
Operating Temperature	0 ~ 50°C (Non-freezing)
Storage Temperature	-10 ~ 60°C (Non-freezing)
Dimension	150(L) x 100(W) x 32(H) mm (excluding antenna)
Weight	Approx. 250g (excluding accessories)
Accessories	Instruction Manual x 1, USB On-the-Go (OTG) Host Cable x 1, Micro B-to-A USB Cable x 1, AC/DC Power Adapter x 1
Compliance	CE, RoHS, FCC, IC, ARIB

Note 1: Applicable for DK-5000 Type D application only.
For more details, please visit our website at **http://www.lineseiki.com**

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