M2I Corporation

Industrial Barcode Reader

MSR-B2MWA/B

MSR-B2MWA-DONGLE

Hardware Manual

Thank you for using industrial Barcode reader of M2I corporation.

Please read this manual carefully to know installing, wiring, operating, servicing and inspecting this equipment.

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Chapter 1 Safety precautions

■ Before using the product

To ensure the safe and efficient use of the product, please read this manual thoroughly and completely before use. The safety precautions must be followed to prevent accidents and hazards. These precautions are divided into "Warning" and "Caution" sections. The meanings of each category are as follows.

⚠ Warning	Failure to follow the instructions may result in serious injury or death due to hazardous conditions.
⚠ Caution	Failure to follow the instructions may lead to serious or minor injury, or damage to the product, due to hazardous conditions.
⊘	Please exercise extra caution, as dangerous situations may arise.
❗	Be cautious, as electrical shocks may occur.

■ General precautions ⚠ Caution

⊘ Do not press the screen with hard or sharp objects (such as an awl, screwdriver, pen, etc.) or apply excessive force. This may cause damage to the front sheet and result in touch malfunctions.

⊘ Do not use or store the product in environments with heavy vibrations.

❗ Be cautious to prevent water, liquids, metal dust, or other foreign substances from entering the product. This could cause damage or electrical shock.

⊘ Keep walkie-talkies or mobile phones at least 30 cm away from the main body.

⊘ It is normal for the LCD screen to display up to two bright spots or for certain areas to appear brighter. This is a characteristic of the LCD and not a defect.

⊘ Do not store or operate the product in direct sunlight. Direct sunlight may alter the properties of the LCD.

WARNING – DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED. or equivalent.

AVERTISSEMENT – NE PAS CONNECTER OU DÉCONNECTER LORSQUE L'ÉQUIPEMENT EST SOUS TENSION.

❗ Do not touch the adapter or power cord with wet hands. There is a risk of electric shock.

⊘ Do not charge or use the battery in explosive environments with flammable liquids, gases, or dust.

⊘ When storing the product for a long time without using the product, store it in a dry environment without direct sunlight. Record/store your data separately. When the product is repaired, the main contents of the device may be deleted.

■ Installation precautions ⚠ Caution

⊘ Do not install the product in locations where the temperature exceeds the allowable range, as this may cause damage to the unit or reduce its lifespan.

⊘ Do not install the product in the following environments:

- Locations where the ambient temperature is outside the range of -10 ~ 50°C
- Surfaces of control panels where high-voltage equipment is installed

⊘ Do not install the unit in areas subject to continuous strong shock or vibration.

❗ When the product will not be used for an extended period, charge it fully and store it at room temperature.

⊘ Use only indoors.

⊘ Use only at altitudes of 2,000 meters (6,561 feet) or lower.

■ Disposal precautions ⚠ Caution

When you dispose of product and battery, please treat it as industrial waste. It can create poisonous substances or explosion.

Chapter 2 Overview

2.1 Product introduction

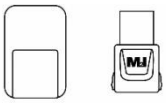
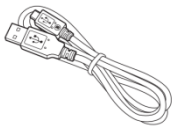
This industrial barcode scanner is designed as an industrial device to meet the demands of field environments. It features high durability and supports both wired and wireless communication, enabling connectivity with other devices such as PC and HMI.

The scanner is battery-powered and highly portable, making it suitable for use across various applications.

2.2 Components

The components of the product are as follows.

Before using the product, please check that all of the following components are included.

Components	Figure	Quantity
Main body (MSR-B2MWA/B)		1
RF wireless dongle (MSR-B2MWA-DONGLE)		1
Manual		1
Strap		1
USB cable (Charge & data (dual function))		1

2.3 Scan engine resolution

Model	Resolution
MSR-B2MWA	640 x 400
MSR-B2MWB	1280 x 960

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Chapter 3 General specifications

3.1 Power specifications

Input voltage		DC 5V	
Battery voltage range		DC 3.7V	
Internal battery pack	Cell type	Lithium-ion (1S1P)	
	Consumption	3W	
	Operating time	13 hours (*Low voltage warning)	
	Charging time	5.5 hours (*Full charge)	
	Charging capacity	1800mAh (Minimum)	1850mAh (Nominal)

* Operating time and charging time are based on 25 ℃ ambient temperature and may vary depending on the ambient temperature.

* The operating time may vary depending on the usage pattern.

3.2 Display and memory specifications

Type	1.3" OLED
Resolution(dot)	128 x 64
Internal Memory	512KB

3.3 Functional specifications

MSR-B2MWA	Sensor Resolution & Scan Type	640(H) x 400(V), 1D/2D barcode
	Data storage internal memory	32,768 code (*GTIN-08 / EAN-8) 24,966 code (*GTIN-13 / EAN-13) 23,831 code (*GTIN-14 / ITF-14)
	Light Source	Aiming 610nm LED, illumination 660nm LED
MSR-B2MWB	Sensor Resolution & Scan Type	1280(H) x 960(V), 1D/2D barcode
	Data storage internal memory	32,768 code (*GTIN-08 / EAN-8) 24,966 code (*GTIN-13 / EAN-13) 23,831 code (*GTIN-14 / ITF-14)
	Light Source	Aiming 655nm laser, Illumination 2X warm white LEDs
Alarm		Buzzer and LED light
LED indication		Power ON(Green), Charging(Red), Status indication
Action button		Power, Scan, Up, Down, Send, Erase

* The storage capacity may be subject to change by the manufacturer.

3.4 Antenna information

Model name	ANT3216LL00R2400A
Antenna type	Internal antenna
Manufacturer	YAGEO

3.5 Environment specifications

Operation temperature(℃)	Main body : -10 ~ +50 / RF wireless dongle : -10 ~ +50
Storage temperature(℃)	-20 ~ +60
Operation humidity(%RH)	0 ~ 90 (No dew)
Atmosphere	No corrosive gas

Vibration endurance	Amplitude: 10≤F < 25Hz(2G) X, Y, Z each direction (for 30 minutes)
Noise immunity	1000Vp-p (Pulse width 1㎲)
Electrostatic discharge	Connective discharge from EN61000-4-2: ±4kV
Shock endurance	10G X, Y, Z each direction (for 3 times)
BARCODE LED classification	Exempt risk group LED product per IEC/EN 62471
Protection classification	Product body IP67

3.6 Structure specifications

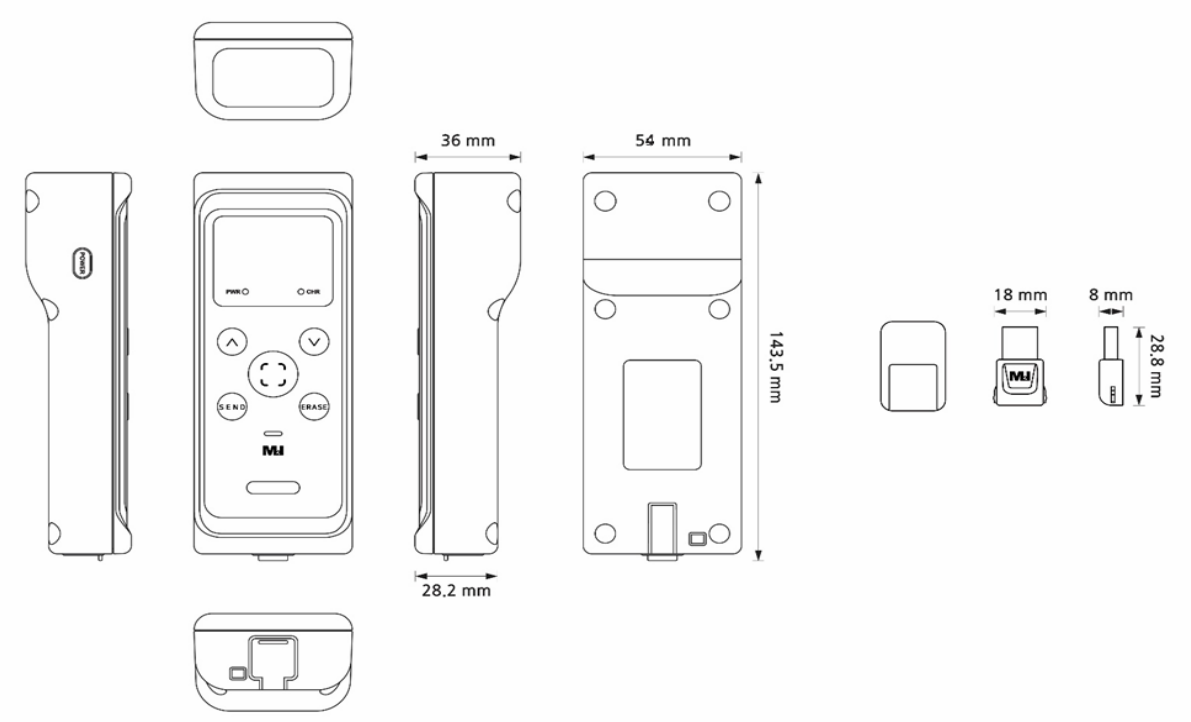
Model	MSR-B2MWA/B	MSR-B2MWA-DONGLE
Weight(g)	180	3
Cooling system	Natural air circulation	
Case material	PC(Flame Retardant) and urethane	

3.7 RF specification

Maximum output power: +1.71dBm e.i.r.p (MSR-B2MWB) / +1.69dBm e.i.r.p (MSR-B2MWA-DONGLE)
This device can be used in at least one EU member state without violating applicable requirements regarding radio frequency usage.

Chapter 4 Parts identification and functions

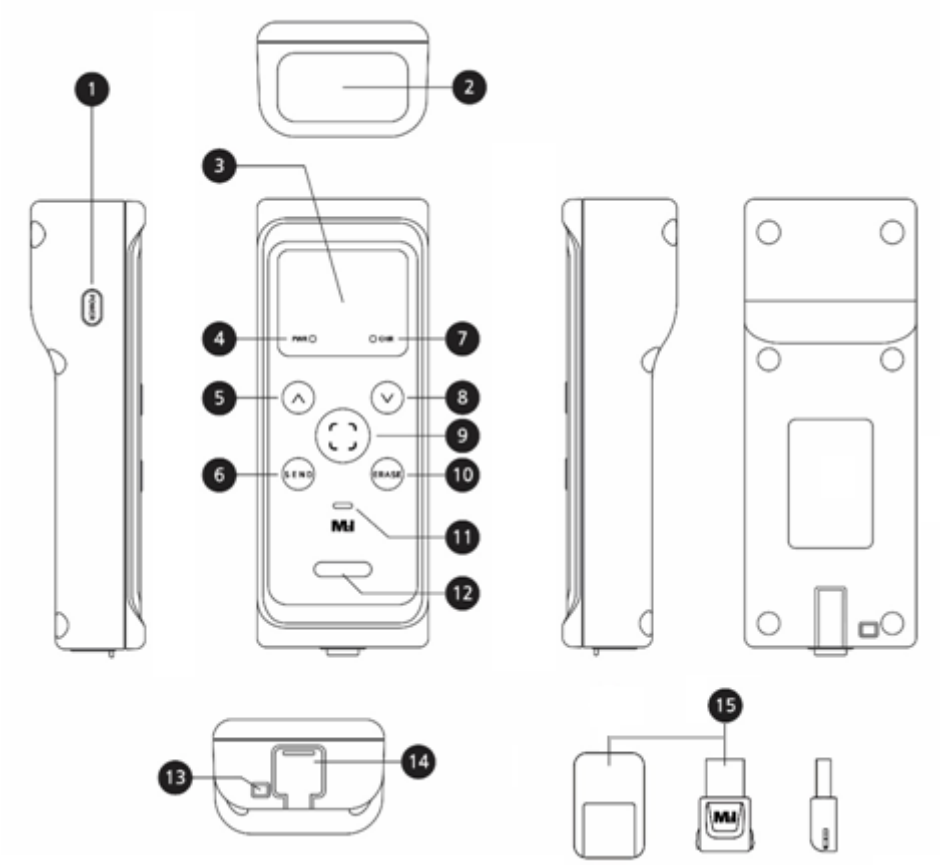
4.1 MSR-B2MWA/B and MSR-B2MWA-DONGLE



(㎜)

Model	W	D	H
MSR-B2MWA/B	54	143.5	36 / 28.2
MSR-B2MWA-DONGLE	18	28.8	8

4.2 Part Names and Specifications

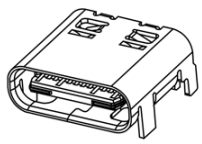


No.	Name	Description
①	Power switch	Power ON, OFF switch
②	Scanner window and IrDA	Barcode scanner window and IrDA
③	OLED	1.3" OLED display
④	Power LED	Display the system power state
⑤	UP switch	UP switch
⑥	SEND switch	SEND switch
⑦	Charge status Indicator	Red: Charging, OFF: Charged
⑧	DOWN switch	DOWN switch
⑨	SCAN switch	SCAN switch
⑩	ERASE switch	ERASE switch
⑪	Buzzer hole	Buzzer sound
⑫	Status indicator	Green: Scan success, Yellow: Data transfer and deletion
⑬	Strap fixing hole	Strap attached hole
⑭	Rear cover	USB connector cover
⑮	USB dongle	RF wireless communication USB dongle and case * Model name: MSR-B2MWA-DONGLE

Chapter 5 Interface

To enable communication between this product and external devices, please refer to the following to connect the two devices.

5.1 USB

Type	Items	Specifications
	USB interface	EHCI/OHCI specification version 1.0, USB 1.1 compatible
	Communication method	Control/bulk
	Transfer speed	Max. 12Mb/s
	Connector type	Type C

5.2 RF Wireless communication

(* Requires dedicated wireless dongle, * Model Name: MSR-B2MWA-DONGLE)

Type	Items	Specifications
	RF iInterface	IEEE 802.15.4
	Transfer speed	Maximum 2Mb/s
	Frequency range	2404.6 ~ 2479.6MHz
	Supporting OS	Windows 98SE/2000/XP/VISTA/7/10 (32/64bit)
	Connect	Wireless dongle

5.3 IrDA

Type	Items	Specifications
	Connection distance	1M (May vary depending on the operating environment)
	Transfer Speed	115.2kbit/s
	Peak wavelength	900nm
	Connection device	Dedicated communication port for our IrDA-integrated HMI

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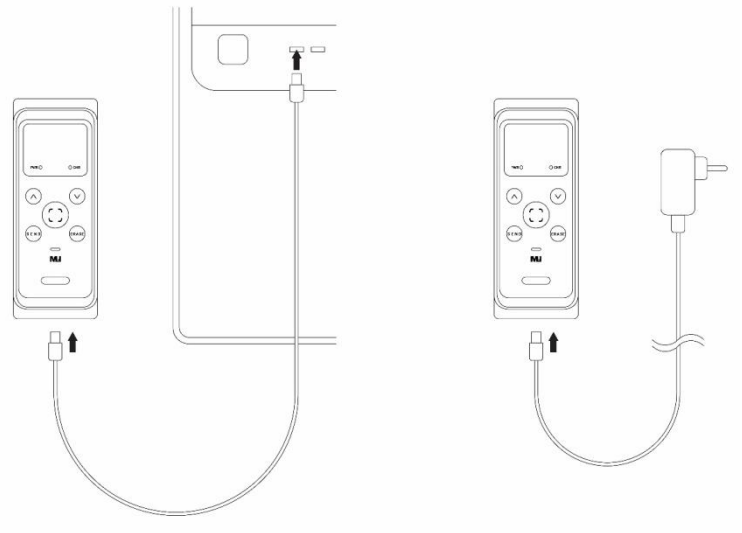
Chapter 6 Installation ⚠Warning

6.1 Specifying install location

(1) A location where the operation of the main unit is guaranteed
(2) A location where the main unit can be easily connected to and disconnected from the charging cable
(3) A location with a clear, unobstructed line of sight between the Device body and the dongle
(4) A location protected from direct sunlight

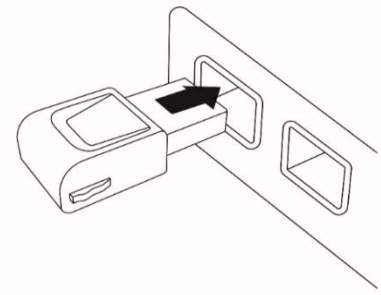
6.2 Battery charging

Connect the USB-C cable (USB-C Type) to the bottom port of the terminal.



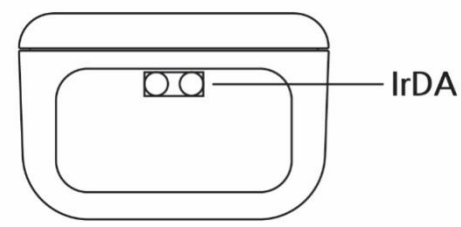
6.3 Dongle installation

A separate wireless dongle is provided for RF wireless communication between the main unit and the device. There is no need to install a separate driver using the Windows built-in driver.



6.4 Infrared communication (IrDA)

This device is used for infrared communication with our HMI products equipped with built-in IrDA



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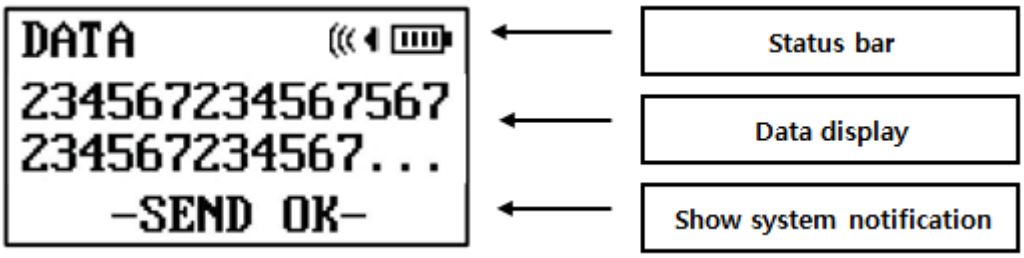
Chapter 7 Device operating and settings.

7.1 Base screen



The status bar provides the device's mode, communication mode, and battery status.

Icon	Description
SCAN	The data is displayed on the screen when the device successfully reads a data code.
DATA	Displayed when managing internal memory data.
	Indicates that the device is connected in IrDA communication mode.
	Indicates that the device is connected in USB communication mode.
	Indicates that the device is connected in RF communication mode.
	Indicates the remaining internal battery level. If the battery level is low, a low voltage warning message will be displayed and the device will automatically power off.

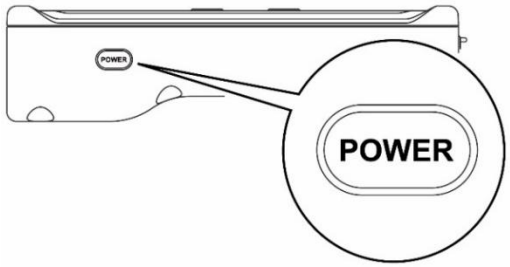
The system notification area displays alerts related to device management and control.

Notification	Description
READY	Indicates that the device is operating normally.
SCAN OK	Indicates that the data code has been successfully read.
SEND?	Confirms whether to send the selected data. Press again to proceed with the transmission.
SEND ALL?	Confirms whether to send all data stored on the device. Press again to proceed with the transmission.
SEND OK	Indicates that the data stored on the device has been successfully transmitted.
ERASED?	Confirms whether to delete the selected data. Press again to delete.
ERASED ALL?	Confirms whether to delete all data stored on the device. Press again to delete.
EMPTY	Indicates that no data is currently stored on the device.
TOTAL [ ]	Shows the total number of data entries currently stored in internal memory.

7.2 Learn the basic operations

7.2.1 Power On and Off

Press the "POWER" button located on the side of the device to turn it on. Press the button again to turn it off. To optimize battery usage, the device will automatically power off after 10 minutes of inactivity.



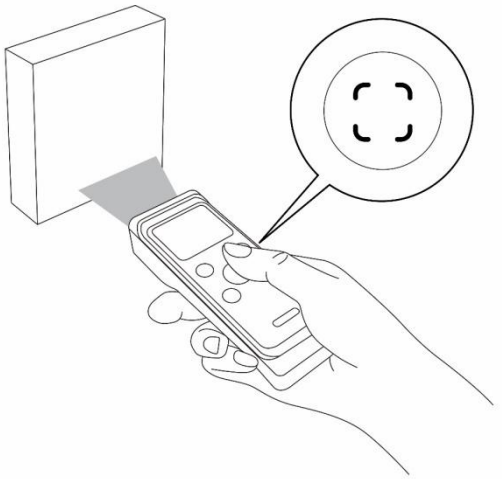
7.2.2 Barcode scanning

Press the "SCAN" button to activate scan mode.

If a barcode is successfully read, a buzzer will sound, scan mode will automatically end, and the scanned data will be displayed on the screen. Scan mode remains active while the button is being pressed.

When the device is connected in communication mode, the scanned data is transmitted in real time and stored in internal memory. If the device is not connected, the data will be stored in internal memory only.

Data	Communication mode connected	Communication mode disconnected
Internal memory	Save	Save
Online data transfer	Enable	Disable



If the scan is successful, the save number and the scanned data code are displayed, along with the message "Scan OK."

Do not point the scanner window at people or animals when scanning barcodes. Doing so may cause retinal damage or reduced vision.

The minimum resolution and optimum distance for scanning are as follows. **Caution**

(1) MSR-B2MWA

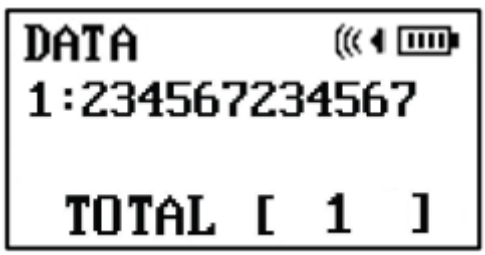
Symbol type	Resolution	Minimum distance	Maximum distance
Code 39	0.127 mm	5.1 cm	16.2 cm
Code 39	0.508 mm	5.0 cm	49.5 cm
Code 128	0.127 mm	6.3 cm	12.7 cm
PDF417	0.167 mm	6.3 cm	16.0 cm
PDF417	0.254 mm	4.5 cm	22.8 cm
100% UPC	0.330 mm	5.0 cm	31.7 cm
Data Matrix	0.508 mm	3.8 cm	34.3 cm
QR Code	0.508 mm	3.8 cm	27.9 cm

(2) MSR-B2MWB

Symbol Type	Resolution	Minimum Distance	Maximum Distance
Code 39	0.076 mm	7.1 cm	15.24 cm
Code 39	0.508 mm	4.1 cm	92.2 cm
Code 128	0.127 mm	5.8 cm	22.1 cm
Code 128	0.381 mm	6.1 cm	64.0 cm
PDF417	0.127 mm	7.6 cm	20.6 cm
PDF417	0.169 mm	5.6 cm	26.9 cm
100% UPC	-	4.1 cm	58.4 cm
Data Matrix	0.254 mm	6.1 cm	26.9 cm
QR Code	0.254 mm	2.5 cm	12.7 cm

7.2.3 Checking stored data

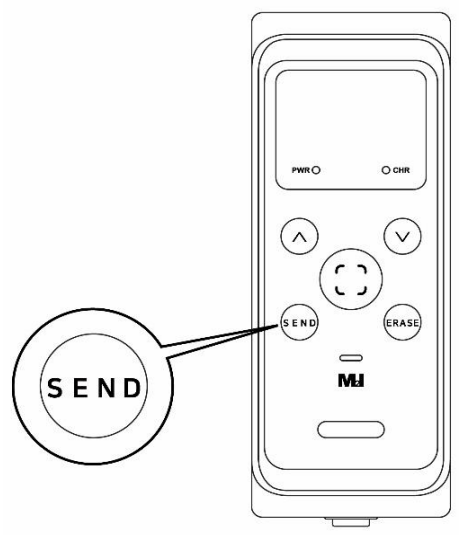
Press the "UP", "DOWN" button to check the stored data. At this time, the total number of stored entries, the storage order, and the data content are displayed together.



7.2.4 Transmitting data

Press the "SEND" button to immediately send data to the connected device.

1) You can use the "UP" and "DOWN" buttons to select and transmit data stored in the internal memory.
2) When the "SEND" button is pressed, a confirmation window displaying "SEND?" will appear. Press the button again to proceed.
3) To transmit all data stored in internal memory at once, press and hold the "SEND" button for more than 3 seconds.
4) If a communication failure occurs during transmission, only the data successfully transmitted before the failure will be sent.



"Send OK" is displayed when the data is successfully transmitted.

The device supports data transmission in three communication modes.
The connection priority is as follows and cannot be changed manually.

1st: Infrared Communication (IrDA)

2nd: USB cable communication

3rd: RF wireless communication (with dongle)

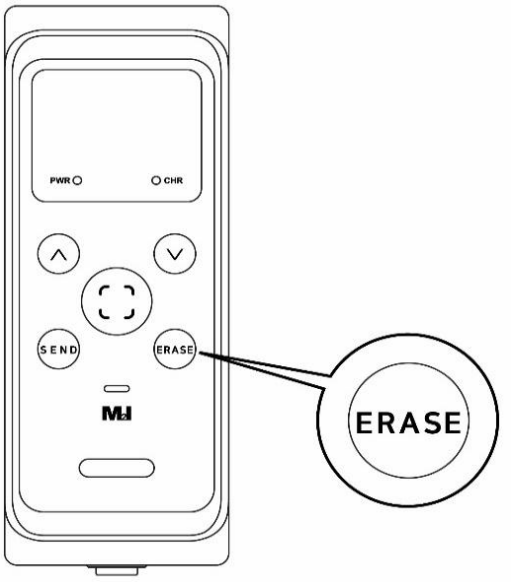
7.2.5 Deleting data

You can delete the saved data by pressing the "ERASE" button.

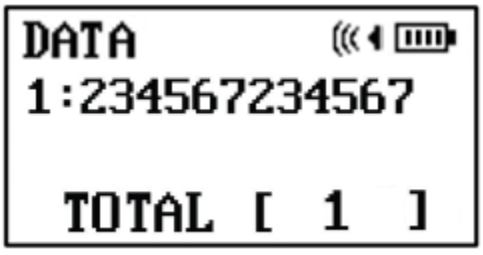
1) You can select and delete the data saved internally with "UP" and "DOWN" button.

2) When pressed, "ERASE?" A confirmation window will appear. Press again to delete.

3) To delete the saved data at once, press the "ERASE" button for 3 seconds or longer, press the "ERASE?" Press again to confirm.



The total number of remaining data entries is displayed when deleting data.



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7.3 Operation Setting Barcode

7.3.1 Default Settings

If barcode scanning is not performed correctly, scan the following code to resolve the issue.

7.3.2 IrDA Communication Settings

(1) Barcode for IrDA communication setup with our HMI or MWD-BTR100-Ex (IrDA receiver) product

(2) Barcode for IrDA communication setup with third-party (INVENSYS IrDA Receiver) products

7.3.3 Scan Key Input Option

(1) Add ENTER Key: To add an ENTER key after scanned data, scan the barcode below.

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(2) Adding TAB Key: To add a TAB key after scanned data, scan the barcode below.

7.3.4 Data Management

(1) Data Mode 1

1) Storage is possible up to the remaining capacity of the internal memory.

2) Data stored in internal memory is retained after rebooting.

3) The last scanned data is repeatedly transmitted. (Data can be changed using the Up/Down buttons.)

(2) Data Mode 2

1) Scanned barcode data can be stored up to 20 entries.

2) Saved barcode data will be initialized after rebooting the product.

3) Data is transmitted in the order it is scanned. (Transmitted data is automatically deleted.)

Chapter 8 Maintenance ⚠Warning

8.1 Cleaning the display

When the surface or frame of the display become dirty, spray the cleaning solution onto a soft cloth and wipe the device. Do not spray the cleaning solution directly onto the device.

8.2 Periodic check points

Check the followings periodically for best condition of the device.

(1) Environment
1) Is the operating temperature within the allowable range?
2) Is the operating humidity within the allowable range?
3) Is the Surrounding pollution no corrosive gas?

(2) Power
1) Is the input voltage within the change range?
2) Check the front power switch surface for damage, scratches, and contamination.

(3) Related items
1) Check the touch pad there is no damage, scratch or pollution by eye.
2) Check the guarantee duration of LCD Backlight by eye.

8.3 When a problem occurs with your device ⚠Warning

(1) If a problem occurs during operation, stop using the device immediately and contact M2I Corporation for support.
(2) Troubleshooting and repair related to device malfunction must be performed only by personnel authorized by M2I Corporation.
(3) If the issue cannot be resolved on-site, the device may need to be sent to M2I Corporation for repair.
(4) M2I Corporation is not responsible for any damage or malfunction caused by using the device under conditions that deviate from the installation and usage guidelines stated in this manual.
(5) The internal battery performance may degrade over time with accumulated usage, resulting in shorter operation duration. If the operating time becomes significantly short, please contact M2I Corporation.
(6) Pressing both the "UP" and "DOWN" keys while powering on the device will activate the manufacturer's service mode. In this mode, the screen will not display anything. This is normal behavior. To return to normal operation, simply turn the power off and on again.

8.4 Self diagnosis

The device performs a self-diagnosis during boot-up to check its system status.

(1) If there is a problem with RF wireless communication, the buzzer will sound three times and the message "Wireless Fail" will be displayed. In this case, data transmission via IrDA or USB cable will still function normally.
(2) If there is an issue with internal memory, the buzzer will sound three times and the message "Memory Fail"

will be displayed. Even if SCAN is performed after this, data cannot be saved. Please contact M2I Corporation.
(3) If a display error occurs, the buzzer will sound three times. For accurate diagnosis and resolution, please contact M2I Corporation.

Chapter 9 Products label

9.1. MSR-B2MWA/B

M2I Corporation
Man·Machine·Interface

Manufacture(AS): M2I Corporation
11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea
Tel: 82-31-465-3366

Device type: Industrial barcode reader
Model name: MSR-B2MWA or MSR-B2MWB
Operating temperature: -10℃ ≤ Ta ≤ +50℃
Power specification: 3.7Vdc, 3W, Lithium-ion battery
KC certification number:
Product number:

9.2 MSR-B2MWA-DONGLE

M2I Corporation
Man·Machine·Interface

Manufacture(AS): M2I Corporation
11-35, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do 14055, Korea
Tel: 82-31-465-3366

Device type: Industrial barcode reader
Model name: MSR-B2MWA-DONGLE
Operating temperature: -10℃ ≤ Ta ≤ +50℃
Power specification: 5Vdc, 1W
KC certification number:
Product number:

- When using M2I equipment, thoroughly read this datasheet and associated manuals introduced in this datasheet, also pay careful attention to safety and handle the module properly.
- Store this datasheet in a safe place so that you can take it out read it whenever necessary.