UHF RFID System

Reader/Writer Model V780-HMD68-EIP-□□

Startup Guide

Thank you for selecting an OMRON product.
This Guide describes the steps that are required from installation of the Reader/Writer through operation.
Use it for confirmation when you want to start to use the Reader/Writer.
If anything related to the Reader/Writer is not clear, refer to the Instruction Sheet or User's Manual.

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⚠ Always read the *Terms and Conditions Agreement* and *Precautions for Correct Use* in the User's Manual before you attempt to use the Reader/Writer.

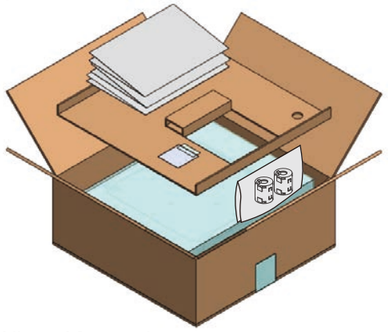
● Meanings of Symbols

Indicates references to more detailed information in this document.

Indicates reference sections to the *V780-series Reader/Writer User's Manual* (Cat. No. Z402-E1).

Introduction

Confirm that you received all of the accessories.



● **Reader/Writer and Accessories**

Name	Qty
Reader/Writer	1
Instruction Sheet	1
Startup Guide (this document)	1
IP address label	1
Ferrite core *1	2
EU DECLARATION OF CONFORMITY *2	1

*1. A ferrite core is packaged with Model V780-HMD68-EIP-EU/-IN/-RU.
*2. A EU DECLARATION OF CONFORMITY is packaged with Model V780-HMD68-EIP-EU.

Operational Flow from Installation through Operation

Preparations

Install the system. — Install the Reader/Writer and RF Tags. STEP 1

Connect the system. — Wire the Reader/Writer to the peripheral devices. STEP 2

Preparations for Communications

Set up communications. — Set the communications conditions in the Reader/Writer. STEP 3

Trail Operation

Test the Reader/Writer. — Confirm that the host device and Reader/Writer are connected correctly and check communications with the RF Tags. STEP 4

Onsite Confirmations

Check the ambient environment. — Check the ambient environment of the Reader/Writer on your site. STEP 5

Test RF Tag communications. — Test communications with RF Tags on your site. STEP 6

STEP 1 Installing the System

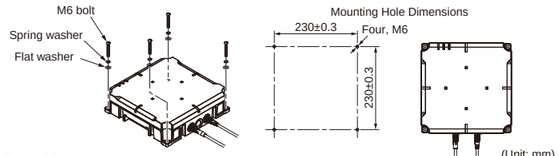
4-1

1 Reader/Writer (V780-HMD68-EIP-□□)

4-1-1

● **Front Mounting**

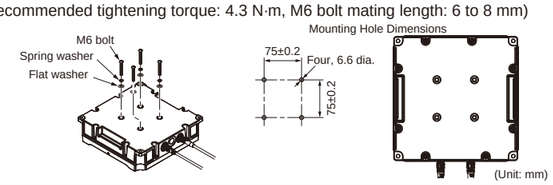
Install the Reader/Writer with four M6 bolts. Use both spring washers and flat washers (Recommended tightening torque: 4.3 N·m, M6 bolt mating length: 6 mm min.)



(Unit: mm)

● **Rear Mounting**

Install the Reader/Writer with four M6 bolts. Use both spring washers and flat washers (Recommended tightening torque: 4.3 N·m, M6 bolt mating length: 6 to 8 mm)



(Unit: mm)

2 RF Tags (V780-A-JIME-Z3BLI-10*1)

4-1-2

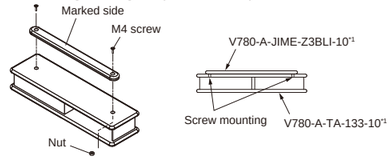
● **Mounting on Non-metallic Material**

1. Use two, M4 screws to mount the RF Tags from the marked side.
   The V780-A-TA-133-10*1 Attachment is not necessary. (Recommended tightening torque: 1.2 N·m, M4 screw mating length: 4 mm min.)

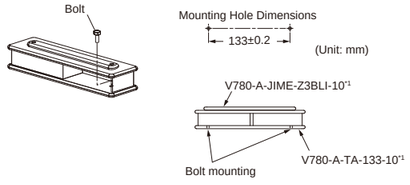
(Unit: mm)

● **Mounting on Metallic Material (RF Tag and Attachment)**

1. Mount the RF Tag in the Attachment.
   Use two M4 screws and tighten the nuts from the marked side of the RF Tag. (Recommended tightening torque: 1.2 N·m)



2. Mount the Attachment to which the RF Tag is mounted to the metallic material. Mount it with two M4 bolts.
   (Recommended tightening torque: 1.2 N·m, M6 bolt mating length: 4 mm min.)



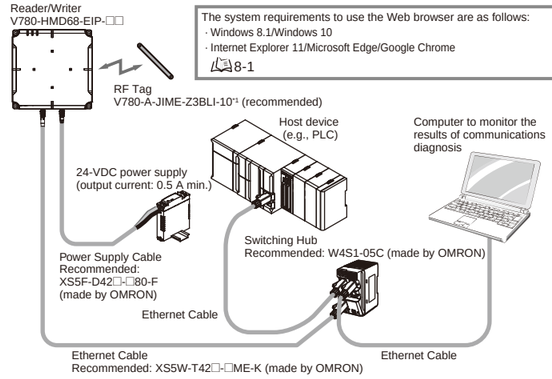
(Unit: mm)

*1. This is the model number for one package of 10 RF Tags.
Order the number of packages that you require.

STEP 2 Connecting the System

4-2

1. Connect the Reader/Writer to a 24-VDC power supply and switching hub.



The system requirements to use the Web browser are as follows:
· Windows 8.1/Windows 10
· Internet Explorer 11/Microsoft Edge/Google Chrome
8-1

*1. This is the model number for one package of 10 RF Tags.
Order the number of packages that you require.

● **Pin Assignments and Wire Colors of Recommended Power Supply Cable (XS5F-D42□-□80-F)**

Pin No.	Name	Wire color	Description
1	24P	Brown	+24V
2	CONT	White	Control signal (operating mode signal) Run Mode: Connect to +24 V and then start the Reader/Writer. Safe Mode: Connect to 0 V and then start the Reader/Writer.
3	24N	Blue	0V
4	-	Black	Not used.

2. Turn ON the power supplies to the peripheral devices.

STEP 3 Setting Up Communications

1 Set the IP address on the computer.

5-2-1

Set the IP address on the computer, but do not use the default IP address of the Reader/Writer given in the following table.
This example changes the last part of the IP address to a value other than 200 (i.e., to 1 to 199 or 201 to 254). Values of 0 and 255 cannot be used.

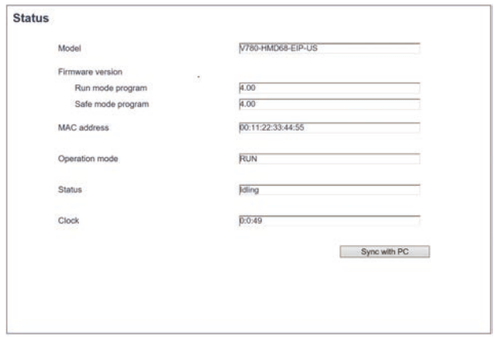
● **Default IP Address Settings of the Reader/Writer**

Setting item	Default setting
IP address	192.168.1.200 (fixed setting)
Subnet mask	255.255.255.0 (fixed setting)
Default gateway	192.168.1.254 (fixed setting)

2 Set the IP address of the Reader/Writer.

5-2-2

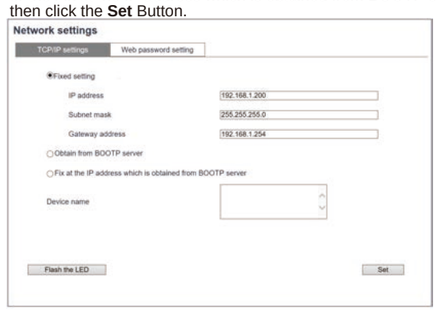
1. Start the Web browser.
   Enter the IP address of the Reader/Writer in the address field of the Web browser to display the Browser Operation Window.
   Enter http://192.168.1.200 if you are using the default URL.



2. Set the IP address of the Reader/Writer.
   Click the **Network settings** Button on the left of the Web Browser Operation Window and select one of the following settings.

● **Setting a Fixed IP Address**
On the Network Settings View, select the *Fixed setting* Option, enter the IP address, subnet mask, and gateway address, and then click the **Set** Button.

● **Getting an IP Address from a BOOTP Server**
On the Network Settings View, select the *Obtain from BOOTP server* Option or the *Fix at the IP address which is obtained from BOOTP server* Option, and then click the **Set** Button.



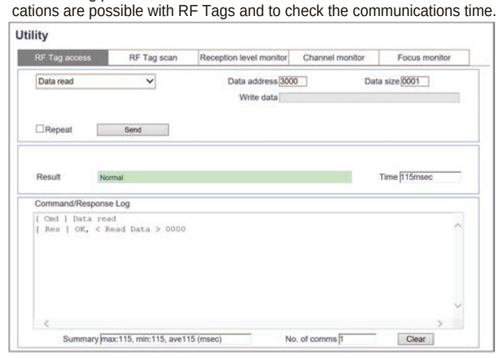
3. Paste the IP address memo label.
Write the set IP address on the IP address memo label and paste it on the target reader/writer.

STEP 4 Testing the Reader/Writer

1 RF Tag Access

5-9-1

The following procedure uses communications commands to confirm that communications are possible with RF Tags and to check the communications time.
1. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **RF Tag access** Tab.
2. Select a command from the **RF communication command** List, and then enter the address, data size, and write data.
3. Click the **Send** Button.
4. The following procedure uses communications commands to confirm that communications are possible with RF Tags and to check the communications time.

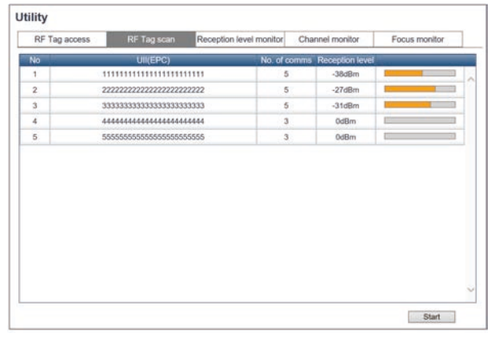


2 RF Tag Scanning

5-9-2

Use the following procedure to see if there is an RF Tag in the communications field of the Reader/Writer.
1. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **RF Tag scan** Tab.
2. Click the **Start** Button at the bottom right of the window.
3. The UII(EPC codes), numbers of communications, and reception levels will be displayed in order as RF Tags are detected.

* Remove any RF Tags you do not want to communicate with from the communications field.



STEP 5 Checking the Ambient Environment

Before you perform the communications tests given below, first confirm that there are no problems with the ambient environment of the Reader/Writer.

1. Channel Monitor
Use this function if you think communications might be adversely affected by ambient noise.

2. Transmission Power Tuning
Use this function if RF Tags that should not be read are being read.

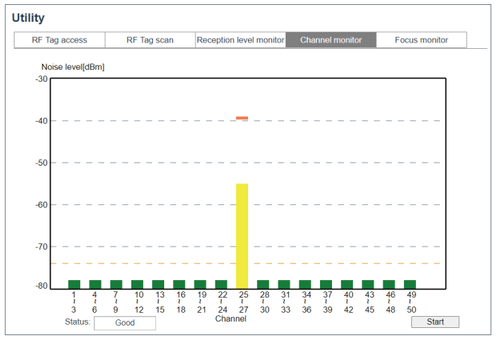
3. Reception Level Monitor
Use this function to adjust the installation or measure the communications field.

1 Channel Monitor

6-9-4

Use the following procedure to have the Reader/Writer measure the noise level to check the interference level in the ambient environment.

1. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **Channel monitor** Tab.
2. Click the **Start** Button.
3. The noise level will be measured for each channel and updated on the display in realtime.



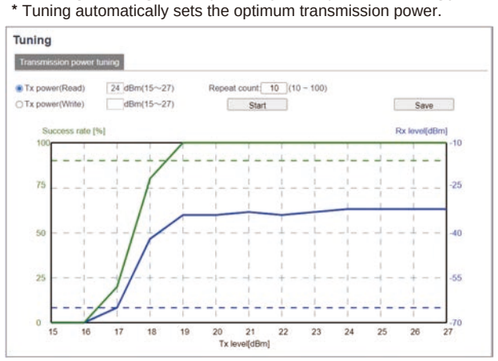
2 Transmission Power Tuning

6-8-1

You can use the following procedure to set the transmission power for communications between the Reader/Writer and RF Tags. You can use this to prevent communicating with RF Tags you do not want to communicate with or to suppress interference with other Reader/Writers.

1. Install the Reader/Writer and RF Tags onsite.
2. Click the **Tuning** Button on the left of the Web Browser Operation Window. The **Transmission power tuning** View will be displayed.
3. Select the *Tx power (Read)* Option or *Tx power (Write)* Option, and then click the **Start** Button.
   * The optimum transmission power is different for reading and writing. Select reading or writing correctly and adjust the power accordingly.

* Tuning automatically sets the optimum transmission power.



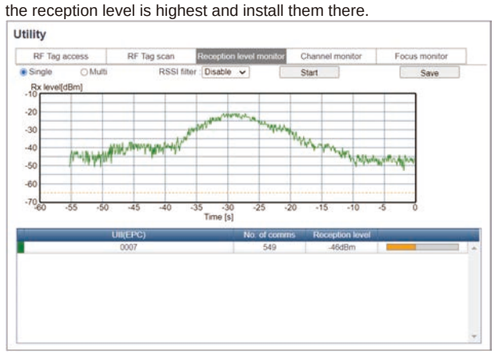
3 Reception Level Monitor

6-9-3

You can use the following procedures to display the reception level from one or more RF Tags against time. You can use these procedures for installation adjustments or to measure the communications field to ensure stable communications.

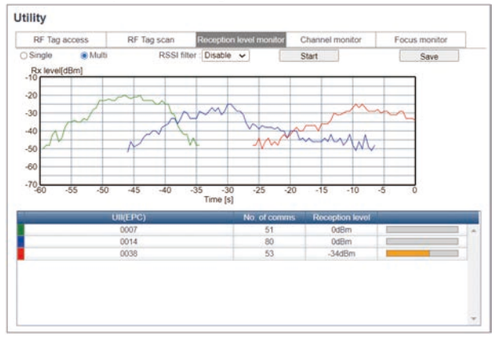
● Reading One RF Tag

1. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **Reception Level monitor** Tab.
2. Select *the Single* Option, and then click the **Start** Button.
3. Move the installation locations of the Reader/Writer and RF Tag to find where the reception level is highest and install them there.



● Reading Multiple RF Tags

1. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **Reception Level monitor** Tab.
2. Select *the Multi* Option, and then click the **Start** Button.
3. Move the installation locations of the Reader/Writer and RF Tags to find where the reception level is highest and install them there.



STEP 6 Testing RF Tag Communications

You can use the communications tests to install the Reader/Writer and RF Tags in your application environment to check the communications environment. To ensure the optimum installation environment, use the maintenance utilities given below to check for any problems before you start actual operation.

1. Communications Diagnostics
Use this function if communications with the RF Tags are not stable.
→ Warning/Error → STEP 6

Normal ↓

2. Focus Monitor
Use this function if you are reading moving RF Tags and are either reading the wrong RF Tags or some RF Tags are not being read.
→ Warning/Error → STEP 7.1 Communications Diagnostics

Normal ↓

Operation

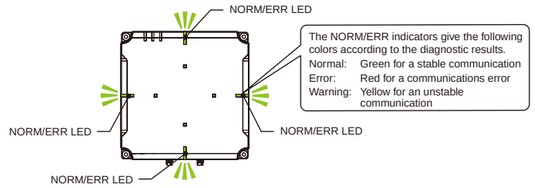
* If a warning or error occurs during operation, click the **Log View** Button on the left side of the Web Browser, check the contents of the error log, and use communications diagnostics to correct the cause of the problem.

1 Communications Diagnostics

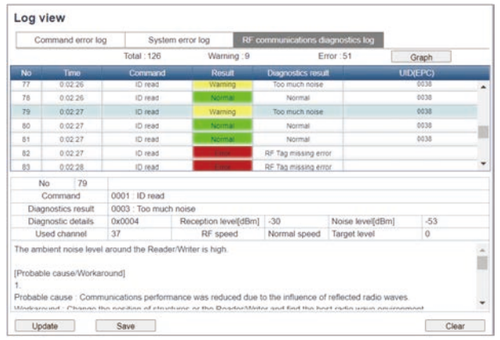
6-7-3

Use the following procedure to diagnose how much leeway there is in communications between the Reader/Writer and RF Tags and display the results on the NORM/ERR operation indicators.

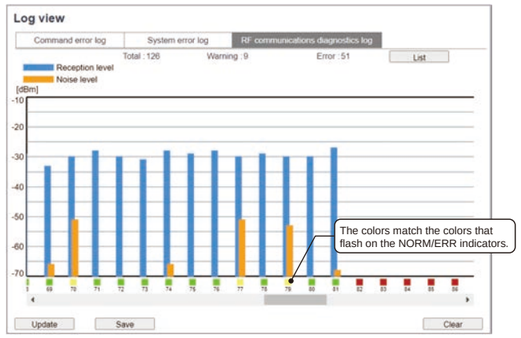
1. Click the **RF Communication settings** Button on the left of the Web Browser Operation Window, enable communications diagnostics, and then click the **Set** Button.
2. Perform STEP 4.1 RF Tag Access.
3. Click the **Log View** Button on the left of the Web Browser Operation Window, and then click the **Reception Level monitor** Tab.
   A diagnostics log for communications with the tags you performed above will be displayed.
4. If **Warning** is displayed in the communications results, click the applicable location and change the Reader/Writer settings or installation environment according to the information given under Probable cause/Workaround.



● Diagnostic Information Table



● Diagnostic Information Graph



2 Focus Monitor

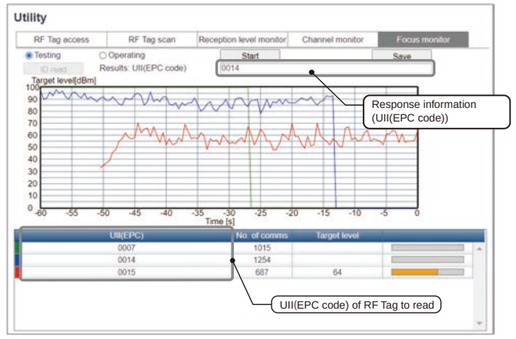
6-9-5

Use the following function to differentially communicate with the RF Tag that is just in front of the Reader/Writer. This enables stable communications with the target RF Tag.

● Testing

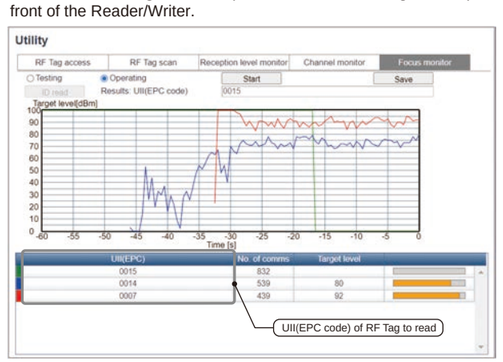
1. Click the **RF Communication settings** Button on the left of the Web Browser Operation Window, set the communications mode to **Focus**, and then click the **Set** Button.
2. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **Focus monitor** Tab.
3. Select the *Testing* Option and click the **Start** Button. The target level will be displayed.
4. Test operation for the onsite environment will be performed. Click the **ID read** Button when the RF Tag that you want to read passes in front of the Reader/Writer.
5. Confirm that the response information (i.e., the UII (EPC code)) displayed in the communications results matches the UII (EPC code) of the RF Tag that you wanted to read.

* Target level : This is an index for differentiating the RF Tag that is positioned in front of the Reader/Writer. Select an RF Tag with a high target level as the target for communications.



● During Operation

1. Click the **Utility** Button on the left of the Web Browser Operation Window, and then click the **Focus monitor** Tab.
2. Select the *Operating* Option and click the **Start** Button. The target level will be displayed.
3. Confirm that the target level drops to 0 when the RF Tag to read passed in front of the Reader/Writer.



For details on the Terms and Conditions Agreement, refer to the user's manual.

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