Rockwell Automation
ControlLogix 1756-L71
EtherNet/IP Connection Guide

OMRON Corporation
RFID System V680S
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1. Related Manuals

The table below lists the manuals related to this document. To ensure system safety, make sure to always read and heed the information provided in all Safety Precautions, Precautions for Safe Use, and Precaution for Correct Use of manuals for each device which is used in the system.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Model</th>
<th>Manual name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1756-RM003R-EN-P</td>
<td>Logix5000</td>
<td>Logix5000 Controllers General Instructions Reference Manual</td>
</tr>
<tr>
<td>ENET-UM001O-EN-P</td>
<td>-</td>
<td>EtherNet/IP Network Configuration User Manual</td>
</tr>
</tbody>
</table>
2. Remarks

(1) Understand the specifications of devices which are used in the system. Allow some margin for ratings and performance. Provide safety measures, such as installing safety circuit in order to ensure safety and minimize risks of abnormal occurrence.

(2) To ensure system safety, always read and heed the information provided in all Safety Precautions, Precautions for Safe Use, and Precaution for Correct Use of manuals for each device used in the system.

(3) The users are encouraged to confirm the standards and regulations that the system must conform to.

(4) It is prohibited to copy, to reproduce, and to distribute a part of or whole part of this document without the permission of OMRON Corporation.

(5) This document provides the latest information as of November 2016. The information in this manual is subject to change for improvement without notice.
The following notation is used in this document.

**WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

**Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

---

**Precautions for Safe Use**
Indicates precautions on what to do and what not to do to ensure using the product safely.

---

**Precautions for Correct Use**
Indicates precautions on what to do and what not to do to ensure proper operation and performance.

---

**Additional Information**
Provides useful information.
Additional information to increase understanding or make operation easier.

---

**Symbols**

- The circle and slash symbol indicates operations that you must not do. The specific operation is shown in the circle and explained in text. This example indicates prohibiting disassembly.

- The triangle symbol indicates precautions (including warnings). The specific operation is shown in the triangle and explained in text. This example indicates a precaution for electric shock.

- The triangle symbol indicates precautions (including warnings). The specific operation is shown in the triangle and explained in text. This example indicates a general precaution.

- The filled circle symbol indicates operations that you must do. The specific operation is shown in the circle and explained in text. This example shows a general precaution for something that you must do.
3. Overview

This document describes the procedure for connecting the RFID System of OMRON Corporation (hereinafter referred to as OMRON) to the ControlLogix PLC of Rockwell Automation (hereinafter referred to as Controller) on EtherNet/IP and provides the procedure for checking their connection.
4. Applicable Devices and Support Software

### 4.1. Applicable Devices

The following devices can be connected.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Name</th>
<th>Model</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMRON</td>
<td>RFID System</td>
<td>V680S-HMD-64-EIP</td>
<td>Versions listed in Section 4.2 or higher versions</td>
</tr>
<tr>
<td>OMRON</td>
<td>Power Supply</td>
<td>S8VK</td>
<td></td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>ControlLogix5571 Controller</td>
<td>1756-L71</td>
<td></td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>4-Slot ControlLogix Chassis</td>
<td>1756-A4</td>
<td></td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>Ethernet Bridge</td>
<td>1756-ENBT/A</td>
<td></td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>Power Supply</td>
<td>1756-PA72/B</td>
<td></td>
</tr>
</tbody>
</table>

#### Additional Information

As applicable devices above, the devices listed in Section 4.2. are actually used in this document to check the connection. When using devices not listed in Section 4.2, check the connection by referring to the procedure in this document.

#### Additional Information

This document explains the connection procedure to establish the communications between the devices. It does not explain the method of operation, installation, or wiring of individual device.

For details on the above products (other than communication connection procedures), refer to the manuals for the corresponding products or contact your OMRON representative.

#### Precautions for Correct Use

You can connect devices with the versions listed in Section 4.2 or higher versions.

For devices whose versions are not listed in Section 4.2, versions are not managed or there is no version restriction.

To connect a device whose model number is not listed in Section 4.2, use the same version of the device that is listed.
### 4.2. Device Configuration

The hardware components to reproduce the connection procedure of this document are as follows:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Name</th>
<th>Model</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMRON</td>
<td>Switching Hub</td>
<td>W4S1-05C</td>
<td>-</td>
</tr>
<tr>
<td>OMRON</td>
<td>RFID System</td>
<td>V680S-HMD-64-EIP</td>
<td>3.0</td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>Power Supply Unit</td>
<td>1756-PA72/B</td>
<td>E01</td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>RSLogix 5000 Full Edition</td>
<td>-</td>
<td>20.01.00</td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>ControlLogix5571 Controller</td>
<td>1756-L71</td>
<td>20.12</td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>4-Slot ControlLogix Chassis</td>
<td>1756-A4</td>
<td>-</td>
</tr>
<tr>
<td>Rockwell Automation</td>
<td>Ethernet Bridge</td>
<td>1756-ENBT/A</td>
<td>3.9</td>
</tr>
<tr>
<td>-</td>
<td>Personal computer (OS:WindowsXP)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
5. Connection Procedure

This section describes how to connect the Controller on the EtherNet/IP network using ETHERNET-MODULE Generic Ethernet Module with the RFID System.

5.1. EtherNet/IP Communications Settings

The Controller settings are shown below.

<table>
<thead>
<tr>
<th></th>
<th>Controller / Ethernet Bridge</th>
<th>RFID System</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP address</td>
<td>192.168.1.1</td>
<td>192.168.1.200</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>255.255.255.0</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>
5.2. **Work Flow**

Take the following steps to make the tag data link connection settings for EtherNet/IP.

<table>
<thead>
<tr>
<th>5.3 Setting up the RFID System</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3.1 Parameter Setting</td>
</tr>
</tbody>
</table>

- Set up the RFID System.
- Set the parameters of the RFID System.

<table>
<thead>
<tr>
<th>5.4 Setting up the Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4.1 Starting the RSLogix5000 and Configuring the Controller</td>
</tr>
</tbody>
</table>

- Set up the Controller.
- Start the RSLogix Software, and configure the controller.

<table>
<thead>
<tr>
<th>5.5 Setting up the Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5.1 Configure RFID within the Network</td>
</tr>
<tr>
<td>5.5.2 Going Online and Transferring Tag Data Link Parameters</td>
</tr>
</tbody>
</table>

- Set the tag data links for the EtherNet/IP.
- Configure RFID to communicate over the network.
- Going Online and Transferring Tag Data Link Parameters to the Controller.

<table>
<thead>
<tr>
<th>5.6 Checking the EtherNet/IP Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.6.1 Checking the Connection Status</td>
</tr>
<tr>
<td>5.6.2 Checking Data that are Sent and Received</td>
</tr>
</tbody>
</table>

- Confirm that the EtherNet/IP communications are performed normally.
- Check the connection status of EtherNet/IP.
- Confirm that the correct data are sent and received.
5.3. Setting up the RFID System

Set up the RFID System.

5.3.1. Parameter Setting

Set the parameters of the RFID System.

Additional Information

For details on the RFID System setup and operation refer to the RFID V680S Series User’s Manual (Cat. No. Z353).

1 Connect the RFID System over Ethernet to the controls system and PC.

To configure the RFID System, use a web browser, and then enter the IP address of the RFID System.

(In this example, the default IP address is used).

Any changes to the RFID System can be made using the web browser. For detailed configuration, please refer to RFID System User Manual.
5.4. Setting up the Controller

Set up the Controller.

5.4.1. Starting RSLogix5000 and Configure the Controller

Start RSLogix5000 Software, and create a new project

1. Open RSLogix 5000 and select File- New.

2. The New Controller window will appear. Enter the controller Type, Revision, Name, and Chassis Type. Select OK

In this application:
Type: 1756-L71
Revision: 20
Name: Omron_V680S_to_L71
Chassis Type: 1756-A4
3 A new empty project is created.

Add the Ethernet module to the control system by selecting the 1756 Backplane under I/O Configuration then Right Click - New Module.

In Select Module Type window, add the Ethernet Bridge. 1756-ENBT

Then select Create to add to the backplane.
This opens the New Module window. Enter the Name, Ethernet Address, and Module Definition.

**Name:** EtherNetIP_Module  
**IP Address:** 192.168.1.1

In the Module Definition window, enter the Series and Revision information.

Click OK.

In this application:  
**Series:** A  
**Revision:** 3.9

In the pop-up window select Yes.
5.5. Setting up the Network

Connect online with the RSLogix5000 and transfer the project data to the Controller.

5.5.1. Configure RFID System within the Network

1. Once the Ethernet Bridge is part of the configuration, the Generic Ethernet Module can be added.

To add the module, Right Click - New Module.

In the Select Module Type window, Create Ethernet – Module Generic Ethernet Module.

2. In the New Module window, enter Name, Comm Format, Address/Host Name, and Connection Parameters (see below.)

In this application:
Name: V680S
Comm Format: Data – SINT
IP Address: 192.168.1.200
Input:
Assembly Instance: 110
Size: 40 (8-bit)

Output:
Assembly Instance: 110
Size: 40 (8-bit)

Configuration:
Assembly Instance: 1
Size: 0 (8-bit)

NOTE: For additional information regarding assembly instance and size, see RFID System V680S Series User’s Manual, Section 5. Host Communications Specifications.

In the Module Properties Report, Check the box “Use Unicast Connection over Ethernet/IP”, click OK.
5.6. Going Online and Transferring the Project Data

Go online with the controller and transfer the project data.

Precautions for Correct Use

Please confirm that the LAN cable has been connected before proceeding to the following steps.
If it is not connected, turn OFF the power to the devices, and then connect the LAN cable.

1. To go online with the Controller select Communications – Who Active.

The Who Active window will appear. Select the controller to program, 1756-L71 Logix5571, L71, and then Download.

Select the Download button from the Download window.
When the controller is online, the *Controller OK* LED is solid green, this means that controller is operating normally.
5.7. Checking the EtherNet/IP Communications

Confirm that the EtherNet/IP communications are performing normally.

5.7.1. Checking the Connection Status

Check the connection status of EtherNet/IP.

1. Check that there is a solid green light on I/O OK.

If the I/O OK LED is solid green, the controller is communicating with the RFID System.

Open Module Properties Report: EtherNetIP_Module (ETHERNET – Module 1.1) by right clicking on ETHERNET-MODULE V680S.

Check that the Status is Running and that there are no faults in the module.
5.7.2. **Checking Data that are Sent and Received**

Confirm that the correct data are sent and received.

1. To check the data, go to the Controller Tags menu and select the Monitor Tags tab.

2. Expand out Tag names by clicking the + symbol next to each tag name. In the first byte of the created Input Tag (V680S: I Data), there is a value of 1. This means that the RFID System is READY.

   For detailed information on I/O Space, see *RFID System V680S Series User’s Manual*, Section 5. Host Communications Specifications.

3. To test the output of the RFID System, send a read command to the device. Set the CmdCode to 1 (V680S: O.Data[2]) then enter “1” in the first bit of the Output tag V680S: O.Data[0] to execute the command.
For additional information regarding RFID Commands see *RFID System V680S Series User's Manual, Section 5. Host Communications Specification, Command Details.*

**Execution Example**

**Reading the ID Code of the RF Tag**

<table>
<thead>
<tr>
<th>Command Area</th>
<th>Memory offset</th>
<th>Data name</th>
<th>Value</th>
<th>Force Mask</th>
<th>Style</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+1</td>
<td>CmdCode</td>
<td>0</td>
<td>0</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>+2</td>
<td>CmdParam1</td>
<td>0</td>
<td>0</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>+3</td>
<td>CmdParam2</td>
<td>0</td>
<td>0</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-1</td>
<td>V680I.Data</td>
<td>6</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-2</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-3</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-4</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-5</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-6</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-7</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-8</td>
<td>V680I.Data</td>
<td>-70</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-9</td>
<td>V680I.Data</td>
<td>-118</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-10</td>
<td>V680I.Data</td>
<td>95</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-11</td>
<td>V680I.Data</td>
<td>-10</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-12</td>
<td>V680I.Data</td>
<td>51</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-13</td>
<td>V680I.Data</td>
<td>1</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-14</td>
<td>V680I.Data</td>
<td>8</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-15</td>
<td>V680I.Data</td>
<td>-32</td>
<td>Decimal</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>-16</td>
<td>V680I.Data</td>
<td>0</td>
<td>Decimal</td>
<td>S</td>
</tr>
</tbody>
</table>

4. In the Input Tag (V680S: I Data) the data is received.
## 6. Revision History

<table>
<thead>
<tr>
<th>Revision code</th>
<th>Date of revision</th>
<th>Revision reason and revision page</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Nov. 30, 2016</td>
<td>First edition</td>
</tr>
<tr>
<td>02</td>
<td>Nov. 20, 2018</td>
<td>Second edition</td>
</tr>
</tbody>
</table>
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- Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

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- Solid State Relays

Software
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