

RSTi-OM IO-LINK Master Fieldbus Module with PROFINET and Modbus/TCP Quick Start Guide

GFK-3213A

Jun 2021



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Introduction

The RSTi-OM Quick Start Guide covers RSTi-OM IO-Link devices. Users can expect to learn how to configure and install the IO-Link Master (IOLM) and connect to other IO-Link devices.

| Product name | Description |
|--------------|-----------------------|
| OMIOLM001 | IO-Link Master Device |

Note: For IO-Link hubs & cable accessories refer to datasheet and/or user manual (00813-0100-0149).

Device Description

The module is a PROFINET or Modbus/TCP Fieldbus module with 8 Class A IO-Link master ports according to IO-Link standard V1.1. The Fieldbus module serves as an interface between the PROFINET controller or Modbus TCP controller Fieldbus system and IO-Link devices as well as discrete I/O in the field level. The integrated web server and IODD interpreter enabling complete configuration of the Fieldbus module and attached IO-Link devices without the need for special software tools. Information regarding the status of the module is also displayed and network parameters such as the IP address and subnet mask can be configured. The module is capable of storing all configurations enabling stand-alone usage without a higher-level PLC. MutliLink simultaneously provides data access via different communication protocols like PROFINET, Modbus/TCP, MQTT, and OPC UA to multiple controllers. An L-coded M12 connector plug used for supplying power enables a current rating of up to 2 x 16 A. The inputs and outputs are equipped with A-coded M12 connector plugs. Connection to the Fieldbus is achieved using a D-coded M12 connector plug. Status information for each channel is displayed via LEDs as a diagnostic function

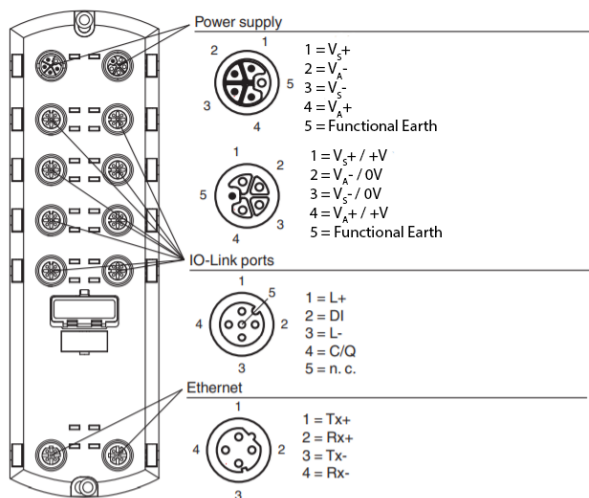
Features

The IOLM's web interface provides a platform so that you can easily configure, review diagnostic pages, and access advanced features, such as the ability to:

- Setup Passwords for pre-defined user accounts Utilize data storage to provide automatic and manual data storage to upload or download IO-Link v1.1 device parameters
- Run device validation to support identical or compatible device validation to dedicate a port or ports to specific IO-Link devices
- Run data validation to support strict or loose data validation to verify data integrity
- Back up configuration files or load the same configuration to multiple IOLM units
- Generate diagnostics data to support maintenance

Connectors Overview

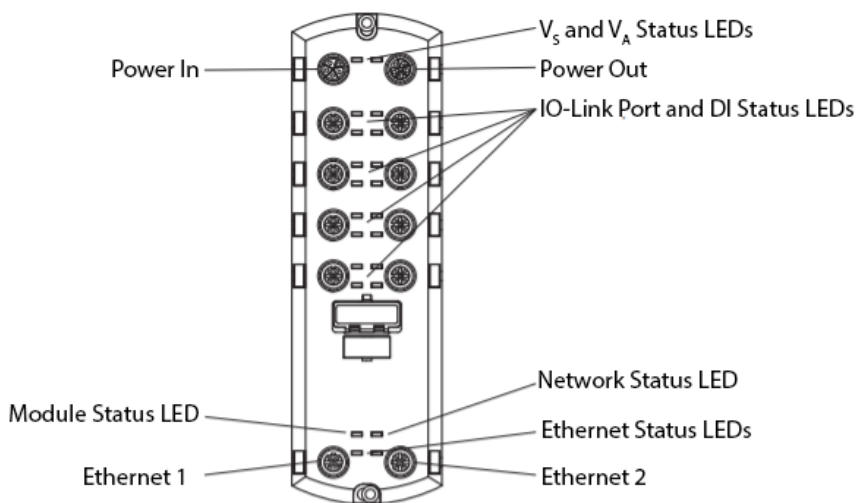
Figure 1: Front Panel Connectors



| Connector Type | Cable Description |
|----------------|-------------------|
| Power Supply | M12 L-Code |
| IO-Link | M12 A-Code |
| Ethernet | M12 D-Code |

Front Panel Description

Figure 2: Front Panel and Indicators

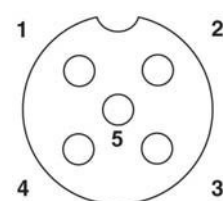


IO-Link Link Connectors

IO-Link Port Connectors

The IOLM provides eight IO-Link ports with M12, 5-pin female/A coded connectors. Each port has robust over-current protection and short circuit protection on its L+/L- power output and C/Q IO-Link signal. The pin-out for each IO-Link port is per the IO-Link standard and is provided in the following table:

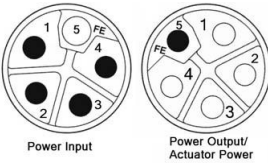
This table provides signal information for the IO-Link connectors.

| Pin | Signal | Description |  |
|-----|--------|--|---|
| 1 | L+ | IO-Link device power supply (+24 V) | |
| 2 | DI | Digital input | |
| 3 | L- | IO-Link device power supply (0 V) | |
| 4 | C/Q | Communication signal, which supports SDCI (IO-Link) or SIO (standard input/output) digital I/O | |
| 5 | FE | Functional Earth (electronics wiring) | |

Power Connectors

The IOLM provides M12 (5-poles) L-coded input and output power connectors. Use a 24VDC power supply capable of the total output current required.

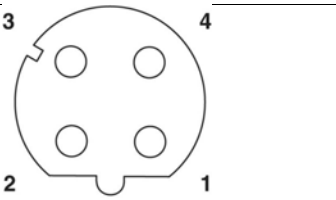
Note: Power connectors must have an approved cable or protective cover attached to the port guarantee to IP67 compliance. For additional information on available connectors and protective covers, please consult the Emerson datasheet 00813-0100-0149.

| Pin | Power Input (Male) | Power Output or Actuator Power (Female) | Description |  |
|-----|--------------------|---|---|---|
| 1 | V_{S+} | V_{S+} or +V | IO-Link Master's system electronics and IO-Link devices | |
| 2 | V_{A-} | V_{A-} or 0V | Actuator supply | |
| 3 | V_{S-} | V_{S-} or 0V | IO-Link Master's system electronics and IO-Link devices | |
| 4 | V_{A+} | V_{A+} or +V | Actuator supply | |
| 5 | FE | | | |

Note: The IOLM requires a UL-listed power supply with an output rating of 24 VDC.

Network Connectors

The IOLM provides two Fast Ethernet (10/100BASE-TX) M12, 4-pin female D-coded connectors.

| Pin | Signal |  |
|-----|--------|---|
| 1 | Tx+ | |
| 2 | Rx+ | |
| 3 | Tx- | |
| 4 | Rx- | |

You can use this procedure to connect the IOLM to the network.

1. Securely connect one end of a shielded twisted-pair (Cat 5 or higher) M12 Ethernet cable together Ethernet port.
2. Connect the other end of the cable to the network.
3. Optionally, use the other Ethernet port to daisy-chain to another Ethernet device.
4. If you did not connect both Ethernet ports, make sure that the unused port is covered with a connector cap to keep dust and liquids from getting in the connector.

Note: Ethernet ports must have an approved cable or protective cover attached to the connector to guarantee IP67 integrity.

Hardware Installation

Pre-Installation Checklist

1. Setting the Rotary Switch
2. Connecting to the Network
3. Connecting the Power
4. Mounting the IOLM

Setting the Rotary Switch

You can use the rotary switches under the configuration window on the IOLM to set the lower 3-digits (8 bits) of the static IP address (192.168.11.XXX).

For example, the **default IP address is 192.168.11.202**. When the rotary switches are set to 000, the final segment of the IP address will remain at 202. However, if the rotary switches are changed to 065, then the IOLM module will obtain the IP address 192.168.11.65

If the rotary switches are set to a non-default position, the upper 9-digits (24 bits) of the IP address are then taken from the static network address. The switches only take effect during startup, but the current position is always shown on the **Help | SUPPORT** page.

Using the rotary switches to set the IP address may be useful in the following situations:

- A permanent method to assign IP addresses while setting machines for a special application where a PC or laptop is not available.
- A temporary method to assign IP addresses to several IOLMs so that they do not have duplicate addresses, making IP address configuration easier when using the web page. After using the web page to change the IP address, reset the rotary switches back to 000.

- An emergency method to reset the IOLM to factory defaults, so that software can be used to program the appropriate IP address, and then reset the switches to 000.

Note: If you set the network address using the rotary switches, the rotary switch setting overrides the network settings in the web interface when the IOLM is initially powered on or after cycling the power.

Note: The default subnet mask is **255.255.255.0**

1. Gently swing open the switch window from the top to the bottom, allowing it to pivot on the hinge on the bottom of the window.
2. Turn each dial to the appropriate position using a small flathead screwdriver.

Figure 3: Rotary Switches



The default setting is 000 as shown above.

The arrow points to the switch location. 0 is located at the 9:00 position. Turn the dial clockwise to the appropriate setting.

3. Close the window and make sure that it snaps shut tightly.

Note: Failure to close the configuration window properly may compromise IP67 integrity.

Connecting the Network

You can use this procedure to connect the IOLM to the network.

1. Securely connect one end of a shielded twisted-pair (Cat 5 or higher) M12 Ethernet cable to either Ethernet port.
2. Connect the other end of the cable to the network.
3. Optionally, use the other Ethernet port to daisy-chain to another Ethernet device.
4. If you did not connect both Ethernet ports, make sure that the unused port is covered with a connector cap to keep dust and liquids from getting in the connector.

Note: Ethernet ports must have an approved cable or protective cover attached to the connector to guarantee IP67 integrity.


Connecting the Power

You can use the following procedure to connect the IOLM to a power supply.

CAUTION

Note: Power should be disconnected from the power supply before connecting it to the IOLM. Otherwise, your screwdriver blade can inadvertently short your power supply terminal connections to the grounded enclosure.

1. Securely attach the power cable between the male power connector (**PWR In**) and the power supply.
2. Either attach a power cable between the female power connector and another device to which you want to provide power or securely attach a connector cap to prevent dust or liquids from getting into the connector. Contact your Customer Sales Representative if you need to order connector caps for the IOLM.
3. Apply the power and verify that the following LEDs are lit indicating that you are ready to attach your IO-Link or digital I/O devices.

- a. The **VS** LED lights.
- b. The **ETH1/ETH2** LED lights on the connected port.
- c. The **MOD** and **NET** LEDs are lit.
- d. The IO-Link LEDs  flash (if no IO-Link device attached) or are lit if an IO-Link device is attached.

Note: It takes approximately 25 seconds after power-up for the IO-Link Master to be ready for operation.

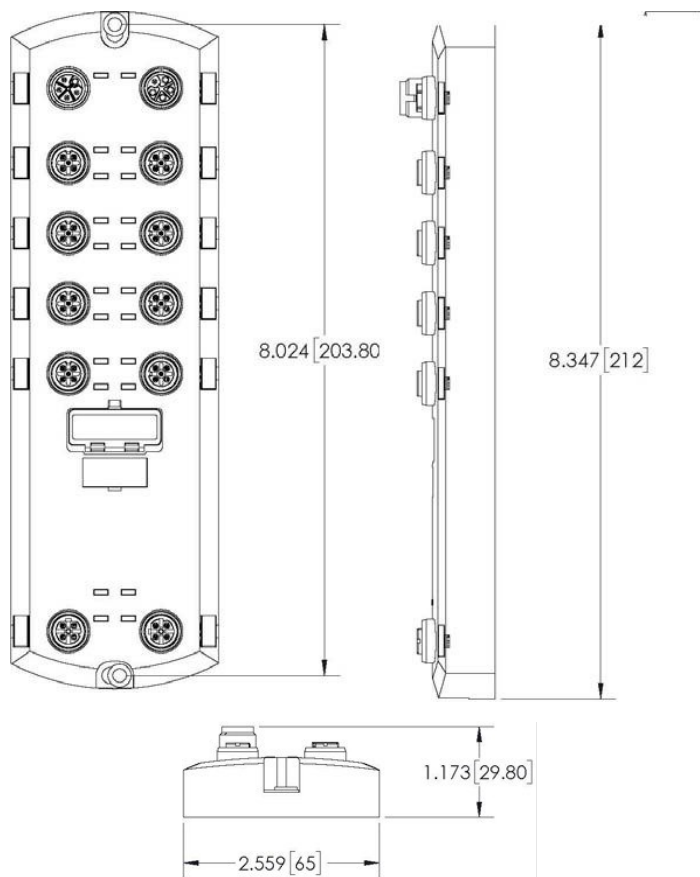
If a PLC is connected, the **NET** LED is lit and green.

Mounting the IOLM

Use the following procedure to mount the IOLM. You can mount the IOLM on a mounting panel or a machine.

1. Verify that the mounting surface is level (flat) to prevent mechanical stress to the IOLM.
2. Attach the IOLM to the surface with two 6 mm (¼") screws and washers, torque down to 8 Nm (70.8 in-lbs).

Figure 4: Mounting the IOLM 8 PNIO L



IOLM Configuration

The following is a checklist for configuration and setup of the IO-Link Master module and the PROFINET IO (PNIO) and Modbus/TCP.

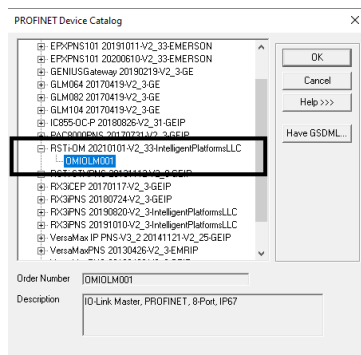
1. Adding the IOLM to the controller.
2. Configure the IP address for the IOLM.
3. Assign the PROFINET Device Name.
4. Set the IO Device Update Time.
5. Configure the IO-Link ports.
6. Configure the IO-Link input device for PROFINET on the PLC.

Note: The following pages will provide a brief description of configuring the module with a PROFINET controller. For more detailed information on configuration over Modbus TCP, OPC-UA or MQTT, please consult GFK-3212, *RSTi-OM User Manual*.

Adding the IOLM to the PROFINET Controller

To add the IOLM to the controller, select the appropriate device from the catalog, and click **OK**

Figure 5: Adding the IOLM to the Controller



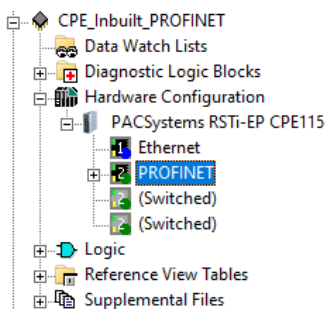
The PROFINET device will then added under the PROFINET controller or PROFINET section of the CPE. For more information, consult the RSTi-OM User Manual (GFK-3212).

Installing the GSDML File

Note: GSDML files are available at Emerson's support site. Please see the links provided at the end of this document.

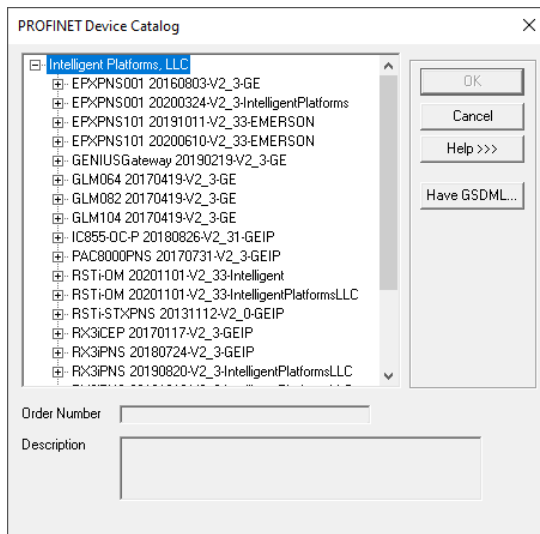
1. Launch PAC Machine Edition.
2. From the Navigator, right-click on the PROFINET or PNC in the Hardware Configuration of the controller section and select **Add IO-Device**.

Figure 6: Installing the GSDML File



3. Navigate to the folder where the GSDML for IOLM is located, select the **GSDML-xxxx.zip** and click on **Open**.

Figure 7: PROFINET Device Catalog



IP Address Configuration

RSTi-OM IOLM gateways support three methods for IP address assignment according to *GSDML Specification*.

- **DCP** - The IOLM supports IP address assignment via Discovery and basic Configuration Protocol (DCP). See Section *Assigning an IP Address via IO Controller (DCP)* of GFK-3212 for procedures.
- **DHCP** - The IOLM supports the Dynamic Host Configuration Protocol for IP address assignment. See Section *Assigning an IP Address via DHCP* of GFK-3212 for procedures.
- **LOCAL** - The IOLM supports a device-specific method for IP address assignment. See Section *Assign IP Address Statically Using the Web Page* of GFK-3212 for procedures.

Device Name Assignment

The user will need to assign a device name to the IOLM during the initial setup.

The user can use PAC Machine Edition and its DCP tool or the IOLM's web interface.

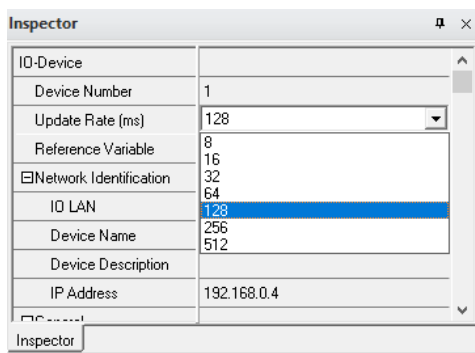
For detailed information, please consult Section *Device Name Assignment* of the RSTi-OM User Manual (GFK-3212).

Setting the IO Device Update Time

The PROFINET device **Update Rate** can be set in the Inspector window of the PAC Machine Edition. The unit of update rate is in milli-seconds. The allowable rates are 8, 16, 32, 64, 128, 256, and 512.

The default update rate is 128ms

Figure 8: Device Update Time



Configuring IO-Link Ports

The IO-Link Master gateway has two categories of IO modules: *IO-Link Port Modules* and *Port Status Modules*. IO modules are used to configure IO-Link ports and exchange PDI and PDO data with various IO-Link devices and digital I/O devices.

IO-Link Port Modules are used to configure the mode of an IO-Link port.

Port Status Modules is a 4-byte input-only module that provides status information of all IO-Link ports.

To access the modules to be configured under the IO-Link master, right-click on the IOLM module in the Hardware configuration and select **Change Module List**.

For more information on the Configuration of IO-Link Ports, please consult Section *Configuring Link Ports* of the RSTi-OM User Manual (GFK-3212).

PROFINET IO Configuration

For detailed instructions, PROFINET IO Reference Information of the RSTi-OM User Manual (GFK-3212).

Web Interface

The IOLM module's settings can be adjusted using the web interface. To access the interface, open a web browser and enter the IOLM's IP address.

Note: The IOLM default IP address is: 192.168.11.202 and the subnet mask is 255.255.255.0. You may need to change your laptop's or PC's IP address range to access the IOLM web interface.

Other web interface Uses:

- Upload the latest IOLM images or applications
- Set up user accounts with different user levels and passwords
- Load IODD files and configure IO-Link device parameters
- Implement manual or automatic data storage (upload or download)
- Implement device and/or data validation

Additional Information

User manuals, product updates, and other information sources are available on the Support website: <https://www.emerson.com/en-us/support>

RSTI-OM User Manual

GFK-3212

RSTi-OM Secure Deployment Guide

GFK-2222

General Contact Information

Please visit us for product support or updated product information:

Online Technical Support

<https://www.emerson.com/en-us/support>

Additional Information:

<https://www.emerson.com/industrial-automation-controls>

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