



Pushing Performance

People | Power | Partnership

User Guide

MICA IO-Link Gateway

1st Edition 2020

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1 Introduction

1.1 About the MICA IO-Link Gateway Container

MICA IO-Link Gateway is a MICA container that lets you configure, and communicate with, IO-Link devices connected to a HARTING MICA IO-Link or MICA Wireless IO-Link..

1.2 MICA IO-Link Gateway Limitations

The MICA IO-Link Gateway currently does not support external or third-party IO-Link masters.

2 General Overview

2.1 Operation Requirements and Conditions

MICA IO-Link Gateway requires a MICA IO-Link or MICA Wireless IO-Link.



3 Installation, Initial Setup and Configuration

3.1 Connecting the MICA IO-Link

For connecting and logging into a MICA IO-Link or MICA Wireless IO-Link, see the *MICA Getting Started* available at harting-mica.com. All MICA IO-Link variants have a supplemental M8/24V input next to the IO-Link ports. This input is used to provide 24V power from the MICA to IO-Link devices.

Depending on the model, you can connect either 3 or 4 IO-Link devices using M8 – M12 or M5 – M12 cables respectively. We recommend only using HARTING IO-Link cables.



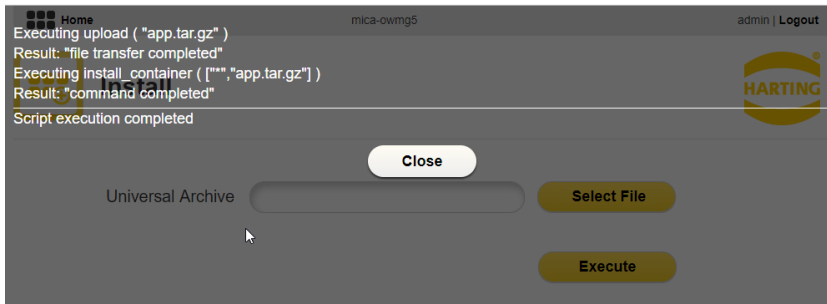
3.2 Installation of the IO-Link Gateway

3.2.1 Default Installation

With this software package, you can install the MICA IO-Link Gateway on a MICA.



1. Log in to the MICA with admin rights.
2. Click *Install*.
3. Click *Select File* and select the installation archive.
4. Click *Execute* to start the installation.
5. The installer will display the readme file with information about the installation archive.

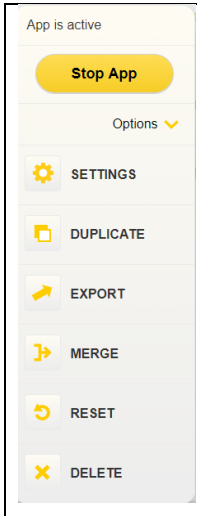


6. Wait until the installation is finished and click *Close*.

The installed containers *IOLink* and *IODDstore* are initially turned off. Right Click first on the *IODDstore* container and then the *IOLink* and container and press *Start App* button to start the container.

4 Basic Container Operations

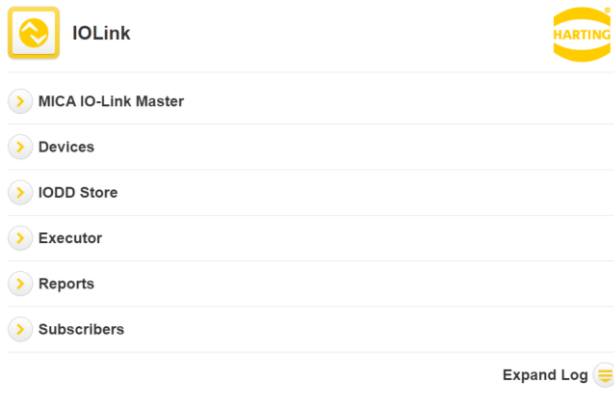
Right clicking the MICA IO-Link Gateway Container tile opens the container's context menu. Press *Options* to access the following functions:

	<ul style="list-style-type: none"> • <i>Start App / Stop App</i>: Starts or stops the container. • <i>Options</i>: Expands or hides the basic container functions. • <i>Settings</i>: Shows the container information and lets you configure the IPv4 / IPv6 settings, an Additional Network Interface and the Single Sign On Mode. • <i>Duplicate</i>: Duplicates the container on your MICA. • <i>Export</i>: Exports the container to your PC or a network drive. All configurations you set will be kept. • <i>Merge</i>: Overwrites the reset point of the Container with its current configuration. • <i>Reset</i>: Resets the configuration of the MICA IO-Link Gateway to the last reset point (factory default if no merge was executed before). • <i>Delete</i>: Deletes the Container including all its configuration and user data.
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5 Using the IO-Link Gateway

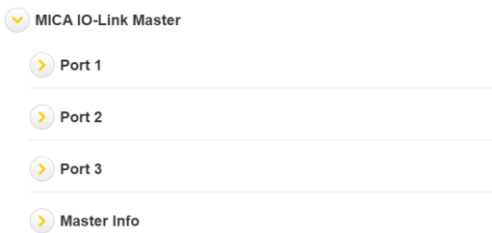
After starting the container, you can open the user interface by clicking the MICA IO-Link Gateway Container tile.

The user interface consists of six sections. To make changes to a section, click on the section title or the button with the chevron left of the section title.



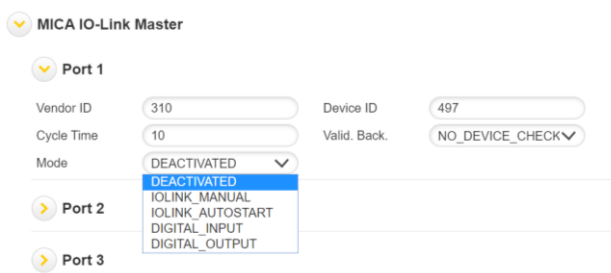
5.1 MICA IO-Link Master

The MICA IO-Link Master section lets you view and configure the settings of the IO-Link master, ports, and devices. It also lets you upgrade the firmware of the integrated IO-Link master.



To configure an IO-Link device, connect the device to a port on the front panel, open the associated port section, enter the *Vendor ID* and *Device ID*, the cycle time in milliseconds, the *Validation* setting, and the *IO-Link Mode*.

Before a device can be activated, the correct IODD file must have been stored in the IODD Store (see section 5.3).



If the container shipped with a newer version of the IO-Link master firmware than the one installed on the master, it will display an *Install* button at the end of the section. Click this button to update the firmware on the master to the latest version.

5.1.1 Using IO-Link Ports as Digital I/O

The IO-Link Gateway also supports the standard IO-Link digital input and digital output modes:

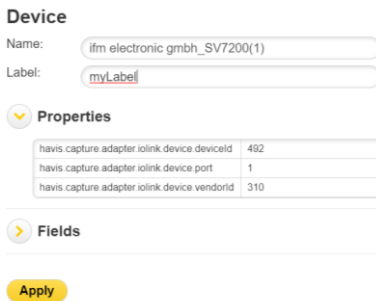
- In *DIGITAL_INPUT*/"DI" mode, the port functions as a digital input.
- In *DIGITAL_OUTPUT*/"DQ" mode, the port functions as a digital output.

5.2 Devices

The Devices section lists all currently connected devices, their operation modes and their statuses. You can mouse over the icons to get additional information.



To see the device properties, assign labels to devices, or to inspect or add labels to individual fields, click on the device name to open the device information window.



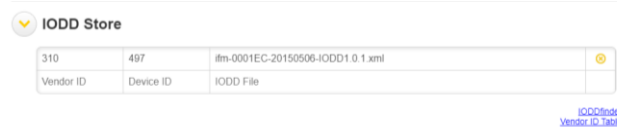
You can give any IO Link device a label to make it easier to identify and remember.

To see the fields and field properties of the device, open the *Fields* section and click on any field name to inspect the field properties.

For digital IO devices, the port and the IO pin (normally pin 4) are listed in the device information window.

5.3 IODD Store

Before you can use an IO-Link device, you must add its *VendorID*, *DeviceID* and IODD file to the IODD Store. To enter the *VendorID* and *DeviceID*, click on the field and enter a value using your keyboard or the up and down arrows. To upload an IODD file, click in the IODD File field to open a file browser and select the correct IODD file.



As a convenience, links to an online Vendor ID lookup table and IODD finder are included below the table.

To delete an IODD entry, click the (x) in the right column. Only one IODD file per device can be uploaded to the IODD Store.

Note: For the IODD Store functionality to work, the IODDstore container must be installed and running.

5.4 Executor

The Executor lets you perform operations on specific fields of IO-Link devices that are connected to a MICA IO-Link.

To read data from a device, choose the device and field you want to read, select *READ* from the *Operation* drop down and click *Execute*. If the data could be written to the device, the *Result* field will change to SUCCESS and the data will be placed in the *Data* field in the UI.

The screenshot shows the 'Executor' section of the interface. It contains several dropdown menus and a text field:

- Device:** ioLinkMaster
- Field:** events.port.1
- Operation:** READ
- Result:** SUCCESS (highlighted in green)
- Data:** []

Below these fields is a yellow 'Execute' button.

To write data to a device, choose the device and field you want to write and select *WRITE* from the *Operation* drop down. Then enter the data you want to write to the device in the *Data* field and click *Execute*. If the data could be written to the device, the *Result* field will change to SUCCESS.

The Data field supports standard operations like copy and paste.

5.5 Reports

The IO-Link Gateway lets you create reports that can be sent to all subscribers defined as described in section 5.6.

The screenshot shows the 'Reports' section with a refresh icon and an 'Add Report' icon (a square with a plus sign).

To create a new report, expand the *Reports* section and click the *Add Report* icon .


In the *Report* window, enter a name for the report, the report duration and repeat period, and choose the device and fields the report should cover. You can also choose *All Fields* to add all the device information to the report.

Click *Apply* to save the report. and have it sent to all subscribers automatically.

The screenshot shows a 'Report' configuration window. It has fields for:

- Name:** test
- Duration:** 1000
- Repeat Period:** 1000
- Fields:** A dropdown menu showing a list of fields. The 'events' field is selected and highlighted in blue. Other visible fields include: applicationSpecificTag, deviceId, firmwareRevision, functionTag, hardwareRevision, ioLinkRevision, iodd, locationTag, masterCycleTime, processDataInput, processDataInput.Flow, processDataInput.OUT1, processDataInput.OUT2, processDataInput.Temperature, processDataInput.validity, and processDataOutput.

An 'Apply' button is located at the bottom left of the window.

To activate a report and have it sent to all subscribers, click the on/off button .

Note: devices that are referenced in reports cannot be deleted. To delete a device, you have to first remove any reports that reference the device



5.6 Subscribers

5.6.1 Creating a new Subscriber

You can create a new subscriber by clicking the expand button from the left side of the *Subscribers*.

The following steps are to be done:

1. Left click the *New* tile button.
2. *Subscriber* dialog will pop up.
3. Choose the type of the subscriber. (CUSTOM, MQTT, MQTTS AZURE, HTTP, HTTPS, JDBC, TCP, UDP options are available)
4. The URI of the Subscriber must be set and valid.
5. Left click on *Apply* button.

Subscribers



Subscriber

Type	MOTT	▼
Host	mqtt	
Port	1883	
Fragment		
Username		
Password		
Topic	topic	
Client ID	clientid	
QoS	At most once	▼
URI	mqtt://MQTT:1883/topic?qos=0&clientid=cli	

Properties

Property Key	Property Value	
		⊕

Apply

5.6.2 Deleting a Subscriber

You can delete a subscriber by moving your mouse over on a subscriber and clicking the *Delete* button.

The specific subscriber and all subscriptions associated with the subscriber will be deleted. Please be sure that at least one subscriber is in the subscribers list.

6 Working with Logs

The MICA IO-Link Gateway provides full logging information.

Level	Date/Time	Service	Message
	2020-02-19 13:56:31	havis custom harting iolink gate...	.getDevices entered
	2020-02-19 13:56:31	havis custom harting iolink gate...	.getDeviceFieldsValues entered
⚠	2020-02-19 13:56:32	havis custom harting iolink gate...	.Could not read value of field named 'updateMasterFirmware' and id '5...
	2020-02-19 13:56:45	havis custom harting iolink gate...	.updateDevicePropertiesValues entered
	2020-02-19 13:56:56	havis custom harting iolink gate...	.updateDevicePropertiesValues entered

To see the log entries, click the *Expand Log* button.

To change the log levels for the IO-Link Gateway, click the cog icon and choose the desired log level for each log target. You can also use the trash can icon to delete all log entries for one or

Log Configuration

Name	Target	Log Level	Clear
Transformer	havis transform	ALL	
Transporter	havis transport	OFF ERROR WARNING	
Core	havis util core	INFO DEBUG TRACE	
IO-Link Gateway	havis custom harting iolink gateway	ALL	
Capture-API	havis capture	WARNING	

Clear All

all log targets.

To reload the log, click the *Reload* icon .

To download the log as a text file to your computer, click the *Export* icon .

To follow the log live, click the *Observe* button.

7 REST API

`GET /devices`

provides all known devices

`GET /devices/status`

provides the status of all known devices

`GET /devices/{deviceId}`

provides the requested device

`GET /devices/{deviceId}/fields/values`

provides all fields values of requested device

`GET /devices/{deviceId}/fields/values/{fieldId}`

provides field value of requested device and field

`PUT /devices/{deviceId}/fields/values`

updates a list of fields values of a device

`PUT /devices/{deviceId}/fields/values/{fieldId}`

updates a field value of a device

`PUT /devices/{deviceId}/properties/values`

updates a list of properties values of a device

`PUT /devices/{deviceId}/properties/values/{property}`

updates a property value of a device

`PUT /devices/{deviceId}/label`

updates the device label

`PUT /devices/{deviceId}/{fieldId}/label`

updates the device field label

8 Troubleshooting

Problem	Solution
After selecting an IODD file, it doesn't get uploaded to the IODD Store	Click on the IO Link icon on the upper left of the UI to reload the web page and try again. Also check that the IODDstore container is running.
The IO-Link container cannot connect to the IODDstore.	Stop both apps. Then start the IODDstore followed by the IO-Link container.