Rosemount™ IO-Link Master

with PROFINET® Interface

FB 5104, FB-5108

ROSEMOUNT™

EMERSON™

Safety messages

Note

The plant manufacturer is responsible for the safety of the plant in which the device is installed.

If the device is used in a way that is not intended by the manufacturer, the protection supported by the device may be impaired.

Non-observance of the instructions, operation which is not in accordance with use as prescribed below, wrong installation, or incorrect handling can affect the safety of operators and machinery.

- Observe these operating instructions.

- Adhere to the warning notes on the product.

Required background knowledge

This document is intended for specialists. Specialists are people who, based on their relevant training and experience, are capable of identifying risks and avoiding potential hazards that may be caused during operation or maintenance of the product.

The document contains information about the correct handling of the product.

⚠ WARNING

Observe instructions in chapter "Electrical connection."

Tampering with the units can affect the safety of operators and machinery.

Tampering with the units is not allowed. In case of non-compliance our liability and warranty expire.

Do not open the devices.

Do not insert any objects into the devices.

Prevent metal foreign bodies from penetrating.

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

Contents

1   Overview

1.1   Legal and copyright information

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1.2   Purpose of the document

This document is only for device types Rosemount™ IO-Link Master with PROFINET Interface, four port and eight port (FB-5104 and FB-5108). It contains information about the correct handling of the product.

- Read this document before using the device.

- Keep this document during the service life of the device.

2   Intended use

Permitted use

The IO-Link master serves as a gateway between intelligent IO-Link devices and the fieldbus. The device is designed for use without a control cabinet in the food industry.

Prohibited use

The device may not be used beyond the limits of the technical data.

3   Function

3.1   Communication parameter setting evaluation

IO-Link

The device offers the following IO-Link functions:

- IO-Link master (IO-Link revision 1.0 and 1.1)
- FB-5104 offers four IO-Link ports for connection of IO-link devices. FB-5108 offers eight IO-link ports for connection of IO-Link devices

PROFINET

The device offers the following PROFINET® functions:

- Provision of the functions of a PROFINET RT Device (Class B)
- Two-port switch for access to the PROFINET interface (X21/X22)
- Gateway for transmission of the process and parameter data between the connected IO-Link devices and the higher-level PROFINET controller

Parameter setting

The device provides the following configuration options:

- Parameter setting of the IO-Link master with Rosemount™ IO-Link Software or PROFINET projection software.
- Parameter setting of the connected IO-Link devices (sensors, actuators) with Rosemount IO-Link Software parameter setting software or PROFINET projection software.
- Storage of parameter sets of the connected IO-Link devices for automatic recovery (data storage.)

Visual indication

The device has the following visual indicators:

- Status and error indication of the gateway, of the PROFINET connection and of the system
- Status display of the voltage supply
- Status and activity display of the PROFINET connection
- Status, error and short circuit/overload indication of the IO-Link ports

Digital inputs

The device has four or eight additional digital inputs (type 2 according to EN 61131-2).

The digital inputs are on pin 2 of the IO-Link ports (X01...X04 for FB-5104, X01..X08 for FB-5108).

All inputs refer to the potential of the device supply (pin 3).

IO-Link supply

The device has four (FB-5104) or eight (FB-5108) supplies for IO-Link devices.

The IO-Link ports X01...X04/X08 are ports class A.

All ports feature short circuit protection (3.6A)

The device ensures fire protection for the connected IO-Link devices by providing a power-restricted circuit at the IO-Link ports (according to IEC61010-1 and Class 2 according to UL1310).

4　　Mounting

4.1　　**Mount the device**

Note

Disconnect the system from power before installation.

For installation choose a flat mounting surface.

Please observe the maximum tightening torque.

1. Fix the unit to the mounting surface using two M5 mounting screws and washers (tightening torque: 15.9 inch-pound, 1.8 Nm).

2. Ground the unit via the upper mounting screw.

5 Electrical connection

5.1 Safety messages

> ⚠ **CAUTION**

A qualified electrician must connect the unit.

Observe the national and international regulations for the installation of electrical equipment.

Device is only suitable for operation on SELV/PELV voltages.

Observe the information listed in section Connect the device.

The device contains components that can be damaged or destroyed by electrostatic discharge (ESD).

Observe the required safety measures against electrostatic discharge.

The IP rating depends on the individual protection ratings of the unit, the applied connection elements and the corresponding protective covers.

For UL applications: For connecting the device and the IO-Link devices use UL certified cables of category CYJV or PVVA with a minimum temperature rating of 100°C.

Depending on the mounting conditions, cables must be provided with a strain relief to avoid unacceptable loads on the mounting points and M12 connections.

Make sure that the M12 connection parts are correctly seated and mounted correctly. The specified protection rating can not be guaranteed if this is not observed.

For information on wiring, see Technical data.

Note
The communication interfaces are separated from the device supply according to EN61010-1 considering basis isolation as secondary circuit with maximum 30 Vdc derived from the applied voltage up to 300 V of overvoltage category II. The communication interfaces are designed for a network environment 0 according to IEC TR62102.

5.2   PROFINET® ports

Eight ports FB-5108   **Four ports FB-5104**

1. Connect the unit via the M12 socket X21 and/or X22 to the IT network
  - Tightening torque: 5.3-7.1 in-lbs (0.6-0.8 Nm)

2. For the connection, use M12 connectors with protection rating IP 65 / IP 66 / IP 67 / IP 69K or higher.

3. Cover the unused sockets with M12 protective caps.
  - Tightening torque: 5.3-7.1 in-lbs (0.6-0.8 Nm)

5.3   IO-Link ports

Eight ports FB-5108   **Four ports FB-5104**
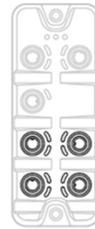
Ports X01…X04/X08: For use as IO-Link port class A:

1. Connect the connector of the IO-Link devices with the M12 sockets X01 … X04/X08.
  - Tightening torque: 5.3-7.1 in-lbs (0.6-0.8 Nm)
  - Maximum cable length per IO-Link interface: 65.6 ft (20 m)

2. For the connection, use M12 connectors with protection rating IP 65 / IP 66 / IP 67 / IP 69K or higher.

3. Cover the unused sockets with M12 protective caps.
  - Tightening torque 5.3-7.1 in-lbs (0.6-0.8 Nm)

Input circuit

The inputs of the ports X01…X04/X08 (pin 2) provide a type 2 behavior according to standard EN61131-2, the connected electronics must be rated for this electrically.

IO-Link circuits

The IO-Link ports of the device meet the requirements of the IO-Link specification 1.0 to 1.1.2.

Note

The power supply of the connected IO-Link devices may only be provided from the FB-510X IO-Link Master.

For more information, see Technical data.

5.4 Connect the device

Eight ports FB-5108   **Four ports FB-5104**

1. Disconnect the power.

2. Connect the device via M12 socket X31 to 24 Vdc (20...28 V SELV/PELV; according to EN61010-1, secondary circuit with maximum 30 V DC derived from applied voltage up to 300 V of overvoltage category II).

- Connect the device via M12 socket X31 to 24 Vdc (20...28 V SELV/PELV; according to EN61010-1, secondary circuit with maximum 30 V DC derived from applied voltage up to 300 V of overvoltage category II).

- Maximum cable length: 82 ft (25 m)

3. To connect the device, use M12 connectors with protection rating IP 65 / IP 66 / IP 67 / IP 69K or higher.

Note

When using cable length greater than 25 m keep in mind the voltage drop as well as the required minimum voltage supply of 20 V.

5.5 Display elements

Figure 5-1 displays standard LED status ports.

Figure 5-1: LED Status Ports

Eight ports FB-5108   Four ports FB-5104
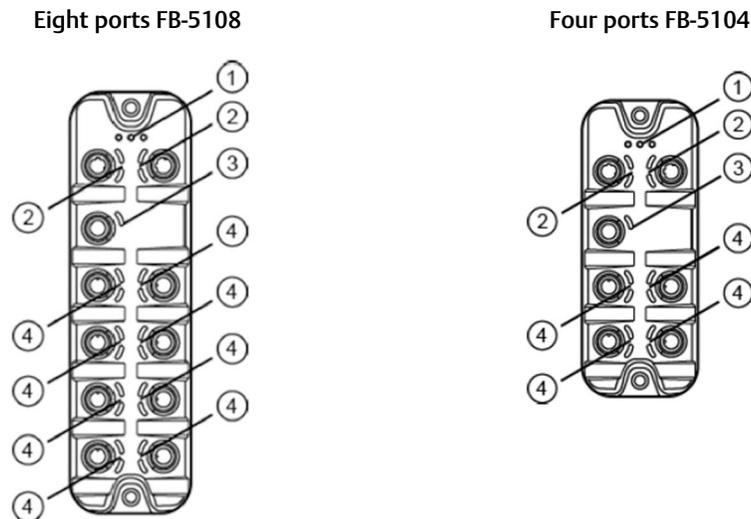
1. Status LEDs RDY, BF and SF. See Status LEDs.

2. Status LEDs LNK and ACT of the PROFINET® ports 1 (X21) and 2 (X22) see PROFINET interface.

3. Status LED US of the power supply(X31). See Voltage supply.

4. Status LEDs IOL an DI of the IO-Link ports Class A (X01...X04/X08). See IO-Link port (Class A).

5.6   LED indicators

The device includes only the following status LED indicators:

• The RDY LED indicates the status of the Gateway.

• The BF LED (Network Status) indicates the status of the network.

• The SF LED (Module Status) indicates the status of the PROFINET connection.

Table 5-1: Status LEDs

Status LED			Description
RDY	Green	On	Gateway functions properly
		Flashes 1 Hz	Error
		Flashes 5 Hz	Firmware update
		Off	Gateway does not function; device reboots
BF	Red	On	Bus error
		Flashes 1 Hz	No connection to the PROFINET controller

Table 5-1: Status LEDs *(continued)*

Status LED			Description
		Off	Error-free
SF	Red	On	• Error in gateway • At least 1 IO-Link device sends warning / alarm (temperature, over/under current, over/under voltage, shortcut)
		Off	Error-free

PROFINET interface

Each PROFINET interface (X21, X22) has 2 LEDs (LNK and ACT). The LEDs indicate the status of the PROFINET connection.

Table 5-2: PROFINET Interface Status LEDs

Status LED			Description
LNK	Green	On	PROFINETconnection established
		Off	No PROFINET connection
ACT	Yellow	Flashes	Data is transmitted via the PROFINET interface
		Off	No data transmission

Voltage supply

The interface for voltage supply (X31) has the LED that is marked as US. The LED indicates the status of the voltage supply.

Table 5-3: Voltage Supply Status LEDs

Status LED			Description
US	Green	On	The supply voltage US is applied
		Off	No supply voltage is applied or the applied supply voltage is too low

IO-Link port (Class A)

Each IO-Link port Class A (X01 ... X04/X08) has 2 LEDs marked as IOL and DI. The LEDs indicate the status of the IO-Link port.

Table 5-4: IO-Link Ports (Class A)

Status LED			Description
IOL	Yellow	On	Interface configured as DI/DO: pin 4 (C/Q) =ON
		Off	Interface configured as DI/DO: pin 4 (C/Q) = OFF

Table 5-4: IO-Link Ports (Class A) *(continued)*

Status LED			Description
	Green	On	IO-Link transmission functions properly
		Flashes 1 Hz	Interface configured as IO-Link, but no IO-Link transmission
	Red	On	Short circuit or overload in supply voltage
		Flashes 1 Hz	Transmission error
DI	Yellow	On	Digital input: pin 2 (DI) = ON
		Off	Digital input : pin 2 (DI) = OFF

6 Configuration

6.1 PROFINET®: Programer's notes

The programmer can access on the following data from the PLC application:

- Read device information of the FB-5104/FB-5108
- Read diagnostics and alarms
- Set parameters of the connected IO-Link devices

The following sections show the available options.

Note
For further information about the functional/operational blocks: see Help function of the PROFINET projection software.

Table 6-1: Read and write I&M datasets

Symbol / function block	Meaning	Remarks
GET_IM_DATA / FB	Function block for reading the I&M datasets of a device **Note** GET_IM_DATA only supports the reading of the I&M0 dataset.	Input parameters • IM_TYPE = 0
RDREC	Function block for acyclic reading of datasets	Input parameters: • I&M0: Index = 0xAFF0 • I&M1: Index = 0xAFF1 • I&M2: Index = 0xAFF2 • I&M3: Index = 0xAFF3
WRREC	Function block for acyclic writing of datasets **Note** Observe access rights on datasets.	Input parameters: • I&M1: Index = 0xAFF1 • I&M2: Index = 0xAFF2 • I&M3: Index = 0xAFF3

Table 6-2: Detect diagnostics and alarms

Symbol/ operational block	Meaning	Remarks
I/O_FLT1 / OB82	Diagnostic alarms	
I/O_FLT2 / OB83	Pull/plug in alarms	

Table 6-2: Detect diagnostics and alarms *(continued)*

Symbol/ operational block	Meaning	Remarks
RACK_FLT / OB86	Module rack failure	

Note

For available alarms and diagnostic messages: see Diagnostic and alarms.

Table 6-3: Configure IO-Link devices

Symbol / function block	Description	Remarks
IO_LINK_DEVICE / FB50001	Acyclic access to the parameters of an IO-Link device	Input parameters: • CAP: Access point for function FB-510X: 0xB400 • PORT: HW-ID: Slot/sub-slot of the IO-Link port with connected IO-Link device Port X01: 1 Port X02: 2 … Port X04/X08: 4/8 • IOL_INDEX and IOL_SUBINDEX: depends on the IO-Link device (see operating instructions of the IO-Link device)
IOL_CALL / FB1	Acyclic access to the parameters of an IO-Link devices (obsolete)	See IO_LINK_DEVICE

7 Operation

7.1 Web interface: read device and diagnostic information

In order to read the diagnostic information about the current device status via the web interface, perform the following steps.

1. Connect laptop/PC and FB-510X via the PROFINET® port.

2. Start web browser.

3. Enter the IP address of the FB-510X into the address field of the browser and select **ENTER** to confirm.

4. Web browser shows the web interface of the device. The page shows the following data tables.

Table 7-1: Connected IO-Link Devices

Name	Description
Port	Number of the IO-Link interface
Mode	Operating mode of the IO-Link interface
Comm. Mode	Baud rate of the IO-Link interface
MasterCycle Time	Cycle time
Vendor ID	ID of the manufacturer of the IO-Link device
Device ID	ID of the IO-Link device
Name	Article number of the IO-Link device
Serial	Serial number of the IO-Link device

Table 7-2: Diagnostic Information of the Device

Name	Description
SW-Version	
Current	Current (in mA)
Voltage	Voltage (in mV)
Short Circuit	Number of detected short circuits
Overload	Number of detected overloads
Undervoltage	Number of detected under voltages
Temperature	Device temperature (in °C)

Table 7-3: Version Information of the Installed Firmware Components

Name	Description
Firmware	Firmware version
Container	Version of the firmware container
Bootloader Version	Version of the boot loader
Fieldbus Firmware	Version of the PROFINET firmware

7.2   Replace IO-Link device

Prerequisites

To replace an IO-Link device:

- IO-Link device is with factory settings.
- IO-Link device supports IO-Link standard 1.1 or higher.

Procedure

1. Set data storage.
    a) Set the following parameters of the IO-Link port: Validation and Data Storage: Type compatible V1.1 device with Restore

2. Save changes.
3. Replace IO-Link device.
    a) Disconnect old IO-Link device from IO-Link master.

    b) Connect new IO-Link device with the same IO-Link port of the FB-510X. IO-Link master copies parameter values from the data memory to the new IO-Link device.

8 Maintenance

The operation of the unit is maintenance-free.

Procedure

1. Clean the surface of the unit when necessary.

   Do not use any caustic cleaning agents

2. After use, dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

9   Factory settings

In the factory settings, the device has the following parameter settings.

Parameters	Factory setting
IP address	0.0.0.0
Subnet mask	0.0.0.0
IP gateway address	0.0.0.0
PROFINET® name	Blank
Data storage	Empty

10 Reference data

10.1 Technical data

Table 10-1: Application

Application	Hygienic systems; I/O modules for field applications
Daily-chain function	Fieldbus interface

Table 10-2: Electrical Data

Operating voltage [V]	20…28 DC; (US; to SELV/PELV)
Current Consumption [mA]	300…3900; (US)
Protection class	III
Sensor supply US	
Max. current load total [A]	3.6

Table 10-3: Input/Outputs

Total number of inputs and outputs	FB-5104: 8 (configurable) FB-5108: 16 (configurable)

Table 10-4: Inputs

Number of digital inputs	FB-5104: 8 (IO-Link Port Class A: 4 x 1) FB-5108: 16 (IO-Link Port Class A: 8 x 2)
Switching level high [V]	11…28 DC
Switching level low [V]	0…5 DC
Digital inputs protected against short circuits	Yes

Table 10-5: Outputs (Digital)

Output function	FB-5104: 4 (IO-Link Port Class A: 4 x 1) FB-5108: 8 (IO-Link Port Class A: 8 x 1)
Max. current load per output [mA]	200
Short-circuit protection	Yes

Table 10-6: Interfaces

Communication interface	IO-Link; TCP/IP; PROFINET® IO
Ethernet	
Transmission standard	10Base-T; 100Base-TX

Table 10-6: Interfaces *(continued)*

Transmission rate	10; 100
Protocol	TCP/IP; PROFINET® IO
Factory settings	• IP address: 0.0.0.0. • Subnet mask: 0.0.0.0 • Gateway IP address: 0.0.0.0 • MAC address: see type label
IO-Link Master	
Transmission type	COM 1 / COM 2 / COM 3
IO-Link revision	V1.1
Number of ports class A	FB-5104: 8 FB-5108: 16

Table 10-7: Operating Conditions

Applications	Indoor use
Ambient temperature	-13 to 140 °F (-25 to 60 °C)
Storage temperature	-13 to 185 °F (-25 to 85 °C)
Max. perm. relative air humidity (%)	90
Max. height above sea level (m)	6562 ft. (2000 m)
Protection rating	IP 65; IP 66; IP 67; IP 69K (unused ports need to be properly sealed to maintain IP69K ratings)
Pollution Degree	2

Table 10-8: Approval/Tests

EMC	• EN 61000-6-2 • EN 61000-6-4

Table 10-9: Mechanical Data

Weight	FB-5104: 0.6 lbs. (272.8 g) FB-5108: 0.8 lbs (385 g
Materials	Housing: PA grey; socket: stainless steel (1.4404 / 316L)

Table 10-10: Electrical Connection

Voltage Supply IN X31	
Connector	M12

Table 10-10: Electrical Connection *(continued)*

Voltage Supply IN X31		
Wiring	(connector diagram: 2, 1, 3, 4)	1. + 24 Vdc (US) 2. - 3. GND (US) 4. -
PROFINET ® IN / OUT x21, X22		
Connector	M12	
Wiring	(connector diagram: 1, 2, 5, 4, 3)	1. TX + 2. RX + 3. TX - 4. RX - 5. -
Process connection IO-Link Ports Class A X01…X04/X08		
Connector	M12	
Wiring	(connector diagram: 1, 2, 5, 4, 3)	1. + 24 Vdc (US) 2. DI 3. GND (US) 4. C/Q IO-Link 5. -

10.2 PROFINET®

Table 10-11: Parameter Data

Slot	Sub-slot	Name	Description
1	1	Master	Parameter data of the IO-Link master (see Table 10-12)
	2	Port X01	• Parameter data of the IO-Link ports (see Table 10-13) • Fieldbus modules (see Table 10-14)
	3	Port X02	
	4	Port X03	
	5	Port X04	

Table 10-12: Parameter of the IO-Link Master

Parameter	Description	Possible values	
Access rights	The access rights to the parameter data, process data, and events/diagnostic messages of the IO-Link master and the connected IO-Link devices	PROFINET	• PROFINET has read and write access rights to parameters and process data • PROFINET has read access rights to events/alarms
		Keep setting	Keep settings

Table 10-13: Parameters of the IO-Link Ports

Parameter	Description	Possible values	
Fail-safe mode	Behavior in case the PROFINET connection is interrupted	No fail safe	Deactivated
		Fail Safe Reset Value	Reset to default values
		Fail Safe Old Value	Maintain the most recent valid process value
		Fail Safe with Pattern	Set user-defined values
Pattern Value[1]	• Required values for the process data in case the connection is interrupted (as hexadecimal value) • Pattern depends on the size of the selected PROFINET module	Per byte: 0x00…0xFF	
Port cycle time	Cycle time of the data transmission at the IO-Link port	As fast as possible	The device automatically sets the fastest possible cycle time.
		2 ms to 128 ms	2 ms to 128 ms
Validation / Data Storage	Supported IO-Link standard and behavior of the FB-510X when a new IO-Link device is connected to the IO-Link port	No check and clear	• No verification of the vendor ID and device ID • No data storage

Table 10-13: Parameters of the IO-Link Ports *(continued)*

Parameter	Description	Possible values	
		Type compatible V1.0 device	• IO-Link device is compatible with the V1.0 IO-Link standard
			• Verification whether it is an IO-Link device of the same type (validation via vendor ID and device ID)
			• No data storage
		Type compatible V1.1 device	• IO-Link device is compatible with the V1.1 IO-Link standard
			• Verification whether it is an IO-Link device of the same type (validation via vendor ID and device ID)
			• No data storage

Table 10-13: Parameters of the IO-Link Ports *(continued)*

Parameter	Description	Possible values	
		Type compatible V1.1 device with Backup + Restore	• IO-Link device is compatible with the V1.1 IO-Link standard. • Verification whether it is an IO-Link device of the same type (validation via vendor ID and device ID). • The IO-Link master saves the parameter values of the connected IO-Link device; modifications of the parameter values are also stored. • When connecting an IO-Link device with factory settings, the parameter values stored in the IO-Link master are restored automatically on the IO-Link device.

Table 10-13: Parameters of the IO-Link Ports *(continued)*

Parameter	Description	Possible values	
		Type compatible V1.1 device with Restore	• IO-Link device is compatible with the V1.1 IO-Link standard. • Verification whether it is an IO-Link device of the same type (validation via vendor ID and device ID). • The IO-Link master stores the parameter values of the connected IO-Link device once if the data memory of the FB510X is empty. • When connecting an IO-Link device, the parameter values stored in the IO-Link master are restored automatically on the IO-Link device.
Vendor ID (VID)	ID of the manufacturer that is to be validated	0 ... 65535	ID of the manufacturer of the IO-Link device (Rosemount™: 38)
Device ID (DID)	ID of the IO-Link device	0 ... 16777215	ID of the IO-Link device
[IO-Link Events]	Enable/disable the transmission of IO-Link events	Disabled	IO-Link won't be transmitted
		Enabled	IO-Link events will be transmitted

(1)   Settings are only valid if Fail Safe Mode = Fail Safe with Pattern

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Note
If the parameter values of an IO-Link device are changed with IO_LINK_DEVICE, the backup mechanism remains ineffective. The changed parameter values are not stored on the IO-Link master.

10.3   Cyclic data

Table 10-14: PROFINET Modules

Module	Descriptions	
IO-Link 32I/32O + PQI	IO-Link activated	32 bytes input and output data and PQI
IO-Link 16I/16O + PQI		16 bytes input and output data and PQI
IO-Link 8I/8O + PQI		8 bytes input and output data and PQI
IO-Link 4I/4O + PQI		4 bytes input and output data and PQI
IO-Link 2I/ 2O + PQI		2 bytes input and output data and PQI
IO-Link 1I/1O + PQI		1 byte input and output data and PQI
IO-Link 1I/15O + PQI		1 byte input and 15 bytes output data and PQI
IO-Link 32I + PQI		32 bytes input data and PQI
IO-Link 16I + PQI		16 bytes input data and PQI
IO-Link 8I + PQI		8 bytes input data and PQI
IO-Link 4I + PQI		4 bytes input data and PQI
IO-Link 2I + PQI		2 bytes input data and PQI
IO-Link 1I + PQI		1 byte input data and PQI
IO-Link 32O + PQI		32 bytes output data and PQI
IO-Link 16O + PQI		16 bytes output data and PQI
IO-Link 8O + PQI		8 bytes output data and PQI
IO-Link 4O + PQI		4 bytes output data and PQI
IO-Link 2O + PQI		2 bytes output data and PQI
IO-Link 1O + PQI		1 byte output data and PQI
DI + PQI	IO-Link deactivated	Digital input and PQI
DO + PQI		Digital output and PQI
Disabled	Deactivated	

PQI (Port Qualifier Information)

Port Qualifier Information (PQI) contains diagnostic information about the IO-Link port. In addition to the process data, the IO-Link master sends the PQI to the PROFINET controller.

Bit							
7	6	5	4	3	2	1	0
PQ	DE	DA	--	--	--	D12	D14

Legend:

- [D14]   Signal status of the digital input on pin 4 (DI)   FALSE   OFF
          TRUE   ON

- [D12]   Signal status of the digital input on pin 2 (if used)   FALSE   OFF
          TRUE   ON

- [DA]   Device Available: shows if the IO-Link device has been recognized and if the device is in the "preoperate" or in the "operate" state   FALSE   No device
          TRUE   Error detected

- [DE]   Device Error: shows if an error or a warning occurred; Note: The user needs to determine the cause of the fault separately via acyclic services.   FALSE   No error
          TRUE   Error detected

- [PQ]   Port Qualifier: shows if IO data is valid   FALSE   Invalid
          TRUE   Valid

10.4 Acyclic data

The FB-5104/5108 supports the following I&M datasets (I&M = Identification & Maintenance):

Table 10-15: I & M0 (Slot 0)

Variable	Description	Access[1]	Size
Vendor ID	IO-Link ID of the manufacturer	r	2
Order ID	Order number of the device (numbers are separated by blanks)	r	20
Serial number	Serial number of the device (numbers separated by blanks)	r	16
Hardware revision	Hardware revision of the device	r	2
Software revision prefix	Prefix of the software revision of the device (V, R, P, U or T)	r	1
Software revision	Software revision (numbers separated by blanks, e.g. x y z in "Vx.y.z")	r	3
Revision counter	Revision counter; is incremented with each parameter change	r	2
Profile ID	ID of sub-module profile (Slot 0: 0x0000)	r	2
Profile specifictype	Additional value for profile ID; 0, if not used	r	2
IM version	I&M version (default value: 0x0101)	r	2

Table 10-15: I & M0 (Slot 0) *(continued)*

Variable	Description	Access[1]	Size
IM Supported	Supported I&M datasets (0x1110 for I&M1-3)	r	2

(1) r = only read

Table 10-16: I&M1 (Slot 0)

Variable	Description	Access[1]	Size
TagFunction of submodule	Function of the device (ASCII, padded with spaces)	r/w	32
TagLocation of submodule	Location of the device in the plant (ASCII, padded with spaces)	r/w	22

(1) r/w = read and write

Table 10-17: I&M2 (Slot 0)

Variable	Description	Access[1]	Size
Installation _Date	Installation date of the device (ASCII, padded with spaces)	r/w	16
	Reserved	r/w	38

(1) r/w = read and write

Table 10-18: I&M3 (Slot 0)

Variable	Description	Access[1]	Size
Descriptor	Description of the device (ASCII, padded with spaces)	r/w	54

(1) r/w = read and write

Table 10-19: I&M0 (Slot 1)

Variable	Description	Access[1]	Size
Vendor ID	IO-Link ID of the manufacturer	r	2
Order ID	Order number of the device (numbers are separated by blanks)	r	20
Serial number	Serial number of the device (numbers separated by blanks)	r	16
Hardware revision	Hardware revision of the device	r	2
Software revision prefix	Prefix of the software revision of the device (V, R, P, U or T)	r	1
SOFTWARE_REVISION	Software revision (numbers separated by blanks, e.g. x y z in "Vx.y.z")	r	3

Table 10-19: I&M0 (Slot 1) *(continued)*

Variable	Description	Access[1]	Size
REVISION_COUNTER	Revision counter; is incremented with each parameter change	r	2
Profile ID	ID of sub-module profile (Slot 0: 0x0000)	r	2
Profile specifictype	Additional value for profile ID; 0, if not used	r	2
IM version	I&M version (default value: 0x0101)	r	2
IM Supported	Suported I&M datasets (0x1110 for I&M1-3)	r	2

(1)   r = only read

Table 10-20: Diagnostic and Alarms

ECD Code	Name	Description	Type
0x02	EVNT_CODE_M_PDU_CHECK	Receive frame with CRC error	Alarm
0x1B	EVNT_CODE_S_RETRY	Repetitions detected	Alarm
0x1E	EVNT_CODE_P_SHORT	Short circuit on C/Q cable detected	Diagnostics
0x1F	EVNT_CODE_P_SENSOR	Error in the sensor supply	Diagnostics
0x20	EVNT_CODE_P_ACTOR	Error in the actuator supply	Diagnostics
0x21	EVNT_CODE_P_POWER	Error in the power supply of the IO-Link master	Diagnostics
0x28	EVNT_CODE_DSREADY_NOACTION	Data storage completed, but no action, since CRC was correct	Alarm
0x29	DS_FAULT_IDENT	Sensor does not match the content of the data memory	Alarm
0x2A	DS_FAULT_SIZE	Sensor parameters too large for data memory	Alarm
0x2B	DS_FAULT_UPLOAD	Error during data memory transmission from the sensor	Alarm
0x2C	DS_FAULT_DOWNLOAD	Error during data memory transmission to the sensor	Alarm
0x2F	DS_FAULT_DEVICE_LOCKED	Error during data storage because the device is blocked	Alarm
0x32	EVNT_CODES_DSREADY_DOWNLOAD	Parameter transmission to the sensor finished	Alarm
0x33	EVNT_CODE_DSREADY_UPLOAD	Parameter transmission from the sensor finished	Diagnostics

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