Operating Instructions

IO-Link Master with PROFINET Interface
PowerLine
8 Ports
IP 65 / IP 66 / IP 67

AL1202

Firmware: 2.2.x or higher
LR DEVICE: 1.4.0.x or higher

English

7391248 / 02 09 / 2019

Contents

1 Preliminary note

Content

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1.1 Legal and copyright information

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1.2 Purpose of the document

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This document is only for device types "IO-Link master - PROFINET gateway (PowerLine) 8 port IP 65 / IP 66 / IP 67" (art. no.: AL1202).

It is part of the device and 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.

1.3 Explanation of Symbols

34171

WARNING!
Death or serious irreversible injuries may result.

CAUTION!
Slight reversible injuries may result.

NOTICE!
Property damage is to be expected or may result.

Important note
Non-compliance can result in malfunction or interference

Information
Supplementary note

► ... Request for action

> ... Reaction, result

→ ... "see"

abc Cross-reference

123 Decimal number
0x123 Hexadecimal number
0b010 Binary number

[...] Designation of pushbuttons, buttons or indications

1.4 Modification history

34492

Version	Topic	Date
00	New creation of document	11 / 2018
01	Correction: Wiring of IO-Link ports class B	02 / 2019
02	Correction: Technical data - Max. current load per output	09 / 2019

2 Safety instructions

Content

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2.1 General

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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.

2.2 Required background knowledge

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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.

2.3 Safety symbols on the device

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General warning
Observe instructions in chapter "Electrical connection" (→ **Electrical connection** (→ S. 13))!

2.4 Tampering with the unit

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WARNING!

Tampering with the unit.

> In case of non-compliance:
  - Possible affects on safety of operators and machinery
  - Expiration of liability and warranty

- ► Do not open the devices!
- ► Do not insert any objects into the devices!
- ► Prevent metal foreign bodies from penetrating!

3 Intended use

Content

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3.1 Permitted use

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

3.2 Prohibited use

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The device may not be used beyond the limits of the technical data (→ **Technical data** (→ S. 44))!

4 Function

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4.1 Communication, parameter setting, evaluation

Content

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4.1.1 IO-Link

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The device offers the following IO-Link functions:

- IO-Link master (IO-Link revision 1.0 and 1.1)
- 8 IO-Link ports for connection of IO-Link devices
- Provision of process data of the connected IO-Link devices for LR SMARTOBSERVER monitoring software (→ www.ifm.com)

4.1.2 PROFINET

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The device offers the following PROFINET functions:

- Profinet RT Device (Class B)
- 2 port switch for access to the PROFINET interface; integrated switch is RT and IRT conform according to PROFINET V2.3
- Gateway for transmission of the process and parameter data between the connected IO-Link devices and the higher-level PROFINET controller
- Supported protocols: SNMP, LLDP, MRP, DCP, RTA, RTC Class 1 (nicht synchronisiert)
- PROFINET features: FSU, I&M0 - 4 read/write
- Device description: GSDML file

4.1.3 Parameter setting

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The device provides the following configuration options:

- Parameter setting of the IO-Link master of the AL1202 with parameter setting software LR DEVICE and/or PROFINET projection software
- Parameter setting of the connected IO-Link devices (sensors, actuators) with parameter setting software LR DEVICE and/or PROFINET projection software
- Storage of parameter sets of the connected IO-Link devices for automatic recovery (data storage)

4.1.4 Visual indication

34192

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 Ethernet connection
- Status, error and short circuit/overload indication of the IO-Link ports

4.2 Digital inputs

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The device has 4 additional digital inputs (type 2 according to EN 61131-2).

The digital inputs are on pin 2 of the IO-Link ports X01...X04.

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

4.3 IO-Link supply

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The device has 8 supplies for IO-Link devices (sensors, actuators).

The IO-Link ports X01...X04 are Class-A ports. The IO-Link interfaces X05...X08 are Class-B ports.

Every supply provides short circuit monitoring.

The device ensures fire protection for connected IO-Link devices by providing an energy-limited circuit at the IO-Link ports (to IEC61010-1 and Class 2 to UL1310).

4.4 Voltage output

34592

The device has a voltage output (X32) for the supply of an additional device. That means that several devices of type "PowerLine" can be supplied via one singe voltage source (daisy chain).

5 Mounting

Content

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5.1 Mount the device

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- ► Disconnect the system from power before installation.
- ► For installation choose a flat mounting surface.
- ► Please observe the maximum tightening torque.

► Fix the unit to the mounting surface using 2 M5 mounting screws and washers.
  - Tightening torque: 1.8 Nm

► Ground the unit via the two mounting screws of the upper mounting lugs.

6 Electrical connection

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6.1 Notes

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A qualified electrician must connect the unit.

► The national and international for regulations setting up electrical equipment must be complied with.

The unit is only suitable for operation using SELV/PELV voltages.

► Please note the information concerning IO-Link wiring!

This unit contains components that may be damaged or destroyed by electrostatic discharge (ESD).

► Please observe the required precautions against electrostatic discharge!

The IP rating of the overall system depends on the protection ratings of the individual devices, the applied connection elements and the corresponding protective caps.

► Provide cables with a strain relief depending on the mounting conditions to avoid excessive strain on the installation points and the M12 connections.

► Ensure correct fit and proper assembly of the M12 connecting parts. If these instructions are not complied with, the specified protection rating cannot be guaranteed.

For UL applications:

► To connect the IO-Link master and the IO-Link devices, only use UL-certified cables of the CYJV or PVVA category with a minimum temperature of 80 °C (75 °C in case of maximum ambient temperature of 40 °C).

Wiring: → **Technical data** (→ S. 44)

By means of basic insulation according to EN61010-1, the circuits are separated from each other and from device surfaces that could be touched (secondary circuit with 30 V DC maximum, supplied from mains circuit up to 300 V overvoltage category II).

By means of basic insulation according to EN61010-1, the communication interfaces are separated from each other and from device surfaces that could be touched (secondary circuit with 30 V DC maximum, supplied from mains circuit up to 300 V overvoltage category II). They are designed for network environment 0 according to IEC TR62102.

6.2 Ethernet ports

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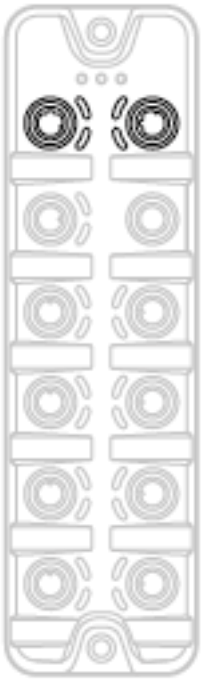

- ► Connect the unit via the M12 socket X21 and/or X22 with the PROFINET network (e.g. PROFINET PLC, additional PROFINET device)
  - Tightening torque: 0.6...0.8 Nm
- ► Connect the unit via the M12 socket X21 and/or X22 to the industrial Ethernet network (e.g. laptop/PC with installed parameter setting software LR DEVICE, laptop/PC with installed monitoring software LR SMARTOBSERVER)
  - Tightening torque: 0.6...0.8 Nm
- ► For the connection, use M12 connectors with protection rating IP 65 / IP 66 / IP 67 or higher (→ **Accessories** (→ S. 42)).
- ► Cover the unused sockets with M12 protective caps (art no. E73004).
  - Tightening torque 0.6...0.8 Nm

6.3 IO-Link Ports

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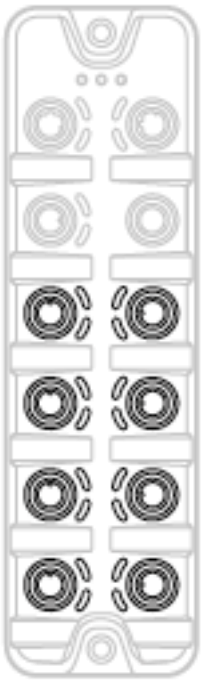
Notes on wiring:

- The IO-Link ports of the AL1202 meet the requirements of the IO-Link specifications 1.0 to 1.1.2.
- The connected IO-Link devices must be supplied exclusively via the IO-Link master.
- The additional digital inputs IO-Link ports X01...X04 (pin 2) have a type 2 behaviour according to the standard EN61131-2. The connected electronics must be electrically suited for this.



► Connect the connectors of the IO-Link devices with the M12 sockets X01...X04 (Ports Class A).
  - Tightening torque: 0.6...0.8 Nm
  - Maximum cable length per IO-Link port: 20 m

► Connect the connectors of the IO-Link devices with higher power requirements with the M12 sockets X01...X04 (Ports Class B).
  - Tightening torque: 0.6...0.8 Nm
  - Maximum cable length per IO-Link port: 20 m

► To connect the devices, use M12 connectors with protection rating IP 65 / IP 66 / IP 67 or higher (→ **Accessories** (→ S. 42)).

► Cover unused sockets with M12 protective caps (art. no.: E73004).
  - Tightening torque 0.6...0.8 Nm

6.4 Connect the device

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CAUTION!

Exceeding the maximum input current of 12 A

> Fire hazard

► Select I_U and I_A of the power supplies US and UA taking into account the derating characteristics of the AL1202 (→ **Derating charcteristics** (→ S. 45))!

► Disconnect power.

► Connect device via the M12 socket X31 to US and UA suppyling 24 V DC each (20...30 V SELV/PELV; to IEC 61010-1, secondary circuit with maximum 30 V DC, supplied by mains circuit up to 300 V of overvoltage category II).

- Tightening torque: 0.6...0.8 Nm.
- Maximum cable length: 25 m

► To connect the device, use T-coded M12 connectors with protection rating IP 65 / IP 66 / IP 67 or higher (→ **Accessories** (→ S. 42)).

Optional: Supply of an additional PowerLine devices (Daisy chain):

► Connect device via the M12 socket X31 to M12 socket of the voltage output X32 of the requested AL12nn.

- Tightening torque: 0.6...0.8 Nm
- Maximum cable length: 25 m

► To connect the device, use T-coded M12 connectors with protection rating IP 65 / IP 66 / IP 67 or higher (→ **Accessories** (→ S. 42))

When using connectors longer than 25 m keep in mind the voltage drop as well as the required minimum voltage supply of the AL1202.

7 Operating and display elements

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7.1 Overview

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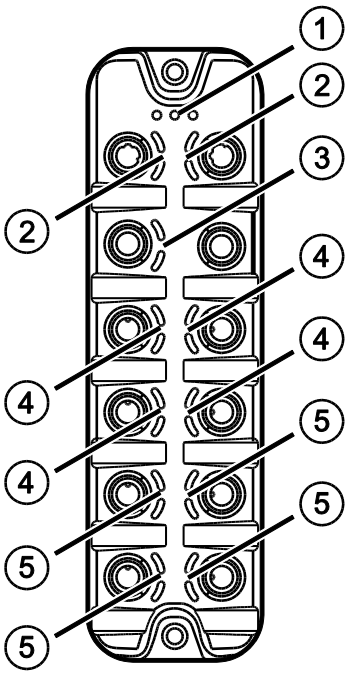

1. Status LEDs RDY, BF and SF
   → **Status LEDs** (→ S. 18)
2. Status LEDs LNK and ACT of the PROFINET interfaces 1 (X21) and 2 (X22)
   → **Ethernet interface** (→ S. 18)
3. Status LEDs US and UA of the voltage supply (X31/X32)
   → **Voltage supply** (→ S. 19)
4. Status-LEDs IOL and DI of the IO-Link port Class A (X01...X04)
   → **IO-Link ports (Class A)** (→ S. 19)
5. Status LED IOL of the IO-Link port Class B (X05...X08)
   → **IO-Link ports (Class B)** (→ S. 19)

7.2 LED indicators

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The device only has the following LED indicators:

7.2.1 Status LEDs

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The RDY LED shows the status of the gateway.
The BF LED (Bus Failure) shows the status of the PROFINET connection.
The SF LED (System Failure) shows the status of the system.

Status LED			Description
RDY	green	on	Gateway functions properly
		flashes 1 Hz	Error
		flashes 5 Hz	Firmware update
		off	Gateway does not function; Unit reboots
BF	red	on	Bus error
		flashes 1 Hz	No connection to the PROFINET controller
		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

7.2.2 Ethernet interface

34348

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

Status LED			Description
LNK	green	on	Ethernet connection established
		off	No Ethernet connection
ACT	yellow	flashes	Data is transmitted via the Ethernet interface.
		off	No data transmission

7.2.3 Voltage supply

34590

The interface for voltage supply (X31) has the LEDs that are marked as US and UA. The LEDs indicate the status of the voltage supply:

Status LED			Description
US	green	lights	The supply voltage US is applied.
		off	No suppply voltage is applied or the applied supply voltage is too low.
UA	green	lights	The supply voltage UA for IO-Link device port class B is applied.
		off	No suppply voltage is applied or the applied supply voltage is too low.

7.2.4 IO-Link ports (Class A)

34074

Each IO-Link port Class A has 2 LEDs marked as IOL and DI. The LEDs indicate the status of the IO-Link port.

Status LED			Description
IOL	yellow	off	Port configured as DI / DO: pin 4 (C/Q) = OFF
		on	Port configured as DI / DO: pin 4 (C/Q) =ON
	green	flashes 1 Hz	Port configured as IO-Link: no IO-Link device detected
		flashes 2 Hz	Port configured as IO-Link: PROOPERATE state
		on	Port configured as IO-Link: OPERATE state
	red	flashes 2 Hz	Port configuration error or short circuit or overload
		on	Transmission error
DI	yellow	off	Digital input : pin 2 (DI) = OFF
		on	Digital input: pin 2 (DI) = ON

7.2.5 IO-Link ports (Class B)

34588

Each IO-Link port Class B (X05...X08) has the LED with the description IOL. The LEDs indicate the status of the IO-Link port.

Status LED			Description
IOL	yellow	on	Port configured as DI/DO: pin 4 (C/Q) = ON
		off	Port configured as DI/DO: pin 4 (C/Q) = OFF
	green	on	IO-Link transmission functions properly
		flashing 1 Hz	Port configured as IO-Link, but no IO-Link transmission
	red	on	Short circuit or overload in supply voltage
		flashing 1 Hz	Transmission error

8 Set-up

Content

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When the supply voltage has been switched on, the AL1202 starts with the factory settings. The display elements signal the current operating status (→ **Operating and display elements** (→ S. 17)).

To enable parameter setting of the AL1202, the fieldbusinterface of the network environment must be configured correspondingly.

► Configure the fieldbus interface (ports X21 / X22) (→ **Fieldbus: Set PROFINET interface** (→ S. 26) or → **Integrate the IO-Link master in the project** (→ S. 33)).

> The fieldbus interface has valid IP settings.

> The user can set the parameters of the AL1202.

Further steps:

- Optional: Update the firmware of the AL1202 (→ **Firmware update** (→ S. 39)).
- Set the parameters of the AL1202 (→ **Configuration** (→ S. 22)).

8.1 Read device and diagnostic information

34216

In order to read the diagnostic information about the current device status via the web interface:

► Connect laptop/PC and AL1202 via the Ethernet internet.

► Start web browser.

► Enter the IP address of the AL1202 into the address field of the browser and press [ENTER] to confirm.

> Web browser shows the web interface of the device.

> The page shows the following data:

- Table with 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
[MasterCycleTime]	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 ▪ For ifm articles: This article number is stored along with a link to the produkt page on the ifm website.
[Serial]	Serial number of the IO-Link device
[LR Mode / Interval]	Cycle time for the communication with the SmartObserver

- 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)

- 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

9 Configuration

Content

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9.1 LR DEVICE

Content

33692

On delivery, the AL1202 is configured with the factory settings (→ **Factory settings** (→ S. 41)).

Required software: LR DEVICE (1.4.0.x or higher) (art.-no.: QA0011/QA0012)

9.1.1 Remarks

Content

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Offline parameter setting

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The AL1202 supports the offline parameter setting. In this context, the user creates and stores a configuration for the IO-Link master and the connected IO-Link devices without being connected to the AL1202 (OFFLINE mode). The configuration created in this way can be stored as a file (*.lrp) and loaded to the AL1202 and activated at a later date.

Further information about offline parameter setting: → Operating instructions LR DEVICE

VPN connection

34382

An active VPN connection blocks the access of the parameter setting software LR DEVICE to the PROFINET interface of the AL1202.

► Deactivate the VPN connection in order to be able to access the AL1202 with the LR DEVICE.

9.1.2 IoT: Configure access rights

34046

The access rights define which instance may read and / or write the parameter data, process data and event/diagnostic messages.

In order to configure the access rights to the IO-Link master:

► Select [IoT] menu.

> The menu page shows the current settings.

► Set the following parameters as required:

Name	Description	Possible values	
[Access Rights]	The access rights to the parameter data, process data and the event/diagnostic messages of the IO-Link master as well as the connected IO-Link devices	[PROFINET + IoT]	▪ PROFINET and IoT Core have read and write access rights to parameters and process data ▪ PROFINET and <IoT Core> have read access rights to events/alarms
		[PROFINET + IoT (read-only)]	▪ PROFINET has read and write access rights to parameters and process data ▪ PROFINET has read access rights to events/alarms ▪ IoT Core only has read access rights to parameters, process data and events/alarms
		[IoT only]	▪ IoT Core has read and write access rights to parameters and process data ▪ IoT has read access rights to events/alarms ▪ PROFINET has no access rights

► Save changed values on the device.

If the parameter [Access rights] is set to [PROFINET + IoT] via IoT and PROFINET projection, then the parameter values set in the PROFINET projection software apply.

If the parameter [Access rights] is set to [IoT only] via IoT, then set the parameter [Access rights] to [Keep settings] in the PROFINET projection software.

Changes of the parameter [Access Rights] are only effective after restarting the device (→ **Firmware: Reboot the device** (→ S. 30))

9.1.3 IoT: Configure the interface to the LR SMARTOBSERVER

34048

To enable data transfer between the device and the LR SMARTOBSERVER monitoring software, the LR SMARTOBSERVER monitoring software interface has to be configured.

► Select [IoT] menu.

> The menu page shows the current settings.

► Set the following parameters as required:

Name	Description	Possible values	
[IP address LR SMARTOBSERVER]	IP address of the PC on which the LR SMARTOBSERVER is installed.	Factory setting: 255.255.255.255	
[Port LR SMARTOBSERVER]	Port number that is used to send process data to the LR SMARTOBSERVER	0 ... 65535	Factory setting:: 35100
[Interval LR SMARTOBSERVER]	Cycle time for the transfer of the process data to the LR SMARTOBSERVER (value in milliseconds)	[Off]	no transfer
		500 ... 2147483647	500 ms ... 2147483647 ms
[Application Tag]	Source identifier of the IO-Link master in the structure of the LR SMARTOBSERVER (String32)	Factory setting: AL1202	

After changing the parameter [Port LR SMARTOBSERVER] or [Application Tag], it may take 120 seconds before the device establishes a new TCP connection.

To prevent the delay:

► Reboot the device after the parameter change.

► Save changed values on the device.

9.1.4 Fieldbus: Set PROFINET interface

34589

For the access of the PROFINET interface the Ethernet ports X21/X22 need to be set:

► Select [Fieldbus] menu.

> The menu page shows the current settings.

► Set the following parameters as required:

Name	Description	Possible values
[IP address]	IP address of the PROFINET interface	Factory setting: 0.0.0.0
[Subnet mask]	Subnet mask of the IP network	Factory setting: 0.0.0.0
[Default gateway IP address]	IP adrress of the network gateway	Factory setting: 0.0.0.0
[MAC address]	MAC address of the PROFINETA interface	The value is firmly set.
[Fieldbus firmware]		

► Save changed values on the device.

9.1.5 IO-Link ports: Activate data transfer to the LR SMARTOBSERVER

33690

The user can decide separately for each IO-Link port if the process data of the connected IO-Link devices should be transferred to the LR SMARTOBSERVER.

To transfer process data the interfaces to the LR SMARTOBSERVER have to be correctly configured (→ **IoT: Configure the interface to the LR SMARTOBSERVER** (→ S. 26)).

To activate / deactivate data transfer:

► Select [Port x] menu (x = 1...8).

> The menu page shows the current settings.

► Set the following parameters as required:

Name	Description	Possible values	
[Transmission to LR SMARTOBSERVER]	Transfer of process data of the connected IO-Link device to LR SMARTOBSERVER	[Disabled]	Process data is not transferred
		[Enabled]	Process data is transferred

► Save changed values on the device.

9.1.6 IO-Link ports: Configure operating mode

33694

The IO-Link ports X01...X08 of the device support the following operating modes:

- Digital input (DI): binary input signal at pin 4 (C/Q) of the IO-Link port
- Digital output (DO): binary output signal at pin 4 (C/Q) of the IO-Link port
- IO-Link: IO-Link data transfer via pin 4 (C/Q) of the IO-Link port

The user can set the operating mode separately for each IO-Link port.

To set the operating mode of an IO-Link port:

► Select [Port x] menu (x = 1...8).

> The menu page shows the current settings.

► Set the following parameters as required:

Name	Description	Possible values	
[Mode]	Operating mode of the IO-Link port	[Disabled]	Port deactivated
		[DI]	Operation as digital input
		[DO]	Operation as digital output
		[IO-Link]	Operation as IO-Link interface
[Cycle time actual]**	Current cycle time of the data transfer between IO-Link master and IO-Link device on the port (value in microseconds)	Parameter can only be read	
[Cycle time preset]*	Cycle time of the data transfer between the IO-Link master and the IO-Link device at the port (value in microseconds)	0	The device automatically sets the fastest possible cycle time.
		1 ... 132800	1 microsecond ... 132800 microseconds
[Bitrate]**	Current transmission rate of the data transfer between the IO-Link master and the IO-Link device on the port	Parameter can only be read	

* ... Parameter only available if [Mode] = [IO-Link]
** ... Parameter only visible if the IO-Link device is connected to the IO-Link port.

► Save changed values on the device.

9.1.7 IO-Link ports: Set the device validation and data storage

33697

In the operating mode "IO-Link" the user can set the behaviour of the IO-Link port with regard to device validation and the storage / restoration of the parameter data of the connected IO-Link device.

To configure the device validation and the data storage:

► Select [Port x] menu (x = 1...8).

> The menu page shows the current settings.

► Set the following parameters as required:

Name	Description	Possible values	
[Validation / Data Storage]	Supported IO-Link standard and behaviour of the device during connection of a new IO-Link device on port x (x = 1...8)	[No check and clear]	▪ No verification of the vendor ID and device ID ▪ No data storage
		[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
		[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 saved (observe the note!) ▪ 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.
		[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 saves the parameter values of the connected IO-Link device once. ▪ 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.
[Vendor ID]	ID of the manufacturer that is to be validated	0 ... 65535	Factory setting: 0 ifm electronic: 310
[Device ID]	ID of the IO-Link device that is to be validated	0 ... 16777215	Factory setting: 0

► Save changed values on the device.

9.1.8 Firmware: Reset device to factory settings

33838

When the IO-Link master is reset, all parameters are set to the factory settings:
To reset the device to factory settings:

► Select [Firmware] menu.
> The menu page shows the current settings.
► Click on [Factory Reset] to reset the device.
> LR DEVICE sets the device to the factory settings.

9.1.9 Firmware: Reboot the device

33832

When rebooting the device, all settings are kept.
To restart the AL1202:

► Select [Firmware] menu.
> The menu page shows the current settings.
► Click on [Reboot] to reboot the device.
> LR DEVICE reboots the ifm IO-Link master.

9.1.10 Configure IO-Link devices

33856

To configure the IO-Link devices connected to the device with the LR DEVICE parameter setting software:

Requirements:

> IO-Link master is correctly installed and connected to the LR DEVICE parameter setting software.

> The IO-Link device is correctly connected to the AL1202.

> Operating mode of the IO-Link port is "IO-Link" (→ **IO-Link ports: Configure operating mode** (→ S. 28)).

> IoT has write access rights to the IO-Link master (→ **IoT: Configure access rights** (→ S. 25)).

1 Select IO-Link master

► Start LR DEVICE.

► Update IODD file library
OR:
Import IODD file of the IO-Link device manually.

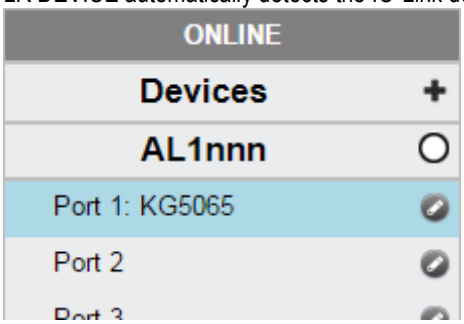
► Scan network for devices.

> LR DEVICE detects IO-Link master.

2 Add IO-Link device

► Under [ONLINE]: Click on the required IO-Link master.

> LR DEVICE automatically detects the IO-Link devices connected to the IO-Link master (e.g. ifm sensor KG5065).



3 Configure IO-Link device

► Mouse click on the port to which the IO-Link device is connected.

> LR DEVICE reads and shows the current parameter values of the IO-Link device.

► Configure IO-Link device.

Information about the available parameters of the IO-Link device: → IO Device Description (IODD) of the IO-Link device

► Save the changed configuration on the IO-Link device.

9.2 PROFINET

Content

34541

On the field bus side, the device can be configured with the following options:

- PROFINET projection software STEP 7 (version 5.5 SP 4 or higher)
- PROFINET projection software TIA portal

Further information about operation and functions of the PROFINET parameter setting software:

► Use the help function of the PROFINET projection software!

9.2.1 Install GSD Files

52478

ifm provides a GSD file to integrate the AL1202 in the PROFINET projection software. All parameters, process data and their valid value ranges are defined in the GSD file. The user can download the GSD file from the ifm website (→ www.ifm.com)).

To add the IO-Link master to the hardware catalogue of the PROFINET projection software:

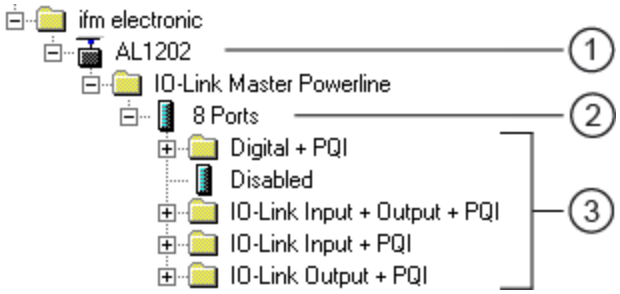
► Download the GSD file of the AL1202 from the ifm website.

► Launch the PROFINET projection software.

► Install the GSD file of the AL1202.

Once the GSD file is installed, the AL1202 is in the hardware catalogue in the following folder:

> [PROFINET IO] > [Addiotional Field Devices] > [IO] > [ifm electronic]



1 AL1202

2 IO-Link ports

3 PROFINET modules

9.2.2 Integrate the IO-Link master in the project

52479

The AL1202 can be integrated from the hardware catalogue into the project.

► Create new project /open project

► Create and configure PROFINET controller and coupling units.

► Create and configure PROFINET connection.

► Drag the [AL1202] node from the hardware catalogue and drop it on the PROFINET connection.

> The AL1202 is displayed as part of the PROFINET network.

To integrate the AL1202 in the network infrastructure, the fieldbus interface must be configured correspondingly.

► Double click on slot 0 to open the configuration of the AL1202.

► Configure the Ethernet interface of the IO-Link master.

► Drag the [8 Ports] node from the hardware catalogue and drop it on slot 1 of the IO-Link master.

► Save the project.

The IO-Link master is integrated in the project and can be configured.

9.2.3 Configure the IO-Link master

52480

You can access the configuration of the IO-Link master via slot 1.1 of the AL1202.

The parameter [Access Rights] determines which controller instance may have read and write access to the data of the IO-Link master.

To set the parameters of the IO-Link master:

► In the project: Double click on slot 1.1 of the AL1202.

► Set parameters [Access Rights] as required (→ **Parameter of the IO-Link master** (→ S. 49)).

► Save the project.

If the parameter [Access Rights] = [PROFINET + IoT] in LR DEVICE and the PROFINET projection software, the parameter values set in the PROFINET projection software will always apply.

If the parameter [Access Rights] = [IoT only] in LR DEVICE, set the parameter [Access Rights] = [Keep settings] in the projection software.

Changes of the parameter [Access Rights] will only be effective after restarting the IO-Link master (→ **Firmware: Reboot the device** (→ S. 30)).

9.2.4 Configure IO-Link ports

52481

You can access the configuration of the IO-Link ports via the slots 1.2 ... 1.9 of the AL1202. The following assignment applies

Slot	IO-Link port of the AL1202
1.2	Port X01
1.3	Port X02
...	...
1.9	Port X08

The available PROFINET modules are defined in the GSD file (→ **PROFINET modules** (→ S. 52)). A PROFINET module determines the following properties of an IO-Link port:

- Operating mode (IO-Link, DI, DO, deactivated)
- Type and length of the process data
- optional data (fail-safe values, device validation, data storage, cycle time, events)

The following table shows the available parameters depending on the selected operating mode:

Operating mode of the IO-Link ports	Available parameters						
	Fail-safe mode	Pattern Value	Validation / Data storage	Vendor ID (VID)	Device ID	Port cycle time	IO-Link events
DI: digital input	--	--	--	--	--	--	X
DO: digital output	X	--	--	--	--	--	X
IO-Link: input	--	--	X	X	X	X	X
IO-Link: output	X	X	X	X	X	X	X
IO-Link: input and output	X	X	X	X	X	X	X

-- = not available
X = available

To configure an IO-Link port of the AL1202:

► Drag the required PROFINET module from the hardware catalogue and drop it on the slot of the IO-Link port.
► Double click on the slot of the IO-Link port
► Set the parameters as required (→ **Parameters of the IO-Link ports** (→ S. 50)).
► Repeat the steps to configure further IO-Link ports.
► Save the project.

9.2.5 Configure IO-Link devices

52482

The AL1202 supports the configuration of the connected IO-Link devices via the PROFINET application. The configurable parameters depend on the IO-Link device that is used.

Configurable parameters of the IO-Link devices: → IO Device Description (IODD) of the IO-Link Devices

The following options are available:

Symbol (function block)	Description	Notes
IO_LINK_DEVICE (FB5001)	Acyclic access to the parameters of an IO-Link device	Input parameter: ▪ CAP: Access point for function AL1202: AL1202: 0xB400 ▪ PORT: Slot/sub-slot of the IO-Link interface of the connected IO-Link device Port X01: 1 Port X02: 2 ... Port X08: 8 ▪ IOL_INDEX and IOL_SUBINDEX: Index and sub-index of the parameter (depends on the IO-Link device: → IO Device Description (IODD))
IOL_CALL (FB1)	Acyclic access to the parameters of an IO-Link devices (obsolete)	→ IO_LINK_DEVICE (FB5001)

9.2.6 Read and write cyclic process data

52483

While the IO-Link ports are being configured, IEC addresses are generated automatically for inputs and outputs as well as the PQI byte. To enable access to the cyclic process data in the application, the user must couple the IEC addresses with symbolic variables. This can be done in global lists of variables (STEP 7: [Symbols]; TIA portal: [PLC tags]).

Take the following actions in global lists of variables of the PROFINET controller:

- ► Create a symbolic name and select the data type
- ► Assign an IEC address to the symbolic name
- ► Save the project.

Using the symbolic name, the user can read the inputs and write the outputs from the application.

- ► To check the validity of the cyclic process data, evaluate the PQI byte (→ **PQI (Port Qualifier Information)** (→ S. 53)).

Even if the fieldbus connection is interrupted, the PQI byte indicates that the process data is valid. This may have an unintended impact on the control process.

- ► Take suitable measures to detect an interruption of the fieldbus connection.

Read additional digital input

52549

IO-Link ports X01...X04 have a additional digital input (pin 2). The current value is mapped to the PQI byte (→ **PQI (Port Qualifier Information)** (→ S. 53)).

9.2.7 Read I&M datasets

52484

I&M0 provide the user with device-specific basic information. This ensures reliable identification of the device, the device's hardware and software components as well as the manufacturer.

The datasets I&M1 to 3 offer the programmer the possibility to store project-specific information on the device.

The programmer can access the I&M0 datasets of the slots 0 and 1 in the PROFINET projection software by means of the following functions:

Symbol / function block	Description	Notes
GET_IM_DATA	▪ Function block for reading the I&M datasets of a device ▪ 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 ▪ Observe access rights on datasets!	Input parameters: ▪ I&M1: Index = 0xAFF1 ▪ I&M2: Index = 0xAFF2 ▪ I&M3: Index = 0xAFF3

9.2.8 Detect diagnostics and alarms

52485

Available alarms and diagnostic messages: → **Diagnostic and alarms** (→ S. 56)

Symbol	Operational block	Description
I/O_FLT1	OB82	Diagnostic alarms
I/O_FLT2	OB83	Connect/disconnect alarms
RACK_FLT	OB86	Module rack failure

10 Maintenance, repair and disposal

Content

51990

The operation of the unit is maintenance-free.

► Dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations when it is no longer used.

10.1 Cleaning process

51991

► Clean the surface of the unit when necessary.

► Do not use any caustic cleaning agents for this!

10.2 Firmware update

33826

The new firmware is installed via the device's web interface.

If the firmware update is not successful, deactivate all connections to the PROFINET PLC, LR SMARTOBSERVER and LR DEVICE and repeat the process.

- ► Close connection to PROFINET PLC.
- ► Set the parameter [IP address SmartObserver] to 255.255.255.255 or 0.0.0.0 (→ **IoT: Configure the interface to the LR SMARTOBSERVER** (→ S. 26)).
- ► Stop the LRAgent.LRDevice service in the Windows task manager.

After the firmware update check the settings of the LR SMARTOBSERVER interface!

To install a new firmware version on the device:

Requirements

> File with new firmware has been downloaded.

> Ethernet connection between laptop/PC and device is established.

1 Call up web interface

- ► Start web browser.
- ► Enter the following into the address field of the browser and press [ENTER] to confirm:
  `http://<IP address of the device>/web/update`

> Web browser shows the [Firmware Update] page.

2 Load new firmware to AL1202

- ► Click on [Select file].

> Dialogue window appears.

- ► Select the firmware file and click on [Open] in order to adopt the file.
- ► Click on [Submit] to start the firmware update.

> Firmware is being loaded to the device.

> After successful storage, the success message is displayed

3 Restart the device

- ► Click on [Restart device now] to restart the device.

> The status LED RDY flashes quickly.

> Firmware is updating.

- ► Follow the instructions in the browser.

10.3 Replace IO-Link device

34182

To replace an IO-Link device:

Requirement:

> IO-Link device is with factory settings.

> IO-Link device supports IO-Link standard 1.1 or higher.

1 Set data storage

► Set the following parameters of the IO-Link port:
Validation and Data Storage = [Type compatible V1.1 device with Restore]

► Save changes.

2 Replace IO-Link device

► Disconnect old IO-Link device from IO-Link master.

► Connect new IO-Link device with the same IO-Link port of the AL1202.

> IO-Link master copies parameter values from the data memory to the new IO-Link device.

11 Factory settings

34594

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

12 Accessories

33870

List of accessories of AL1202: → www.ifm.com > Product page > Accessories

13 Appendix

Content

33879

13.1 Technical data

Content

34188

13.1.1 Application

33878

Application	
Application	I/O modules for field applications
Daisy-chain function	Voltage supply; communication interface

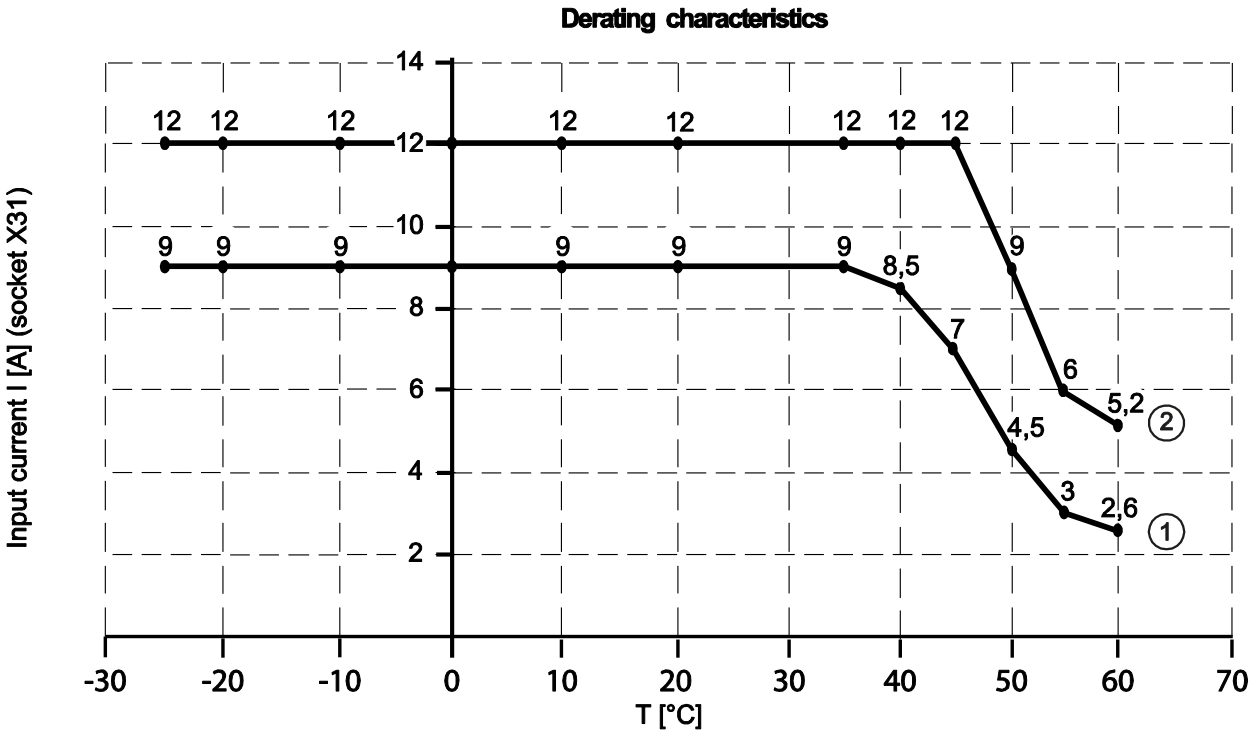
13.1.2 Electrical data

33808

Electrical data	
Operating voltage [V]	20...30 DC; (US; to SELV/PELV)
Current Consumption [mA]	300...3900; (US)
Protection class	III
Sensor supply US	
Max. current load total [A]	3.6

Derating charcteristics

34593



① Max. single input current [A] (from each U_S / U_A) if $I_S \leq 9A$ and $I_A \leq 9A$

② Max. total input current [A] (from sum $U_S + U_A$) if $I_S > 9A$ or $I_A > 9A$

e.g.:

I_S [A]	I_A [A]	curve
9	9	①
12	0	②
10	2	②
5	7	①

13.1.3 Inputs / outputs

34068

Inputs / outputs	
Total number of inputs and outputs	12; (configurable)
Number of Inputs and Outputs	Number of digital inputs: 12; Number of digital outputs: 8

13.1.4 Inputs

34069

Inputs	
Number of digital inputs	12; (IO-Link Port Class A: 4 x 2; IO-Link Port Class B: 4 x 1)
Switching level high [V]	11...30
Switching level low [V]	0...5
Digital inputs protected against short circuits	yes

13.1.5 Outputs

34053

Outputs	
Number of digital outputs	8; (IO-Link Port Class A: 4 x 1; IO-Link Port Class B: 4 x 1)
Max. current load per output [mA]	300
Short-circuit protection	yes

13.1.6 Interfaces

34586

Interfaces	
Communication interface	Ethernet; IO-Link
Communication interface	IO-Link; TCP/IP; PROFINET IO
Ethernet	
Transmission standard	10Base-T; 100Base-TX
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	4
Number of ports class B	4

13.1.7 Operating conditions

34062

Operating conditions	
Applications	Indoor use
Ambient temperature [°C]	-25...60
Storage temperature [°C]	-25...85
Max. perm. relative air humidity [%]	90
Max. height above sea level [m]	2000
Protection rating	IP 65; IP 66; IP 67
Pollution Degree	2

13.1.8 Approvals / tests

33877

Approval / tests	
EMC	▪ EN 61000-6-2 ▪ EN 61000-6-4
MTTF [Years]	90

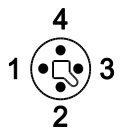
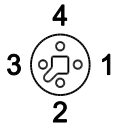
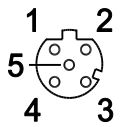
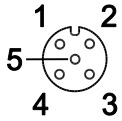
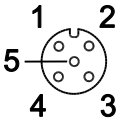
13.1.9 Mechanical data

34050

Mechanical data	
Weight [g]	409,5
Materials	Housing: PA; socket: brass nickel-plated

13.1.10 Electrical connection

34573

Voltage supply IN X31	
Connector	M12
Wiring	 1: + 24 V DC (US) 2: GND (UA) 3: GND (US) 4: +24 V DC (UA)
Voltage supply OUT X32	
Connector	M12
Wiring	 1: + 24 V DC (US) 2: GND (UA) 3: GND (US) 4: +24 V DC (UA)
Ethernet IN / OUT X21, X22	
Connector	M12
Wiring	 1: TX + 2: RX + 3: TX - 4: RX - 5: -
Process connection IO-Link Ports Class A X01...X04	
Connector	M12
Wiring	 1: + 24 V DC (US) 2: DI 3: GND (US) 4: C/Q IO-Link 5: -
Process connection IO-Link Ports Class B X05...X08	
Connector	M12
Wiring	 1: + 24 V DC (US) 2: + 24 V DC (UA) 3: GND (US) 4: C/Q IO-Link 5: GND (UA)

13.2 PROFINET

Content

33674

13.2.1 Parameter data

34546

Slot	Subslot	Name	Description
1	1	Master	Parameter data of the IO-Link master (→ **Parameter of the IO-Link master** (→ S. 49))
	2	Port X01	▪ Parameter data of the IO-Link ports (→ **Parameters of the IO-Link ports** (→ S. 50) ▪ modules (→ **PROFINET modules** (→ S. 52))
	3	Port X02	
	4	Port X03	
	5	Port X04	
	6	Port X05	
	7	Port X06	
	8	Port X07	
	9	Port X08	

Parameter of the IO-Link master

34552

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 + IoT	▪ PROFINET and LR DEVICE have read and write access rights to parameters and process data ▪ PROFINET and LR DEVICE have read access rights to events/alarms
		PROFINET + IoT (ro)	▪ PROFINET has read and write access rights to parameters and process data ▪ PROFINET has read access rights to events/alarms ▪ LR DEVICE only has read access rights to parameters, process data and events/alarms
		PROFINET only	▪ PROFINET has read and write access rights to parameters and process data ▪ PROFINET has read access rights to events/alarms ▪ LR DEVICE has no access rights (parameters, process data, events/alarms, web interface, firmware update)
		keep setting	keeps settings

Parameters of the IO-Link ports

34528

Parameter	Description	Possible values	
[Fail-safe mode]	Behaviour 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]*	▪ 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
		2.0 ms ... 128.0 ms	2 milliseconds ... 128 milliseconds
[Validation / Data Storage]	Supported IO-Link standard and behaviour of the AL1202 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
		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
		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 (→ observe the note!) ▪ 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.

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 AL1202 is empty. ▪ 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.
[Vendor ID (VID)]	ID of the manufacturer that is to be validated	0 ... 65535	ID of the manufacturer of the IO-Link device (ifm electronic: 310)
[Device ID]	ID of the IO-Link device that is to be validated	0 ... 16777215	ID of the IO-Link device
[IO-Link Events]	Enable / disable the transmission of IO-Link events	Diabled	IO-Link won't be transmitted
		Enabled	IO-Link events will be transmitted

* ... settings are only valid if [Fail Safe Mode] = Fail Safe with Pattern

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.

13.2.2 Cyclic data

Content

33814

PROFINET modules

34539

Module	Description	
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 bytes 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 bytes 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)

34530

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	--	--	--	DI2	DI4

Legend:

- [DI4] Signal status of the digital input on pin 4 (DI)
  - FALSE: OFF
  - TRUE: ON
- [DI2] 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 recognised and if the device is in the "preoperate" or in the "operate" state
  - FALSE: no device
  - TRUE: device 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

13.2.3 Acyclic data

Content

33868

I&M datasets

34555

The AL1202 supports the following I&M datasets (I&M = Identification & Maintenance):

I&M0 (Slot 0)

34545

Variable	Description	Access*	Size
Vendor ID	IO-Link ID of the manufacturer	r	2
OrderID	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 Specific Type	additional value for profile ID; 0, if not used	r	2
IMVersion	I&M version (default value: 0x0101)	r	2
IMSupported	Suported I&M datasets (0x1110 for I&M1-3)	r	2

* ... r = only read

I&M1 (Slot 0)

34543

Variable	Description	Access*	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

* ... r/w = read and write

I&M2 (Slot 0)

34544

Variable	Description	Access*	Size
Installation_Date	Installation date of the device (ASCII, padded with spaces)	r/w	16
	reserved	r/w	38

* ... r/w = read and write

I&M3 (Slot 0)

34550

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

* ... r/w = read and write

I&M0 (Slot 1)

34542

Variable	Description	Access*	Size
Vendor ID	IO-Link ID of the manufacturer	r	2
OrderID	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 the sub-module profile (Slot 1: 0x4E01 = IOLink)	r	2
Profile Specific Type	additional value for profile ID; 0, if not used	r	2
IMVersion	I&M version (default value: 0x0101)	r	2
IMSupported	Supported I&M datasets (0x0E for I&M1-3)	r	2

* ... r = only read

Diagnostic and alarms

34533

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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T

V