



Software manual
PLC Toolbox

GB

QMP031

ifm moneo|configure

Contents

1	Preliminary note	3
1.1	Legal and copyright information	3
1.2	Symbols used	3
1.3	Warnings.	3
1.4	Change history	3
2	Safety instructions.	4
2.1	Applicable documents.	4
3	Intended use	5
4	Installation.	6
4.1	System requirements	6
4.1.1	Hardware	6
4.1.2	Software	6
4.2	Activating the license for PLC Toolbox	6
5	GSDML Generator	7
5.1	Notes on use.	7
5.2	ifm moneo configure	7
5.2.1	Creating a parameter set for an IO-Link device.	7
5.2.2	Launching the GSDML Generator.	8
5.2.2.1	Overview.	9
5.2.3	Adding a parameter set to the GSD file.	9
5.2.4	Renaming a submodule	10
5.2.5	Deleting a parameter set from the GSD file.	11
5.3	PROFINET projection software.	13
5.3.1	Installing the modified GSD file	13
5.3.2	Integrating the IO-Link master into the project.	13
5.3.3	Adding the parameter set of an IO-Link device	14
5.3.4	Configuring the IO-Link device	14
5.3.5	Known restrictions.	16
5.4	Troubleshooting	16

1 Preliminary note

1.1 Legal and copyright information

© All rights reserved by ifm electronic gmbh. No part of these instructions may be reproduced and used without the consent of ifm electronic gmbh.

All product names, pictures, companies or other brands used are the property of the respective rights owners.

1.2 Symbols used

- ✓ Requirement
- Instructions
- ▷ Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note
Non-compliance may result in malfunction or interference.
-  Information
Supplementary note

1.3 Warnings

Warnings indicate the possibility of personal injury and damage to property. This enables safe product handling. Warnings are graded as follows:



WARNING

Warning of serious personal injury

▷ If the warning is not observed, fatal and serious injuries are possible.



CAUTION

Warning of minor to moderate personal injury

▷ If the warning is not observed, minor to moderate injuries are possible.

ATTENTION

Warning of damage to property

▷ If the warning is not observed, damage to property is possible.

1.4 Change history

Issue	Subject	Date
00	New creation of the document	11 / 2024

2 Safety instructions

Please read the installation instructions before installing the software.

Ensure that the software is suitable for your application without any restrictions.

If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.

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.

The use must comply with the applicable national and international standards. Responsibility lies with the person installing the software.



In principle, the GSDML Generator can be used for all IO-Link devices. ifm electronic guarantees correct generation of the GSD file based on the provided IODDs for its own IO-Link devices.

For third-party IO-Link devices, ifm electronic cannot guarantee that their IODDs have been correctly implemented for processing with the GSDML Generator.

- After configuring the installation via the modified GSD file, be sure to test the correct functionality of the third-party IO-Link devices!

2.1 Applicable documents

- Observe other applicable documents: → ifm moneo|configure help

3 Intended use

The PLC Toolbox is an extension for ifm moneo|configure.

The GSDML generator is a function of the PLC Toolbox.

The GSDML generator offers the possibility to add the parameter sets of IO-Link devices to a GSD file of a supported IO-Link master. Each parameter set is stored under a separate index in the GSD file.

4 Installation

4.1 System requirements

4.1.1 Hardware

- ifm PerformanceLine IO-Link master with PROFINET interface (AL1400, AL1401, AL1402, AL1403), firmware 3.1.70 or higher
- ifm PerformanceLine IO-Link master with PROFINET interface (AL1304, AL1305, AL1306, AL1307), firmware 3.1.95 or higher
- ifm CabinetLine IO-Link master with PROFINET interface (AL1901), firmware 3.1.95 or higher

4.1.2 Software

- ifm moneo|configure SA (version 1.8.x or higher) or ifm moneo|configure free (version 1.13.x or higher)
- GSD file for AL1400-03 IO-Link master with creation date 16/04/2021 or later (e.g. `GSDML-V2.35-ifm-AL1x0x-20210416.xml`)
- GSD file for AL1304-07 IO-Link master with creation date 27/01/2023 or later (e.g. `GSDML-V2.35-ifm-AL1x0x-20230127.xml`)
- GSD file for AL1901 IO-Link master with creation date 27/01/2023 or later (e.g. `GSDML-V2.35-ifm-AL1x0x-20230127.xml`)

4.2 Activating the license for PLC Toolbox

The PLC Toolbox is installed together with ifm moneo|configure (→ installation instructions). An additional licence is required to use the PLC Toolbox functions. The license must be purchased separately.

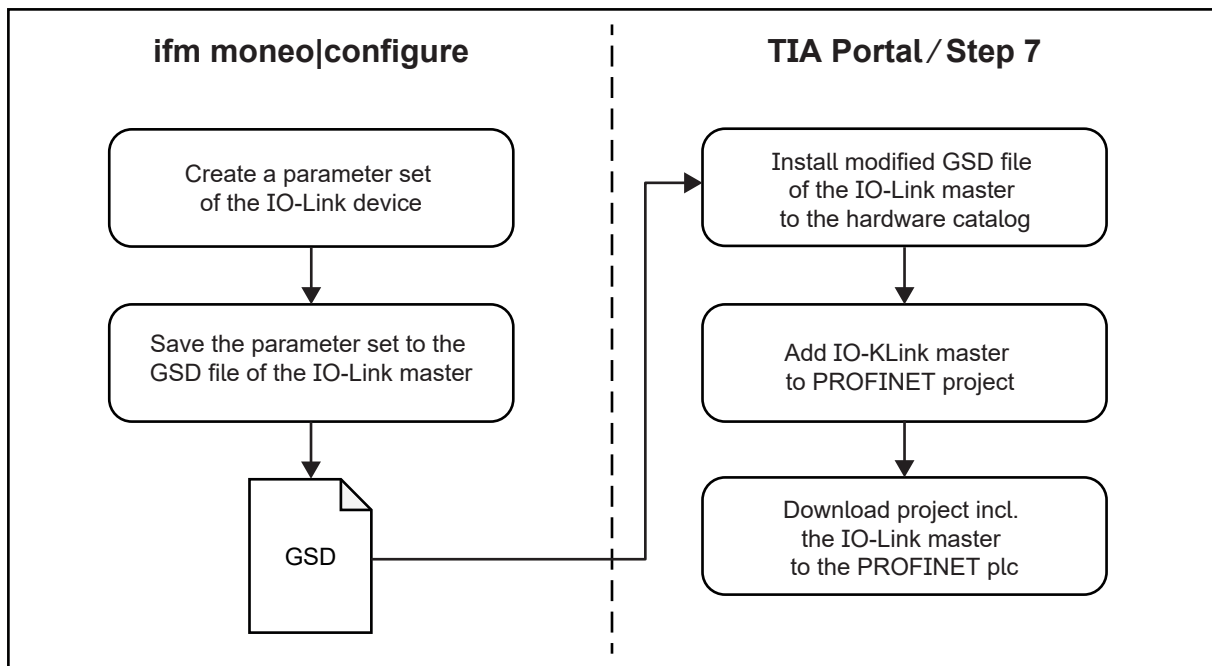
The license can be activated either online or offline.

Requirements:

- ✓ ifm moneo|configure has been properly installed.
- ✓ ifm moneo|configure has been properly licensed.
- ▶ Start ifm moneo|configure.
- ▶ Click on  > [System profile].
 - ▷ The [System profile] menu page appears.
- ▶ Click on [Licence management].
 - ▷ The editor view shows active licenses.
- ▶ Select the required type of activation and follow the instructions of the wizard.
 - ▷ The license for PLC Toolbox is activated.
 - ▷ The editor view shows active licenses.

5 GSDML Generator

5.1 Notes on use



5.2 ifm moneo|configure

5.2.1 Creating a parameter set for an IO-Link device

A parameter set for an IO-Link device can be created using the following options:

- Saving the parameter set of a real IO-Link device
- Configuring and saving the generic IODD of an IO-Link device



Detailed information: → ifm moneo|configure online help

- Example: Configuring and saving the IODD of an IO-Link device

Requirements:

- ✓ ifm moneo|configure has been started.
- ✓ IODD of the IO-Link device is available in the IODD catalogue.
- Click on the [Device descriptions] tile.
 - ▷ The [Device descriptions] view appears.
- Select the IODD of the IO-Link device.
 - ▷ The editor view of the IODD appears.
- Set the parameters of the IODD as required.
- Save the parameter set (lrp file).
- ▷ The parameter set with configuration of the IO-Link device has been created.



- To ensure that the saved parameter set contains the correct configuration of the IO-Link device, check the parameter set for correct functioning in the "GSDML Generator" before further processing.

5.2.2 Launching the GSDML Generator

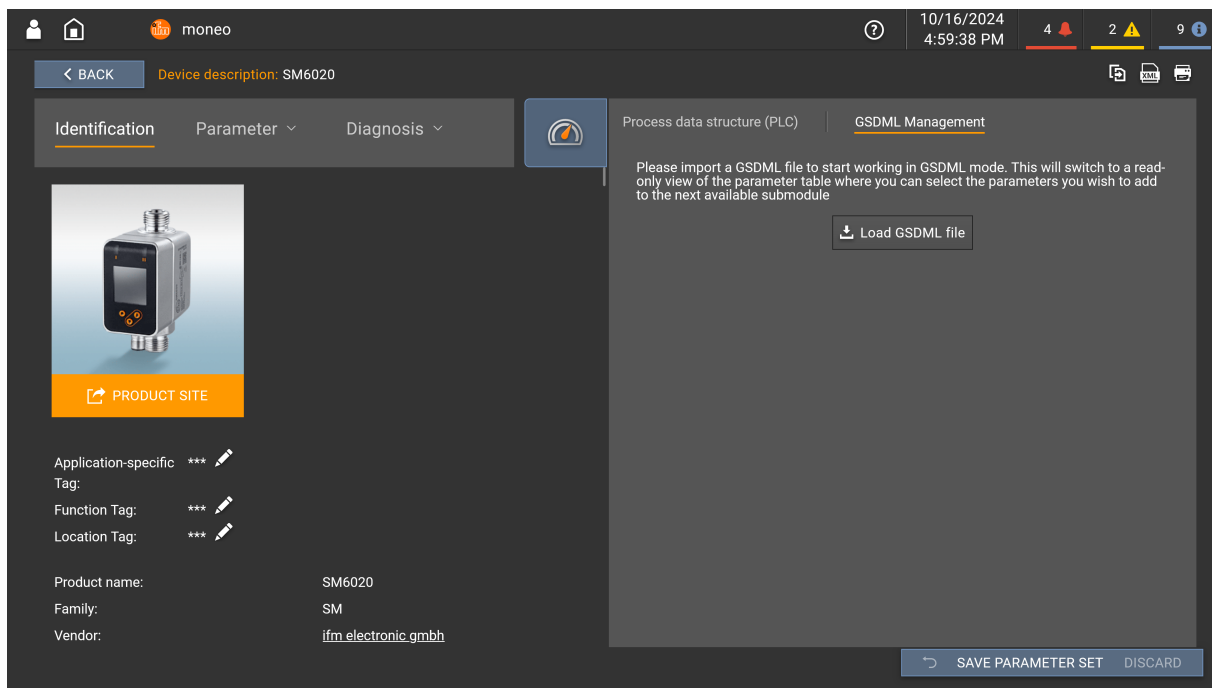
The GSDML generator can be launched via the following options in ifm moneo:

- Dashboard area of a connected IO-Link device ([Device configuration] tile)
- Dashboard area of a saved configuration ([Saved configurations] tile)
- Dashboard area of an IODD ([Device description] tile).

Example: Open the GSDML generator in the device descriptions.

Requirements:

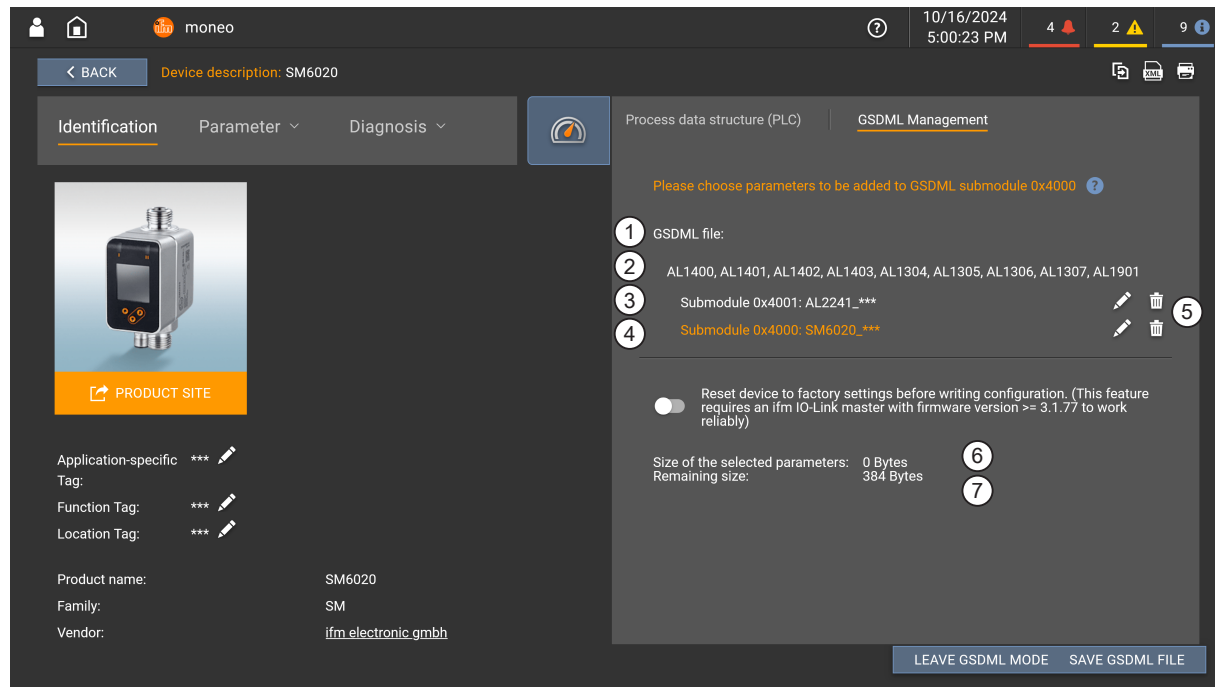
- ✓ ifm moneo|configure has been started.
 - ✓ The licence for the GSDML generator has been activated ([→ Activating the license for PLC Toolbox 6](#)).
 - ✓ A valid GSD file is available for the ifm IO-Link master used.
 - ✓ IODD of the IO-Link device is available in the IODD catalogue.
- Click on the [Device descriptions] tile.
- ▷ The [Device descriptions] view appears.
- Click on IO-Link device in the table.
- ▷ The editor of the IO-Link device appears.
- Click on  in the vertical bar on the right-hand side of the screen.
- ▷ The dashboard area is displayed.
- Click on the [GSDML management] tab.
- ▷ The access point for GSDML generator appears.



- Click on [Load GSDML file].
- ▷ File explorer appears.
- Select the GSD file of the ifm IO-Link master used and click on [Open].

► ifm moneo|configure switches to GSDML editing mode.

5.2.2.1 Overview



- | | |
|---|---|
| 1: Name of the loaded GSD file | 5: Access to editing functions for the submodules |
| 2: Compatible IO-Link masters | 6: Size of the selected parameters |
| 3: Index and name of the already added submodules with parameter sets | 7: Available memory for further parameters |
| 4: Index and name of the currently edited submodule | |

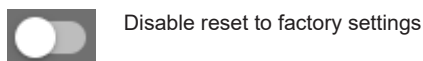
The user can access the following functions via the control bar at the bottom of the screen:

- [GSDML-DATEI SPEICHERN]: Save the GSD file with the selected parameters.
- [GSDML-MODUS VERLASSEN]: Exit the GSDML generator and return to the dashboard area.

5.2.3 Adding a parameter set to the GSD file

The user can add parameter sets from IO-Link devices both to a generic GSD file and to a GSD file of a supported IO-Link master that has already been modified with the GSDML generator.

The user can specify separately for each parameter set whether the IO-Link device is automatically reset to the factory settings before the configuration is written in the PROFINET configuration software (prerequisite: firmware 3.1.77 or higher is installed on the IO-Link master).



Disable reset to factory settings



Enable reset to factory settings

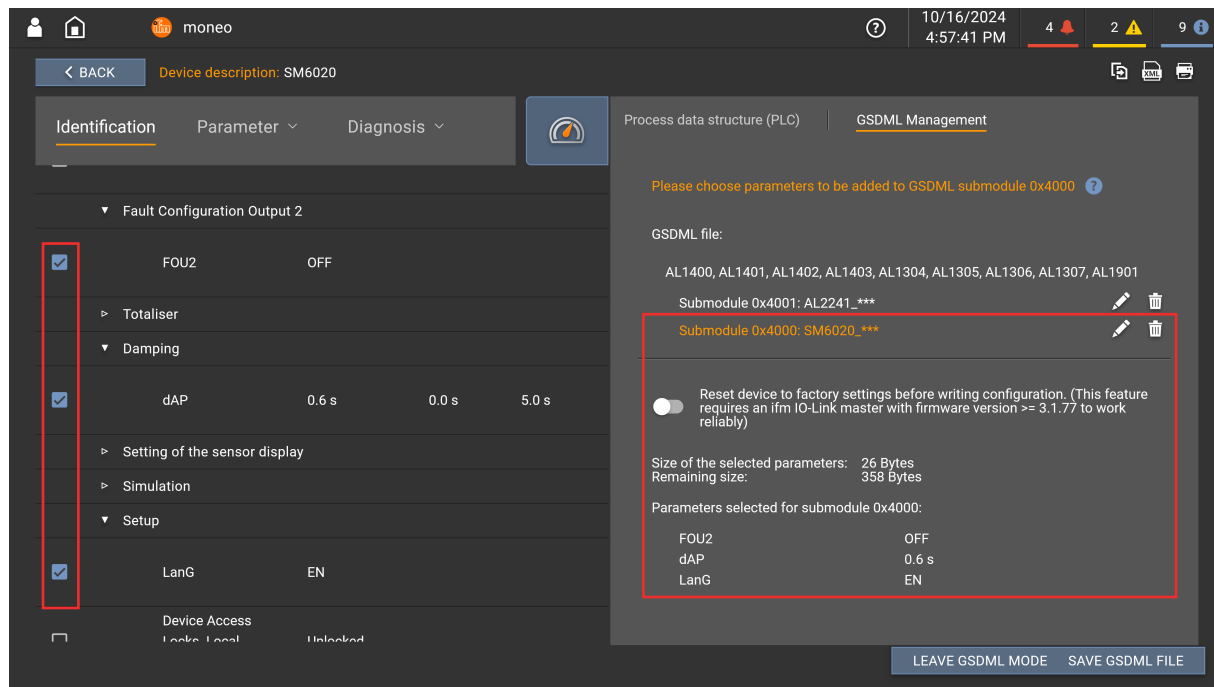


Activating the reset to factory settings requires 5 bytes of the memory space available for the parameter set.

Requirements:

- ✓ ifm moneo|configure has been started.
- ✓ A correct and checked parameter set of an IO-Link device is available.
- [Launching the GSDML Generator \(→ 8\)](#) and open the required GSD file.
- Select the required parameters in the IODD editor.

- ▷ GSDML generator shows the selected parameters and the set values.
- ▷ The submodule currently being edited is shown in orange.
- ▷ GSDML view shows the remaining storage space.



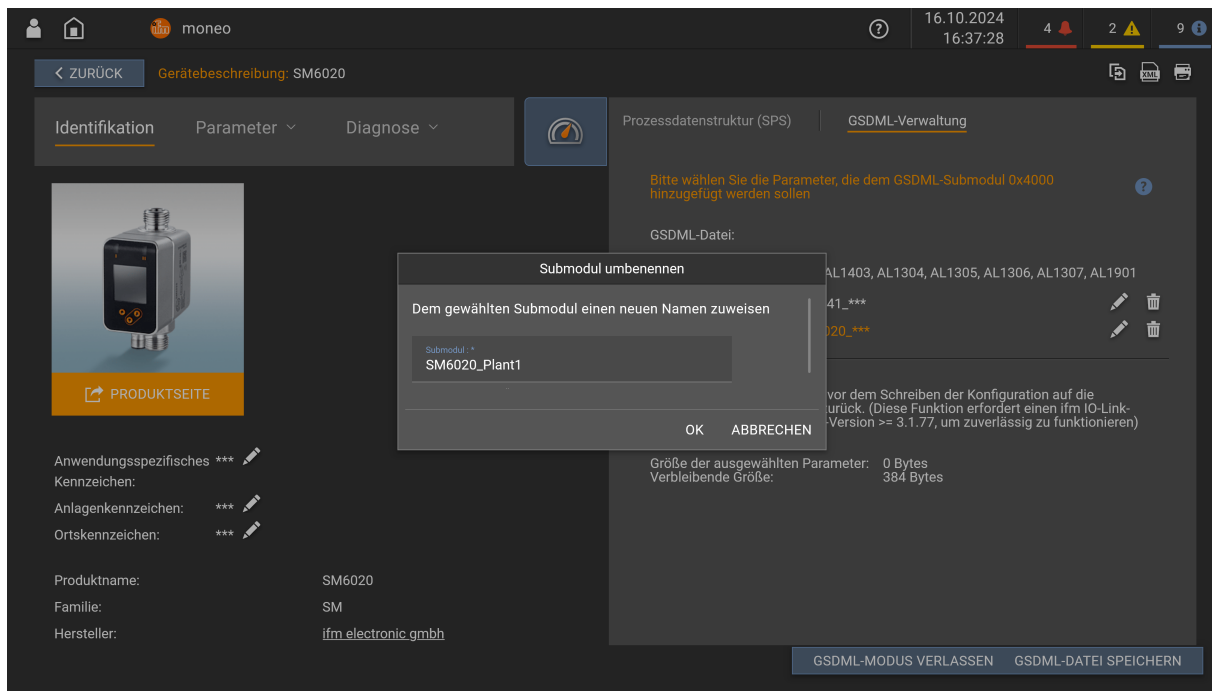
- ❗ A parameter set may have a maximum size of 384 bytes.
 - ▶ When selecting the parameters, note the maximum available memory space.
- ▶ Enable or disable the reset of the IO-Link device before saving the configuration.
- ▶ Click on [Save GSDML file].
 - ▷ A message appears.
- ▶ Read and confirm the note on the modified GSD file.
- ▷ ifm moneo|configure bundles the selected parameters and adds them to the GSD file as a submodule with its own index.
- ▷ GSDML generator saves the changes in a new GSD file.
- ❗ ▶ Do not change the name of the GSD file automatically selected by ifm moneo|configure, otherwise problems may occur when installing the GSD file in the configuration software.

5.2.4 Renaming a submodule

The user can rename all submodules added to a GSDML file.

Requirements:

- ✓ ifm moneo|configure has been started.
- ▶ **Launching the GSDML Generator (→ 8)** and open GSD file with added parameter sets.
 - ▷ GSDML generator shows the added submodules.
- ▶ Click on ✎ next to the required submodule.
 - ▷ A dialogue window appears.



► Enter the new name in the input field.

► Click on [OK] to save the change.

▷ The submodule is renamed.

▷ The previous view appears.

OR:

► Click on [CANCEL] to cancel the process.

▷ Changes are discarded.

▷ The previous view appears.

5.2.5 Deleting a parameter set from the GSD file

It is only possible to delete all parameters of a submodule. It is not possible to delete individual parameters of a submodule.

Requirements:

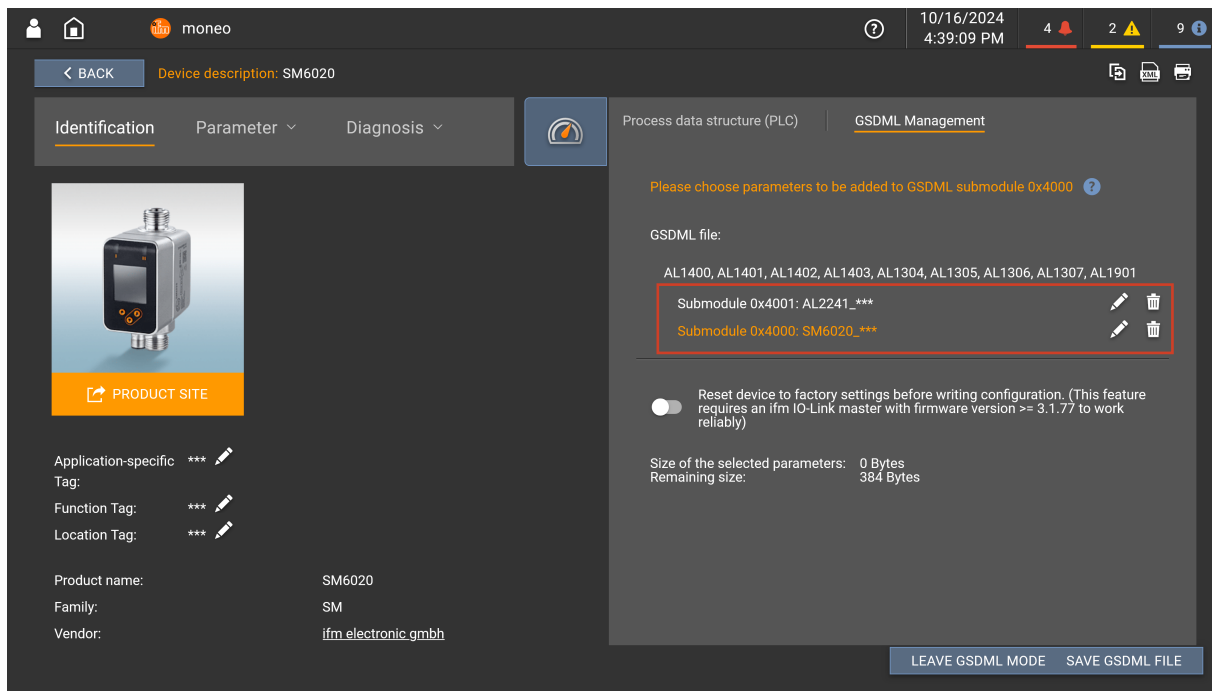
✓ ifm moneo|configure has been started.

✓ The modified GSD file is available.

► [Launching the GSDML Generator \(→ 8\)](#).

► Open the modified GSD file.

▷ The overview shows the submodules contained in the GSD file.



► Click on the  icon next to the submodule that contains the parameter set to be deleted.

▷ ifm moneo|configure deletes the selected submodule.

► Click on [Save GSDML file] to save the changes in the GSDML file.

▷ GSDML generator saves the changes in a GSD file.

▷ GSDML generator is terminated.

OR:

► Click on [Exit GSDML mode] to discard the changes.

▷ The changes are not saved.

▷ GSDML generator is terminated.

5.3 PROFINET projection software

Supported project planning environments:

- TIA Portal, Version 15 or higher
- Step 7, version 5.5 SP4 or higher

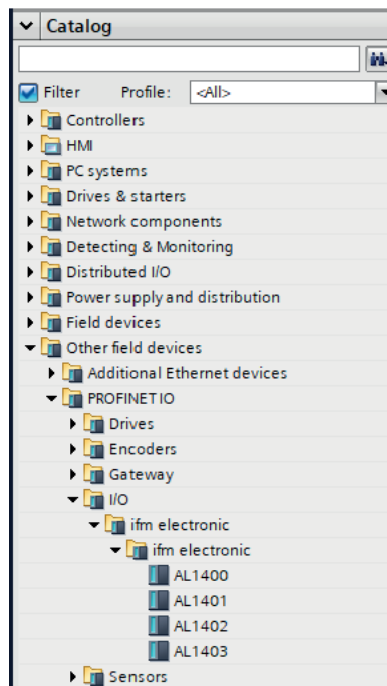
5.3.1 Installing the modified GSD file

The GSD file of the IO-Link master AL140x modified with the GSDML Generator must be added to the hardware catalogue of the PROFINET projection software.

Requirements:

- ✓ The modified GSD file is available.
- ▶ Launch the PROFINET projection software.
- ▶ Install the modified GSD file.
- ▷ The IO-Link masters with the added parameter sets of the IO-Link devices are available in the hardware catalogue.

Example: TIA portal



5.3.2 Integrating the IO-Link master into the project

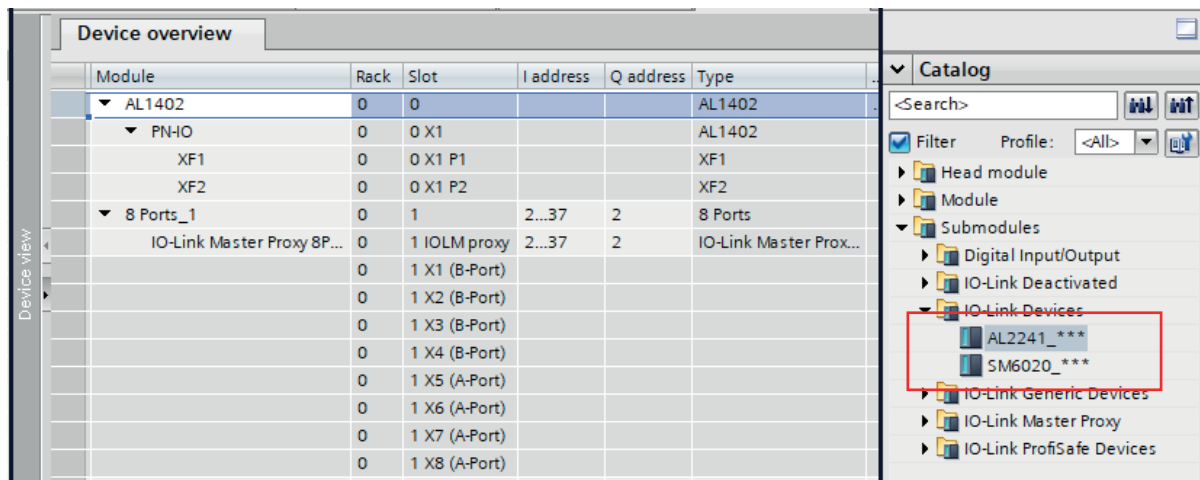
Requirements:

- ✓ The modified GSD file is installed.
- ▶ Open a PROFINET project or create a new one.
- ▶ Open the network editor.
- ▶ Add necessary components of the automation network to the project (e.g. PROFINET PLC).
- ▶ Drag and drop the IO-Link master from the hardware catalogue into the network.
- ▶ Establish a logical PROFINET IO connection between the IO-Link master and the PROFINET PLC.
- ▶ Set the IP configuration of the PROFINET interface of the IO-Link master.
- ▷ The IO-Link master with additional submodules is integrated into the project.

5.3.3 Adding the parameter set of an IO-Link device

The submodules with the parameter sets of the IO-Link devices are located in the directory [Submodules] > [IO-Link Devices].

Example: TIA portal



Requirements:

- ✓ The IO-Link master is added to the project.
- Open the device editor of the IO-Link master.
- Select the submodule of the IO-Link device in the hardware catalogue and drag it to the slot of a free IO-Link port.
 - ▷ IO-Link device with the saved parameter set is assigned to the IO-Link port.
- Repeat the process to assign further IO-Link devices to the free IO-Link ports.
 - ▷ All IO-Link devices are assigned to the IO-Link ports.

5.3.4 Configuring the IO-Link device

The submodule of the IO-Link device contains the following components:

- the parameters of the IO-Link port
- the parameters of the IO-Link device added to the GSD file

Example: TIA portal

Device overview

Module	Rack	Slot	I address	Q address	Type	Article no.	Firmware
AL1402	0	0			AL1402	AL1402	
PN-IO	0	0 X1			AL1402		
8 Ports_1	0	1			8 Ports		
IO-Link Master Proxy 8P...	0	1 IOLM proxy	2...37	2	IO-Link Master Prox...		
	0	1 X1 (B-Port)					
	0	1 X2 (B-Port)					
	0	1 X3 (B-Port)					
	0	1 X4 (B-Port)					
AL2241_***	0	1 X5 (A-Port)	38...46		AL2241_***	AL2241	
SM6020_***	0	1 X6 (A-Port)	47...59	3	SM6020_***	SM6020	
	0	1 X7 (A-Port)					
	0	1 X8 (A-Port)					

SM6020_* [SM6020_***]**

General | **IO tags** | **System constants** | **Texts**

General

- Catalog information
- Module parameters**
 - Fail Safe Parameter
 - Damping: dAP
 - Setup: LanG
 - Flow: LFC - FLOW
 - IO-Link Port Parameter
 - Module failure
- I/O addresses

Damping: dAP

Damping: dAP: 6

Setup: LanG

Setup: LanG: EN

Flow: LFC - FLOW

Flow: LFC - FLOW: 30

Requirements:

- ✓ IO-Link devices are assigned to the IO-Link ports.
 - Click on the IO-Link master and select the [Device view].
 - Select the slot of the IO-Link device in the [Device view].
 - ▷ The [Properties] tab shows the properties of the submodule.
 - ▷ [Module parameters] provides access to the stored parameters of the IO-Link device.
 - ▷ [Module parameters] provides access to the parameters of the IO-Link port.
 - Set the parameters of the IO-Link port.
 - Optional: Set the parameters of the IO-Link interface.
 - Repeat the process to configure further IO-Link ports and IO-Link devices.
 - ▷ IO-Link ports and assigned IO-Link devices are configured.
- !** ► Always check whether the parameter values set in moneo match the parameter values displayed in the TIA Portal.
- Observe restrictions (→ [Known restrictions](#) 16)!

When downloading the PROFINET project, the IO-Link master and the connected IO-Link devices are configured with the set parameters.

5.3.5 Known restrictions

The PROFINET start-up time depends on the size of the parameter data to be transmitted.

IO-Link system commands are not supported by submodules created with the GSDML generator.

- If necessary, trigger system commands via ifm moneo|configure free or via acyclic IO-Link request (FB IO_Link_Device).

When switching physical units (e.g. from °C to °F) via GSDML, there is no automatic conversion of the affected parameter values (e.g. device temperature). The parameter values are still displayed in the originally set unit.

- Set physical units and the affected parameter values in ifm moneo|configure free.

Differences between the parameter values in the stored submodule and those in the IO-Link device can lead to errors (e.g. product name).

Process values can be displayed differently in ifm moneo|configure free and the PROFINET projection software.

Example: STRING values are represented as HEX strings.

- ifm moneo|configure free:

Source	Parameter name	Value	Current project value	Minimum
Identification				
	Application-specific Tag	Plant 1 Machine 2	Plant 1 Machine 2	0

- TIA portal:

General IO tags System constants Texts

General

Module parameters

Fail Safe Parameter

Application-specific Tag

IO-Link Port Parameter

Module failure

Application-specific Tag

Application-specific Tag: 50,6C,61,6E,74,20,31,20,4D,61,63,68,69,6E,65,20,32,00,00,00,00,00,00,00,00,00,00,00,00

When setting parameters via GSDML, the IO-Link mechanism "Datastorage" is deactivated.

Parameter setting via GSDML does not reset the upload request flag.

- Reset IO-Link devices that have been configured via GSDML to the factory settings before using them in standard systems.

5.4 Troubleshooting

Error	Cause	Corrective measures
TIA Portal / Step 7: Error message "Port diagnosis - ISDU batch configuration failed"	Changes to parameter values of the IO-Link device in the PROFINET configuration software are written to the device without a validity check.	► When setting the parameters, observe the valid value ranges of the parameters (→ IO-Link interface description of the IO-Link device)!
After a back-to-box reset, the IO-Link device does not work as desired.	A back-to-box reset interrupts the communication to the IO-Link devices. Parameter setting via GSDML does not work.	► Reboot the IO-Link device
TIA Portal / Step 7: Error message "Parameter Device Access Locks"	An active write protection prevents the parameter setting of the IO-Link device via GSDML.	► Disable write protection of the IO-Link device before parameter setting via GSDML, e.g. with ifm moneo configure free.