SMC

Operation Manual

PRODUCT NAME

Fieldbus system
IO-Link Setting tool

MODEL / Series / Product Number

IO-Link Device Tool V5.1 PE

SMC Corporation

Contents

1.Outline

The IO-Link Device Tool is an application software for IO-Link developed by Technologie Management Gruppe (TMG hereafter) in Germany, that makes the following operations possible for the IO-Link Module in the EX600 and EX245 series.

- Monitoring various parameters of IO-Link Module
- Monitoring and setting various parameters of IO-Link devices

Note: Applicable SI units and IO-Link Modules are as following.

SI unit	IO-Link Module
EX600-SPN3/SPN4	EX600-LAB1、EX600-LBB1
EX600-SEN7/SEN8	
EX600-SEC3/SEC4	
EX600-SEN3-X80	
EX245-SPN1A	EX245-LA1、EX245-LB1
EX245-SPN2A	
EX245-SPN3A	

IO-Link Device Tool

IO-Link setting tool software

IO-Link Module

Communication cable

IODD filer
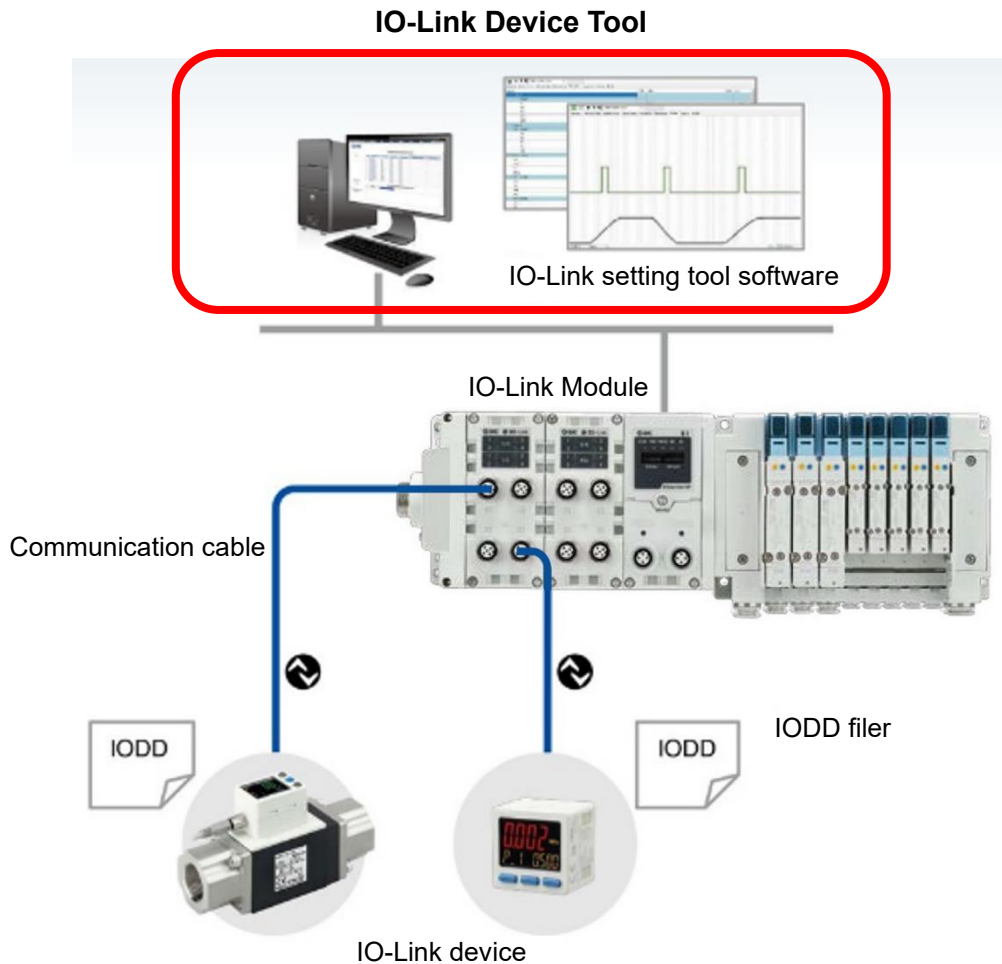
IO-Link device

2.System Requirements and How to Obtain the Software

■ How to Obtain the Software

- IO-Link Device Tool
  After click "Request for 30 days free version and quotation" at the website below and register user iformation, IO-Link Device Tool file can be downloaded.
  ・URL：https://www.tmgte.de/en/products/io-link/io-link-device-tool-professional-edition.html

- IOLM file
  IOLM file can be downloaded from the website below.
  ・URL：https://www.smcworld.com/en-jp/
  Documents/Download >> Operation Manuals >> Fieldbus System Serial Transmission System >> IO-Link Device Tool

■ License Key

- The IO-Link Device Tool can be used free of charge for 30 days after the first installation, but a license key is required after that period. A license key can be obtained in one of two ways:

  1) Purchase one from TMG. Either CmActLicense (limited to a single PC) or a USB dongle (valid when connected to any PC)
     => Contact TMG for details.

  2) Purchase a USB dongle from SMC.
     Model No. EX9-ZSW-LDT1

■ Minimum System Requirements

Components	Requirements
Operating system	Windows10 (32-and 64-bit)
Memory	2GB
Free hard disk space	150MB
Processor	1GHz or higher,32-bit(x86) or 64-bit(x64)
Screen resolution	800 × 600 pixels

■ Recommended System Requirements

Components	Requirements
Operating system	Windows10 (32-and 64-bit)
Memory	8GB
Free hard disk space	250MB
Processor	1GHz or higher,64-bit(x64)
Screen resolution	1920 × 1080 pixels

3.Connection between an EX series and a PC

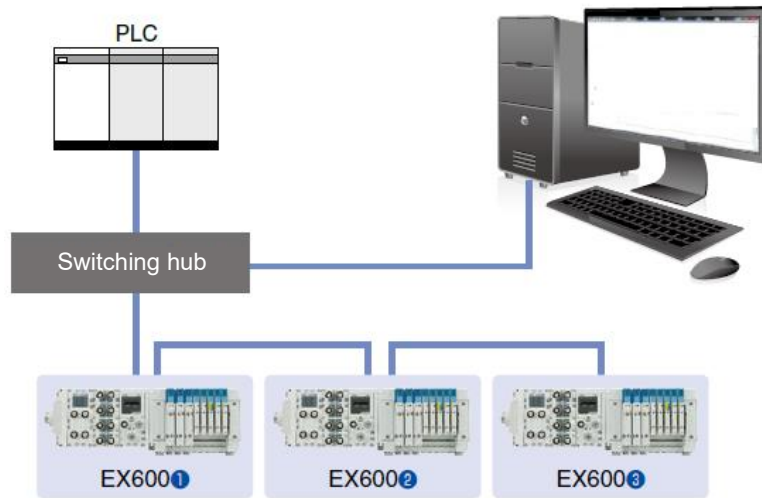■ Connect the EX series to a PC via a switching hub.

Fig. Example of a connection using a switching hub and EX600

■ If the IP address can be set without PLC, it is possible to connect directly to either the communication connectors on the SI unit using EX9-AC###EN-PSRJ.

- Cable model No.

EX9-AC020EN -PSRJ

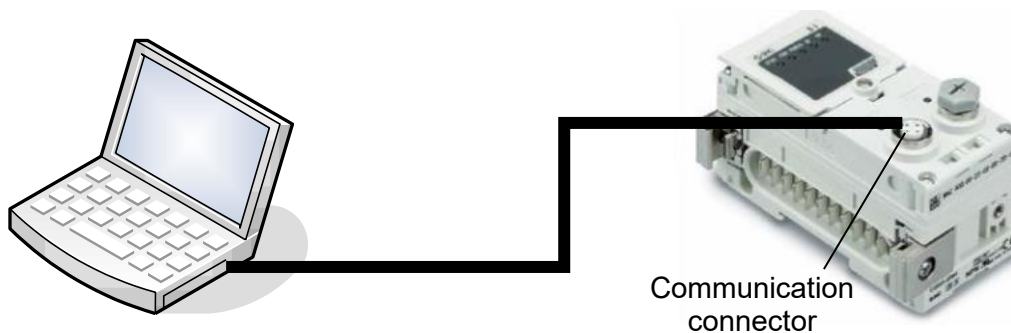| Cable length (L)	
010	1m
020	2m
030	3m
050	5m
100	10m

M12   RJ45
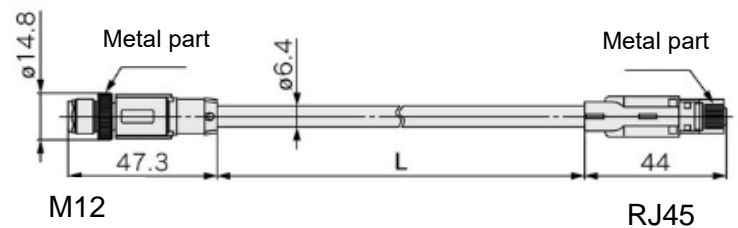

Communication connector

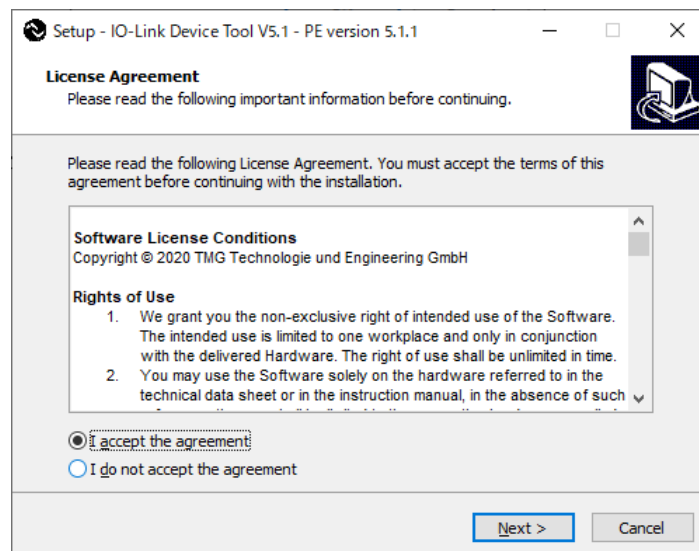Fig. Example of a direct connection between a PC and SI unit(EX600)

4.Software Installation

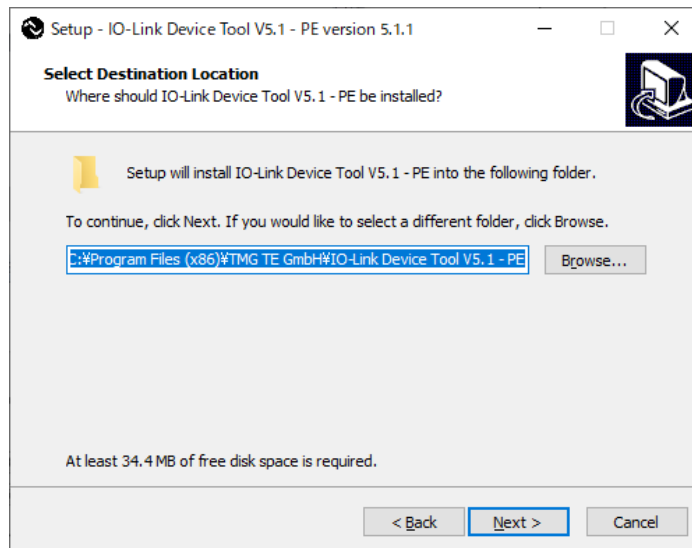■ Install the software according to the following procedure:

- If an old version of IO-Link Device Tool has been installed on the PC, be sure to uninstall it before installing the new version of IO-Link Device Tool.

- Double-click Setup.exe. The following screen will appear. Select a language and then press [OK].

Select Setup Language

Select the language to use during the installation.

English

OK   Cancel
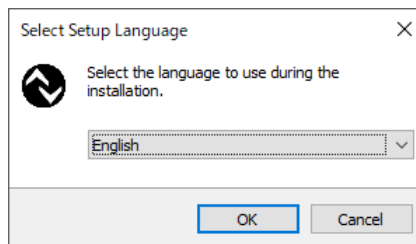
- Check the license terms, and if you agree, check "I accept the agreement" and then press [Next].

Setup - IO-Link Device Tool V5.1 - PE version 5.1.1

License Agreement
Please read the following important information before continuing.

Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

Software License Conditions
Copyright © 2020 TMG Technologie und Engineering GmbH

Rights of Use
1. We grant you the non-exclusive right of intended use of the Software. The intended use is limited to one workplace and only in conjunction with the delivered Hardware. The right of use shall be unlimited in time.
2. You may use the Software solely on the hardware referred to in the technical data sheet or in the instruction manual, in the absence of such

⦿ I accept the agreement
◯ I do not accept the agreement
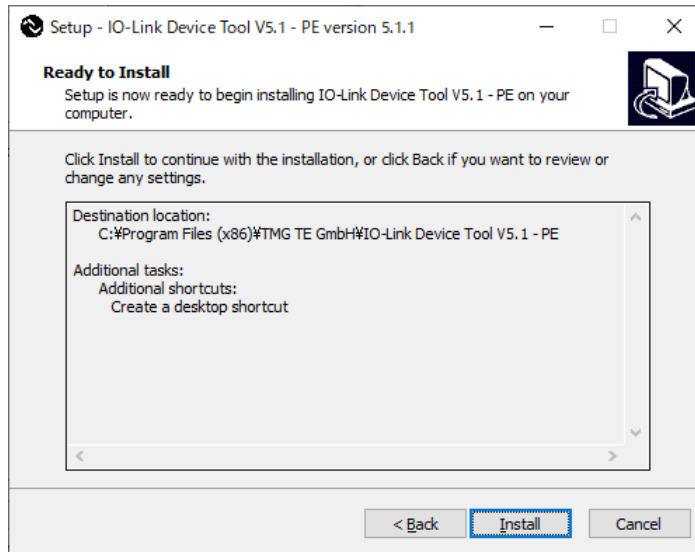
Next >   Cancel

SMC

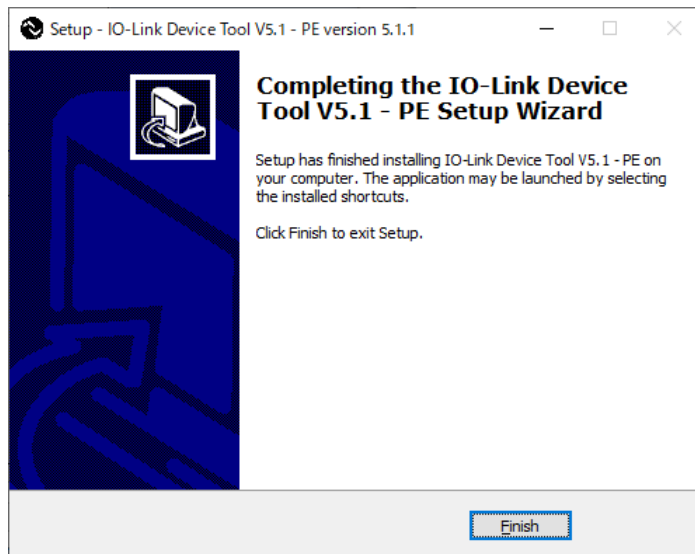- Select a folder to install the software and then press [Next].

- If you want to add a shortcut, check "Create a desktop shortcut" and then press [Next].

SMC

No.EX※※-OMY0032-B
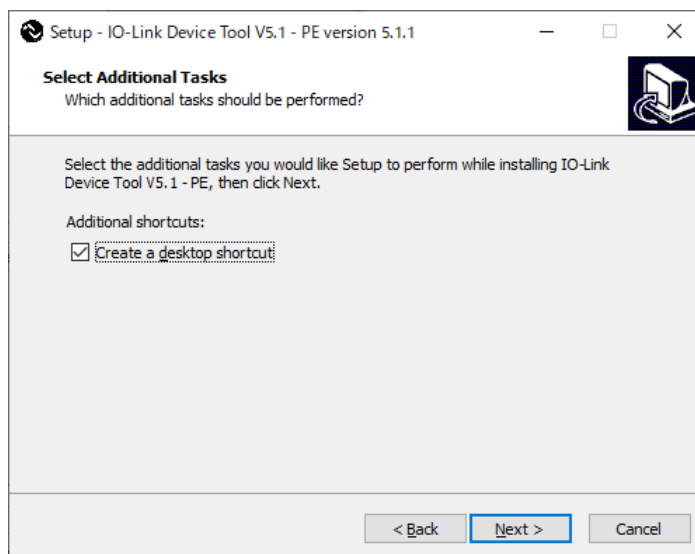
- Check the installation conditions and if everything looks correct, press [Install].

- The above screen appears when the installation is successful. Then press [Finish].

The following description uses the manifold configuration example shown in Fig. 1.

End plate	L#B IO-Link Module Slot1	L#B IO-Link Module Slot2	SPN# SI Unit Slot3	Valve

EX600's IP address: 192.168.0.1

PC's IP address: 192.168.0.250

Fig. 1 EX600 manifold configuration example

SMC.

No.EX※※-OMY0032-B

5.Starting the Software

- When the IO-Link Device Tool V#.# is started, the following screen appears.
- Select the Help > Content, to refer to the User Manual prepared by TMG (read the manual for a detailed description of the operations).
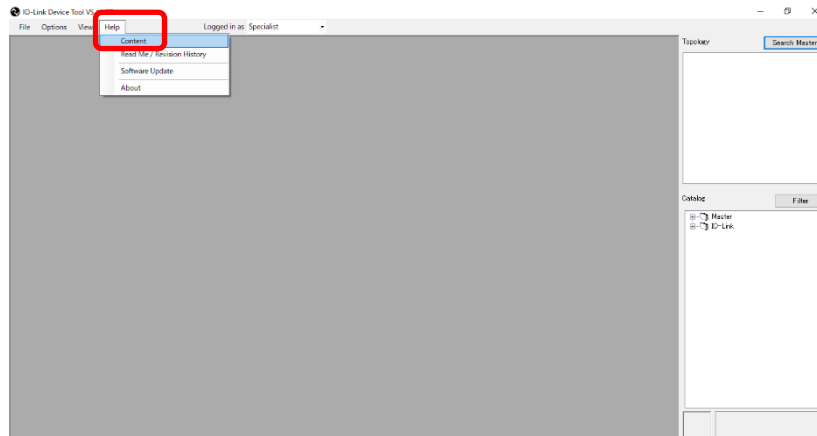
- Select a user role depending on the user authorization.

User roles	Password setting	Initial password
Specialist	Allowed	special
Maintenance	Not allowed	maintain
Operator	Not allowed	None

* For details of the user roles, refer to the User Manual prepared by TMG.
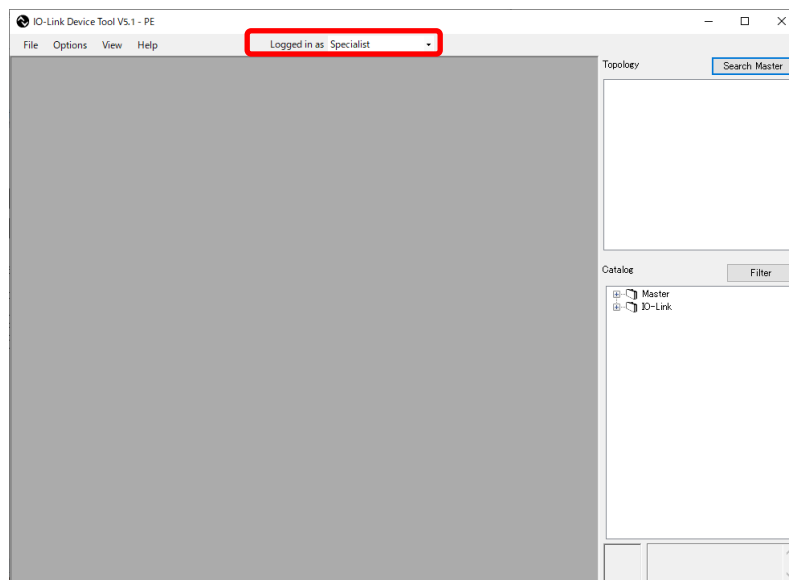
6.Importing an IOLM File

■ To use the IO-Link Module in the EX600 and EX245 series for IO-Link Device Tool, a dedicated setting file (IOLM file) must be imported.

For an EX600-SPN3/4 SI unit:	SMC-EX600-SPN-LxB1-202*****-IOLM1.5.zip
For an EX600-SPN3/4 SI unit:	SMC-EX600-SEN7_8-LxB1-202*****-IOLM1.5.zip
For an EX600-SPN3/4 SI unit:	SMC-EX600-SEC3_4-LxB1-202*****-IOLM1.5.zip
For an EX600-SEN3-X80 SI unit:	SMC-EX600-SEN-LxB1-202*****-IOLM1.5.zip
For an EX245-SPN1A SI unit:	SMC-EX245-SPN_FX-Lx1-202*****-IOLM1.5zip
For an EX245-SPN2A/3A SI unit:	SMC-EX245-SPN_Cu-Lx1-202*****-IOLM1.5zip

 - The following shows how to import an IOLM file.

(1) Select Options > Import IOLM (IO-Link Module Description).
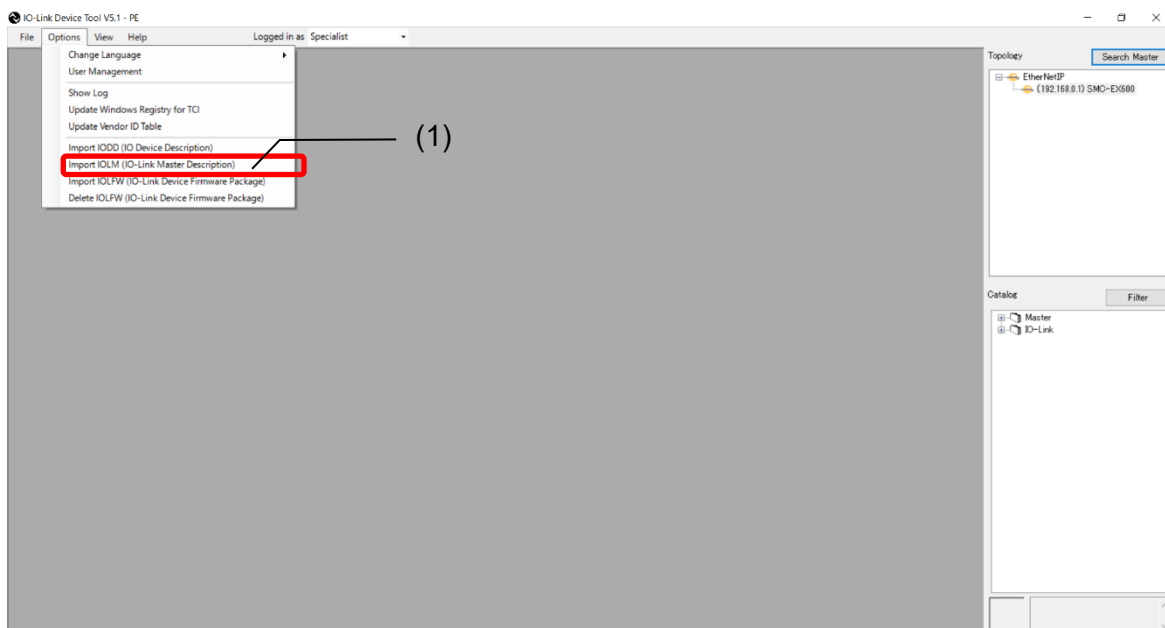
(2) Select a folder where the IOLM file in zip format is saved.
(3) Press [OK].
(4) Check the IOLM file to be imported.
(5) Press [Import].
(6) "SMC Corporation" is added to the Module folder in the Catalog.
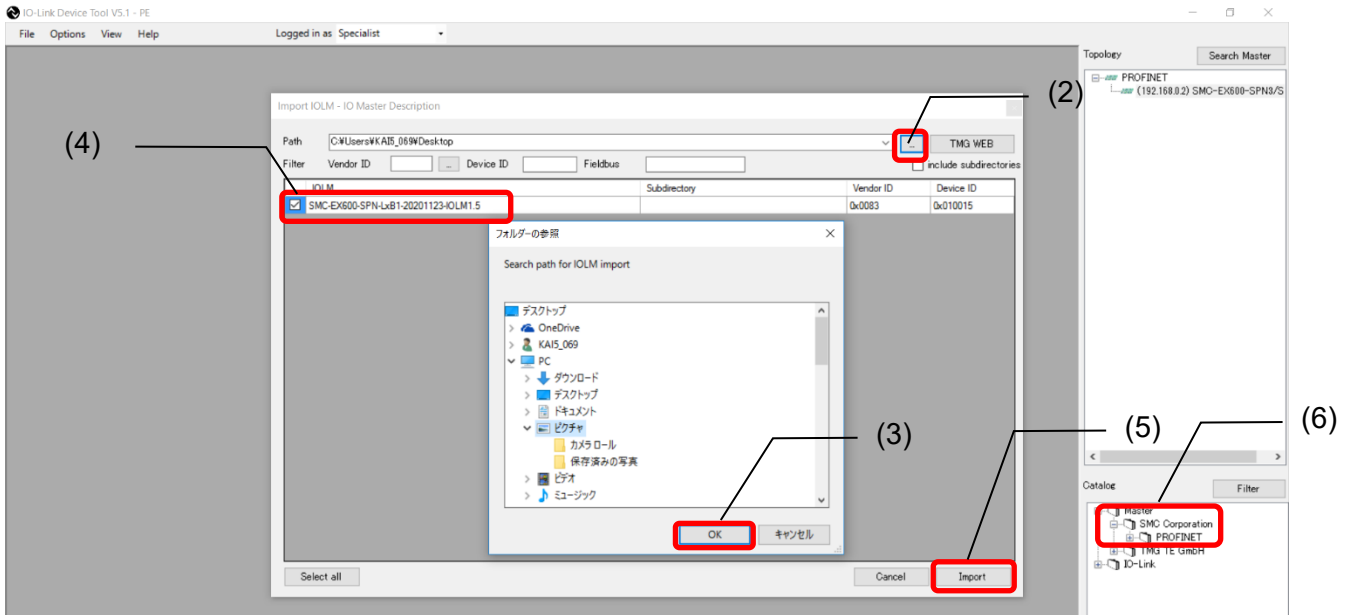
7.Importing an IODD File

■ To set an IO-Link Device by using IO-Link Device Tool, an IODD file for each device must be imported.

    - For how to obtain an IODD file, contact the manufacturer of your device.
    - How to import the IODD file of the SMC EX260-SIL1 is shown below.
      The IODD file can be downloaded from the URL below.
   URL: https://www.smcworld.com/en-jp/
      Documents/Download >> Operation Manuals >> Fieldbus System Serial Transmission System >> IO-Link Device>> EX260-SIL1 >> Configuration File

(1) Select the Option > Import IODD (IO Device Description).
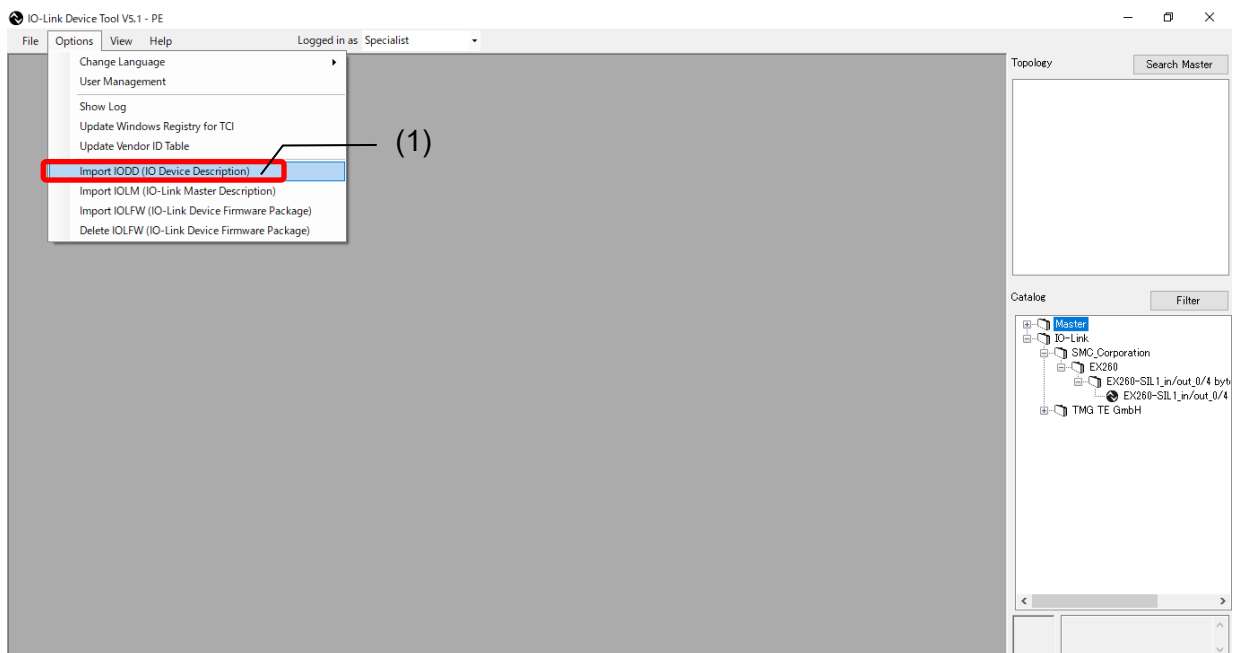
(2) Select the folder where the IODD file is saved.
(3) Press [OK].
(4) Check the IODD file to be imported.
(5) Press [Import].
(6) EX260-SIL is added to the IO-Link folder in the Catalog.
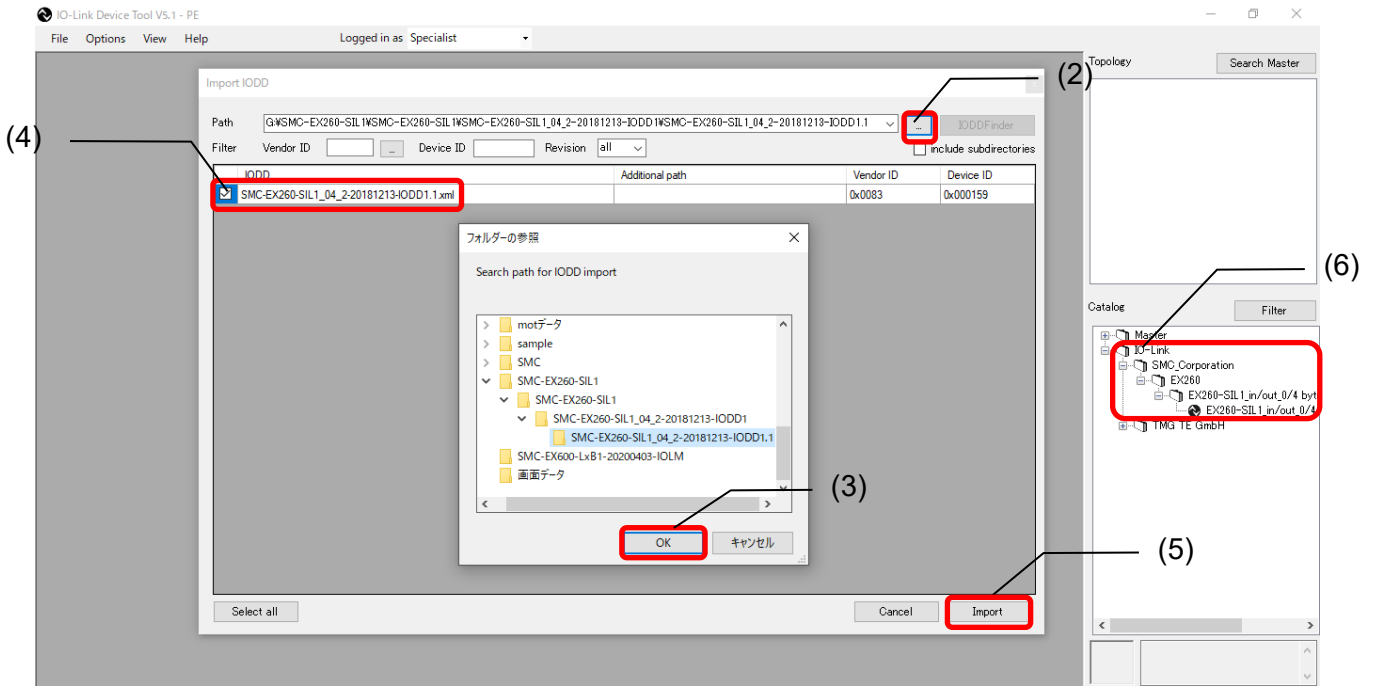
8.How to Use the Software

8.1. The IO-Link Module setting screen
### 8.1.1. Search Master
- After connecting the SI unit to a PC, supply power to the EX600 and conduct the operation as follows.

Note: EX245 does not support the function of Search Master.

(1) Press [Search Master].
(2) When the scanned EX600 is shown on the Master Discovery screen, double-click it.
    The IO-Link Module setting screen will appear.

> * If the EX600 does not appear, perform the following.
>   - Make sure an IP address has been set for the SI unit.
>   - Turn off the EX600 and then turn it on again.
>   - Restart the IO-Link Device Tool.

(1)

(2)
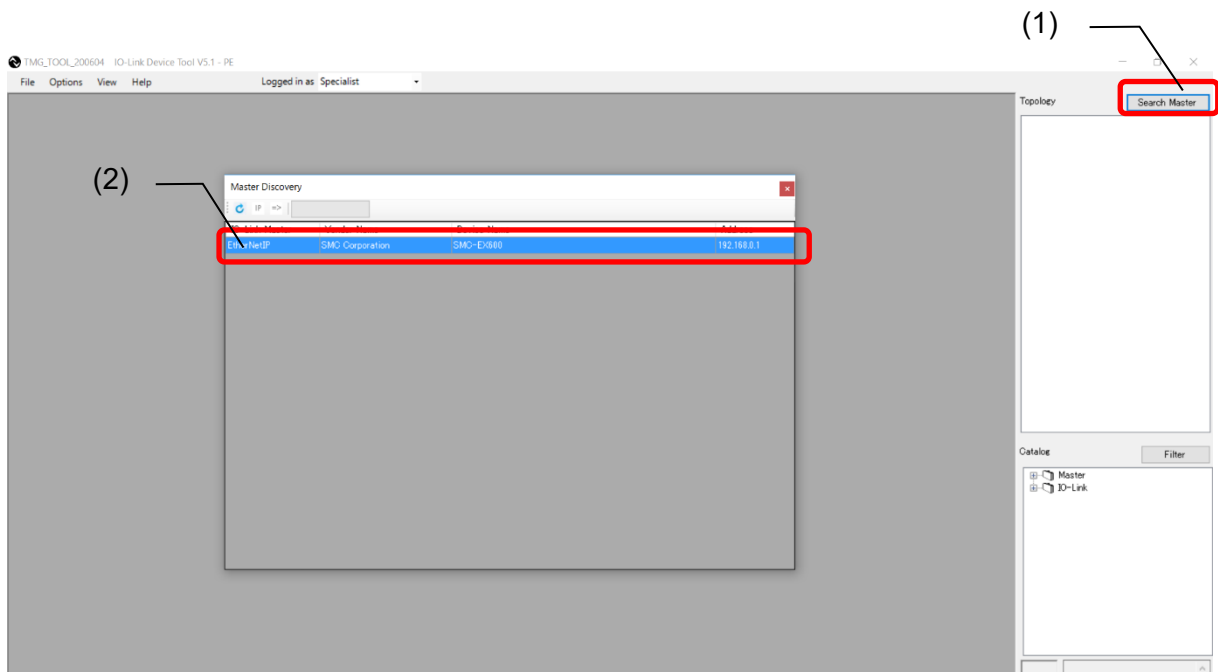
8.1.2. Individual selection

- After connecting the SI unit to a PC, supply power to the EX600 or EX245 and conduct the operation as follows.

(1) Select the IOLM file that matches the SI unit to be used.
(2) Drag and move to Topology. The IO-Link Module setting screen will appear.
(3) Press [Enter IP address] to display the input screen.
(4) Input the IP address of the using SI unit.
(5) Press [OK].
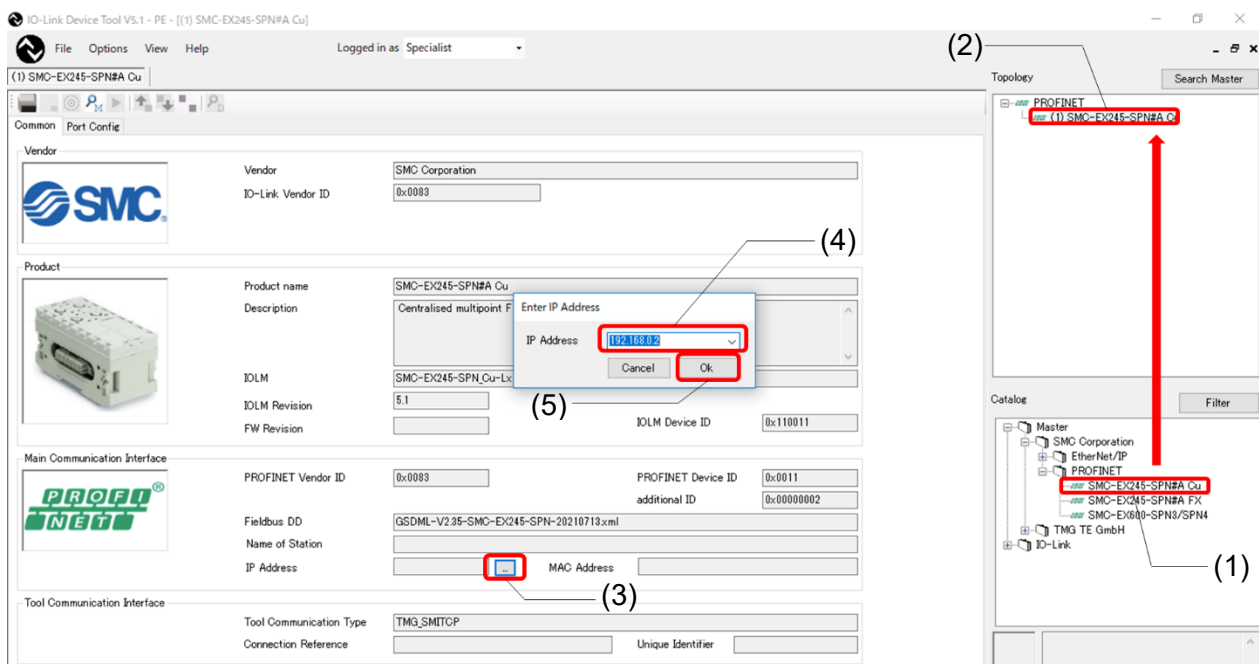
8.2. IO-Link Module Setting Screen

- The IO-Link Module Setting Screen has the three tabs shown below. Selecting a tab changes the screen.

№	Tab name	Outline
1	Common	Shows specific information such as the vendor ID of the EX600/EX245.
2	Port Config	Shows information on devices connected to the ports of the EX600-L#B1 or EX245-L#1.
3	Settings	Shows parameter setting information for the EX600-L#B1.

Note: EX600-SEC3/SEC4 and EX245-SPN#A don't support the Settings tab.

8.3. Common Screen

- The Common Screen of the SMC-EX600/EX245 shows property data such as the Vendor ID.
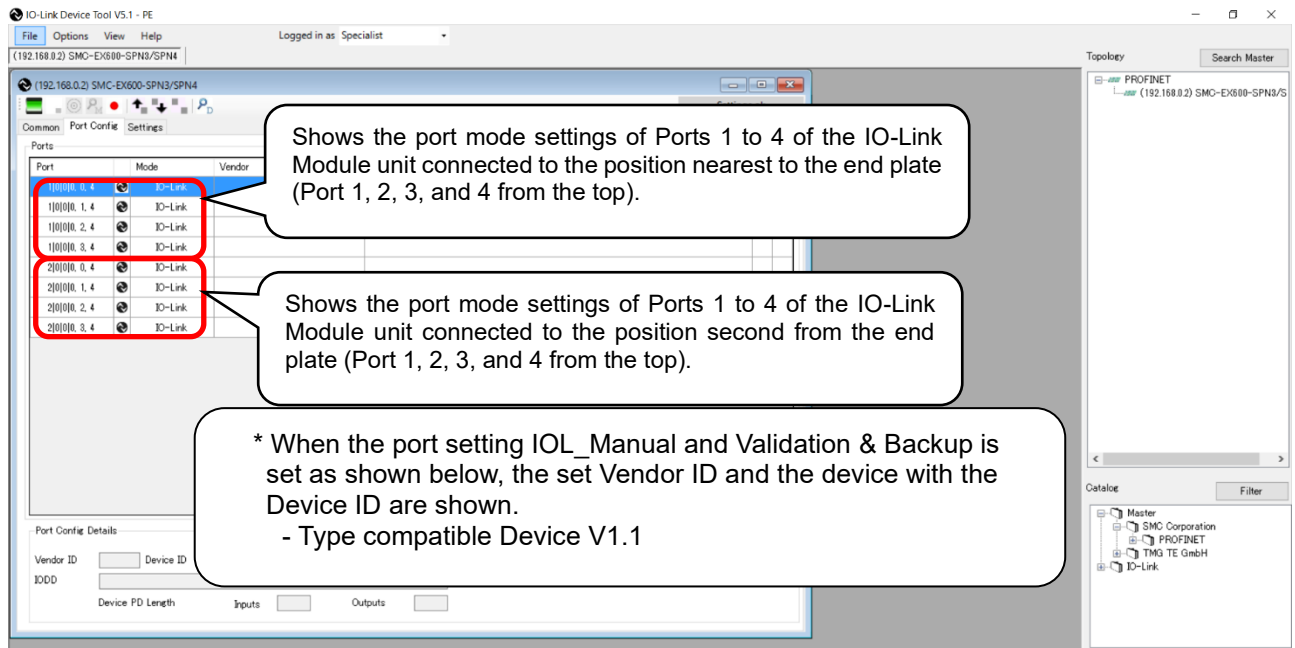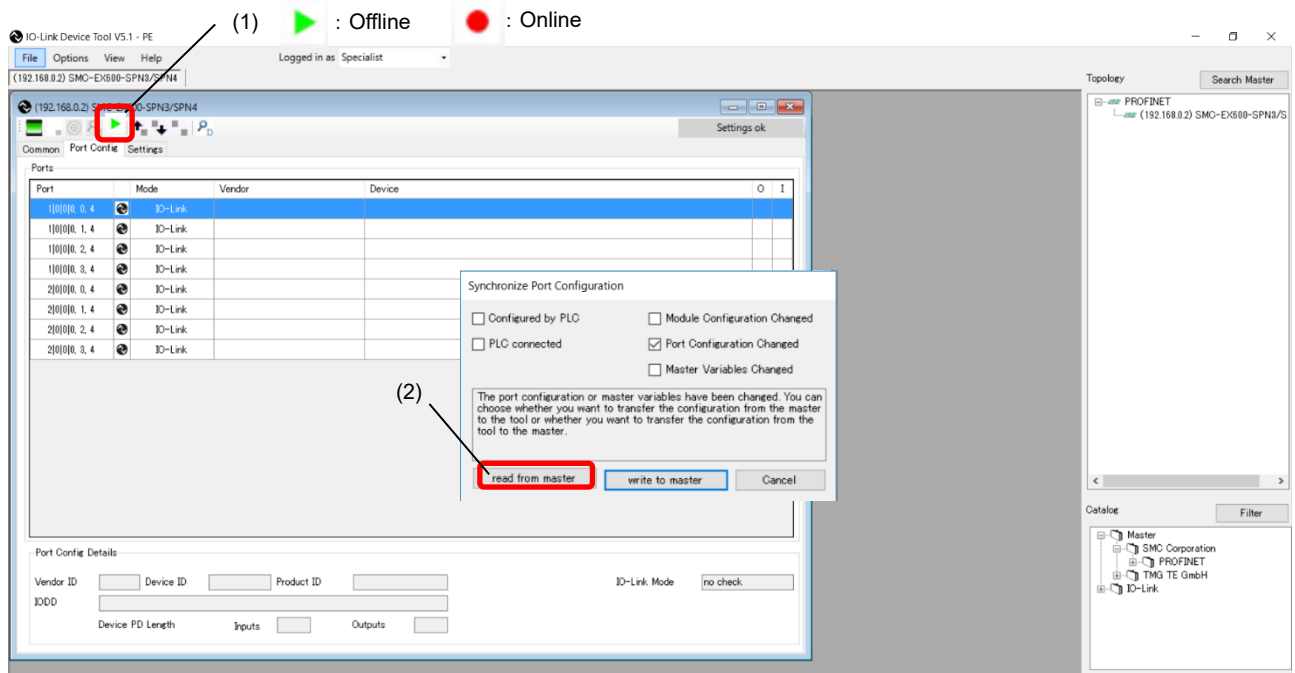 (The image is an example of EX600.)
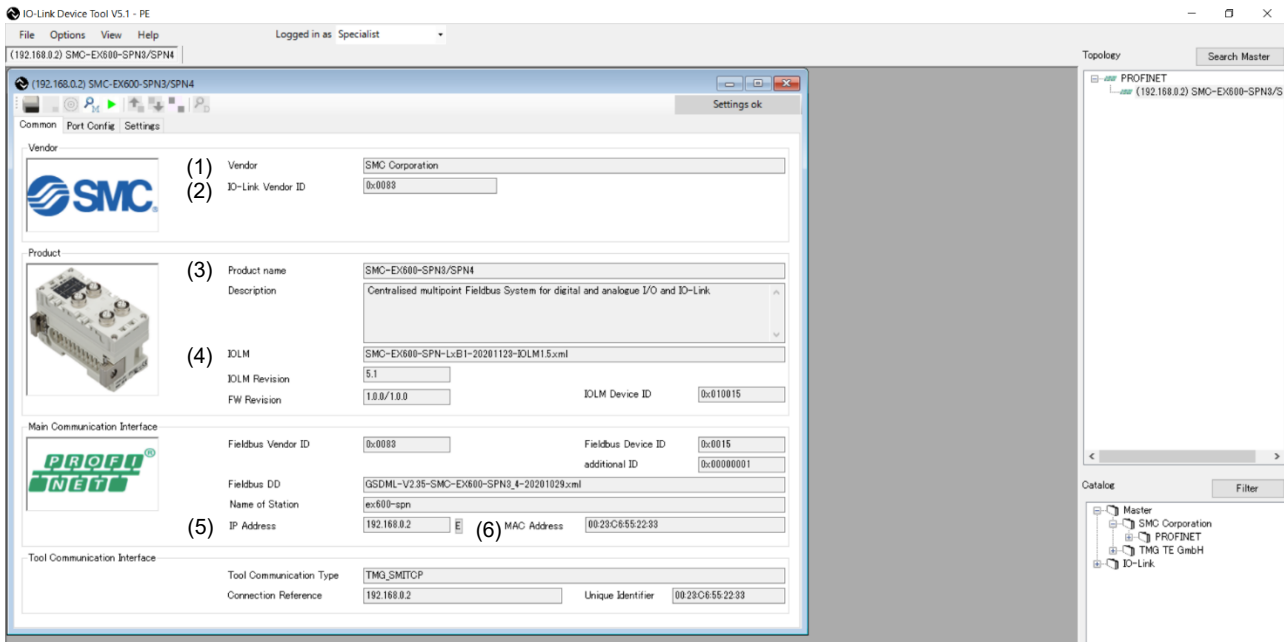
№	Item	Outline
1	Vendor	SMC Corporation, fixed value
2	IO-Link Vendor ID	0x0083, fixed value
3	Product name	The SI unit name, fixed value
4	IOLM	Shows the name of the IOLM file being used.
5	IP Address	Shows the IP address of the SI unit being monitored.
6	MAC Address	Shows the MAC address of the SI unit being monitored.

8.4. Port Config Screen
8.4.1. Reading the IO-Link Port Settings
- The following shows how to read the port settings of the EX600-L#B1 and EX245-L#1.

(1) Set the status to [Go Online].
(2) Press [read from master] to read the port settings of the EX600-L#B1 or EX245-L#1.

Shows the port mode settings of Ports 1 to 4 of the IO-Link Module unit connected to the position nearest to the end plate (Port 1, 2, 3, and 4 from the top).

Shows the port mode settings of Ports 1 to 4 of the IO-Link Module unit connected to the position second from the end plate (Port 1, 2, 3, and 4 from the top).

* When the port setting IOL_Manual and Validation & Backup is set as shown below, the set Vendor ID and the device with the Device ID are shown.
- Type compatible Device V1.1

Note: In the case of EX245, show from the IO-Link Module unit connected to the position nearest to the SI unit.

8.4.2. Changing the Settings of the IO-Link Ports (Only possible when not connected to PLC)
- The following shows how to change the port settings of the EX600-L#B1 by using IO-Link Device Tool.

(1) Set the status to [Go Offline].
(2) Place the cursor on [Mode] of the Port whose setting you want to change and right-click the mouse.
    The settings for the port will be shown.
(3) Place the cursor on the desired Port settingand left-click the mouse. [Mode] will be set to that setting.
(4) When you press [Go Online], the "Synchronize Port Configuration" screen will appear.
(5) Press [write to master] to apply the setting to the EX600-L#B1.
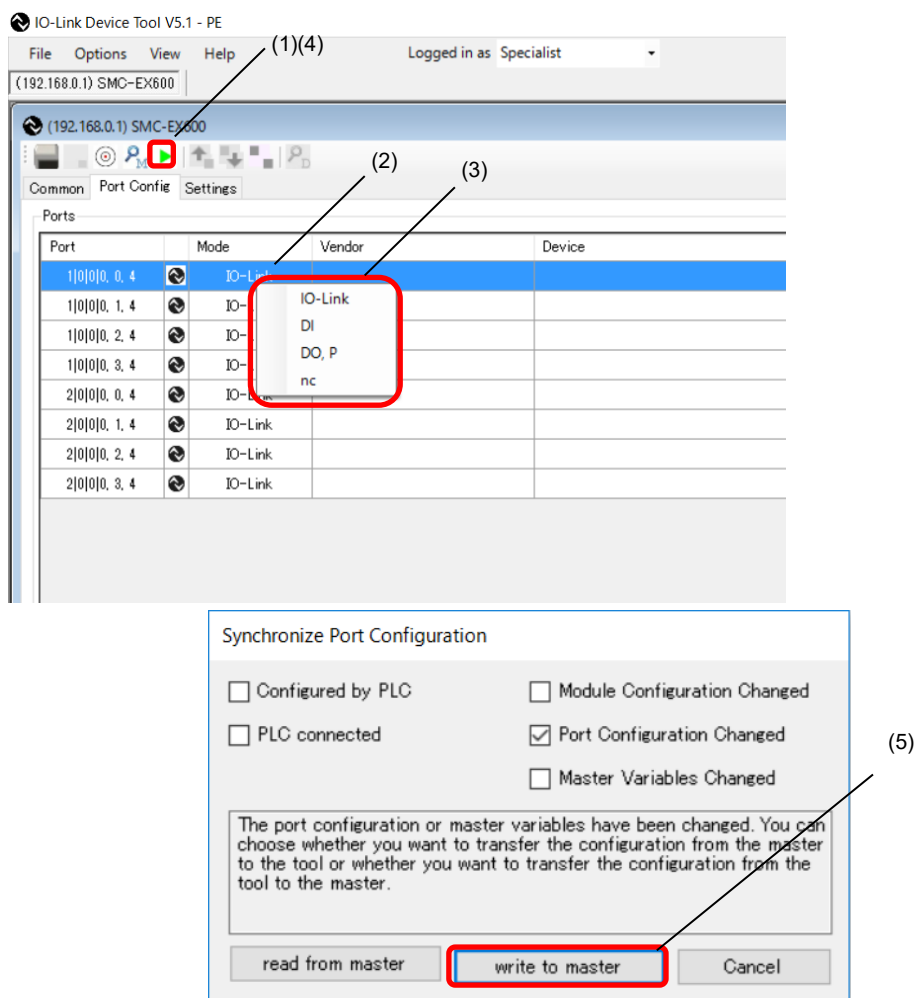

* When the SI unit is EX600-SPN3/4 or EX245-SPN#A, use the configuration software of the PLC to change the parameters of EX600-L#B1 and EX245-L#1.

* Parameters cannot be changed by the IO-Link Device Tool while communication with the PLC is established.

8.4.3. Scanning IO-Link Devices

- The following shows the procedures for scanning IO-Link devices when communication with IO-Link devices connected to the EX600-L#B1 or EX245-L#1 is established.

(1) Set the status to [Go Online].
(2) Press [Check Devices]. The connected IO-Link devices will be shown.
(3) Press [Takeover devices into engineering].
(4) Models, etc. of the connected IO-Link devices are shown.
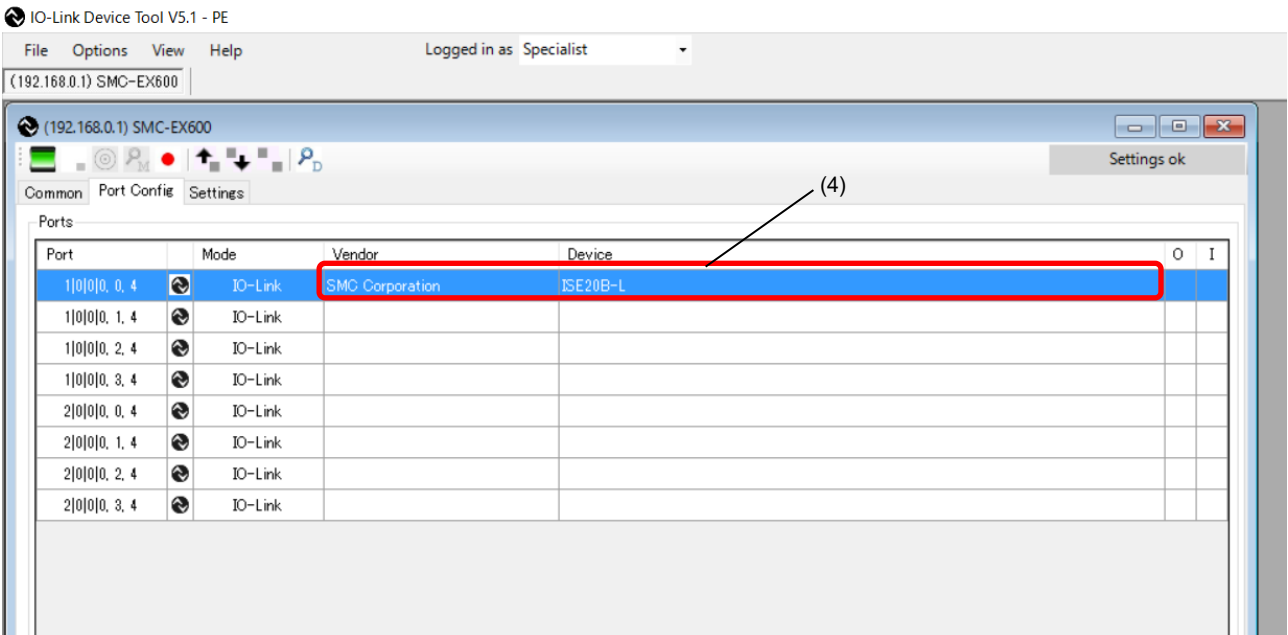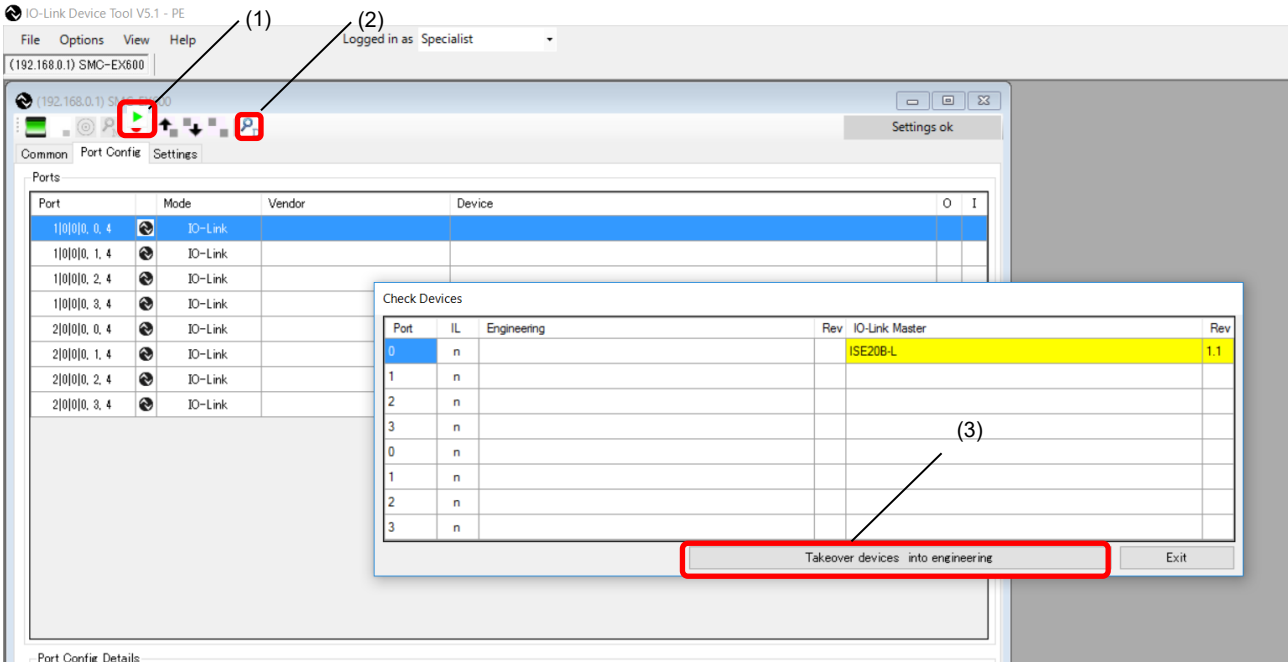
8.4.4. IO-Link Device Validation Function / Data Storage Function Setting
(Only possible when not connected to PLC)

- In the "Port Config Details" on the Port Config Screen of the SMC-EX600, the settings for the IO-Link device Validation Function / Data storage function can be set for each port.

(1) Set the status to [Go Offline].
(2) Select a port whose [Mode] is set to IO-Link.
(3) Select the validation & Backup setting in [IO-Link Mode].
     * For details on each setting, refer to the SI unit Operation Manual of protocol used.
(4) When the status is set to [Go Online], the Synchronize Port Configuration screen appears.
   Press the [write to master] button, to apply the setting to the EX600-L#B1.
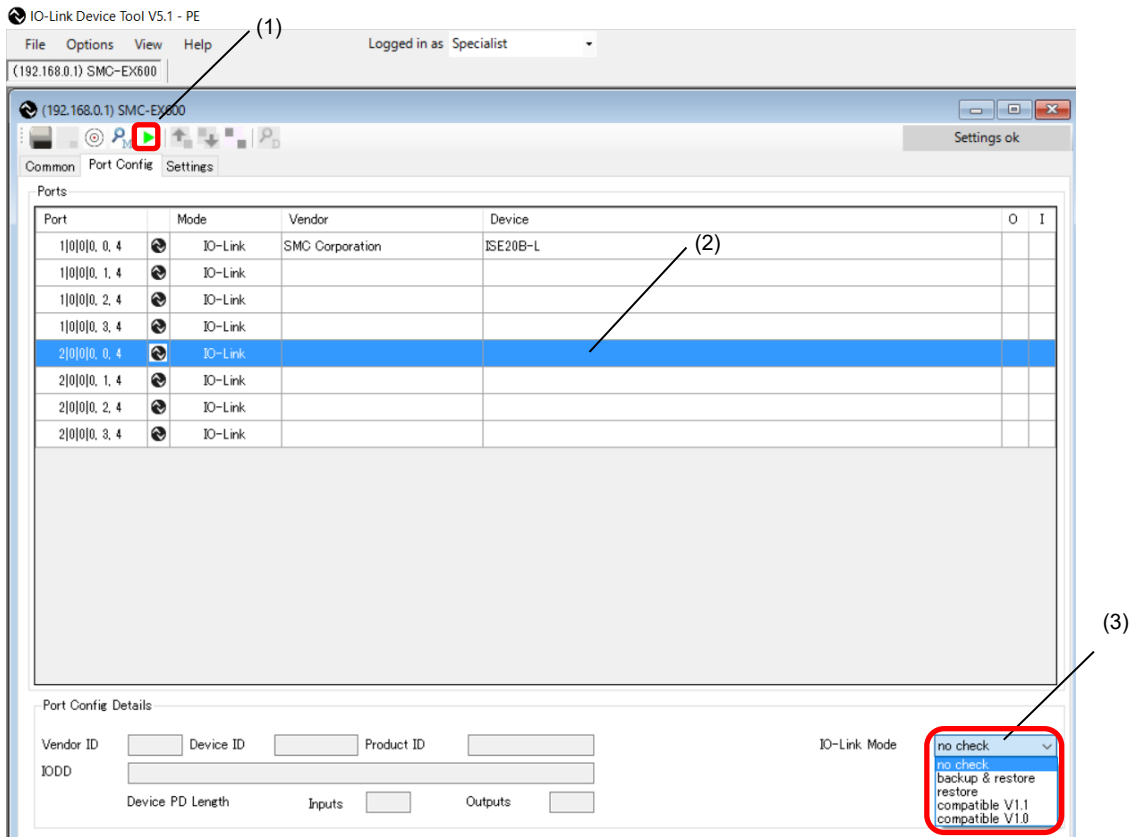
* When the SI unit is EX600-SPN3/4 or EX245-SPN#A, use the configuration software of the PLC to change the parameters of EX600-L#B1 and EX245-L#1.

* Parameters cannot be changed by the IO-Link Device Tool while communication with the PLC is established.

8.4.5. Port Config Details
- In "Port Config Details" on the Port Config screen of the SMC-EX600/EX245, information on connected IO-Link devices is shown.

(1) Select a port to which an IO-Link device is connected.
(2) The information on the IO-Link device is shown in "Port Config Details" as shown below.

№	Item	Outline
1	Vendor ID	Vendor ID
2	Device ID	Device ID
3	Product ID	Product ID
4	IODD	IODD file name
5	Device PD Length Inputs	Input size of the process data
6	Device PD Length Outputs	Output size of the process data
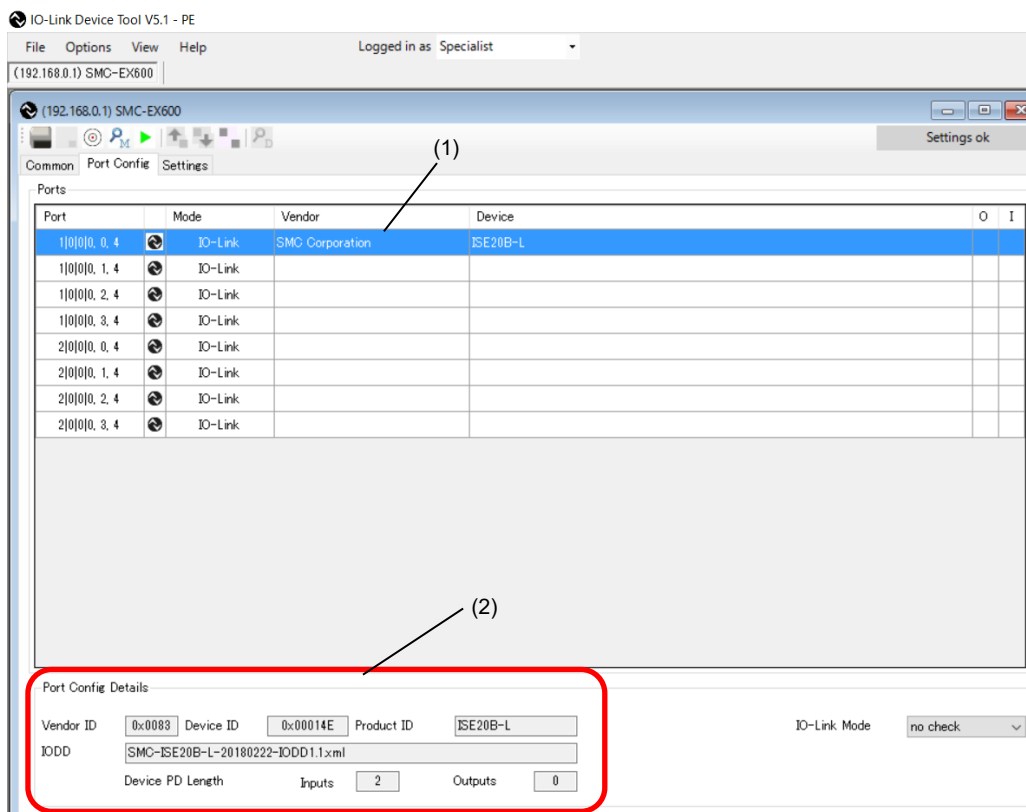
8.5. Settings Screen
- The Setting Screen shows parameter setting information for the EX600-L#B1.

  * EX600-SEC3/SEC4 and EX245-SPN#A don't support the Setting screen.

8.5.1. Reading IO-Link Module Parameters
- The following shows the procedure to read the parameters of the EX600-L#B1.
- For details of the parameters, refer to the SI unit Operation Manual of protocol used.

(1) Set the status to [Go Online].
(2) Select the [Settings] tab. The parameters of the unit selected in "List of Masters" will be shown.
(3) The units can be switched in "List of Masters" area.
(4) "Maximum" of "Total Input/Output Size" shows the maximum acceptable configuration size that can be occupied, and "Configured" shows the actually occupied configuration size (for the EX600-SEN7/SEN8 and EX600-SEN3-X80 only).
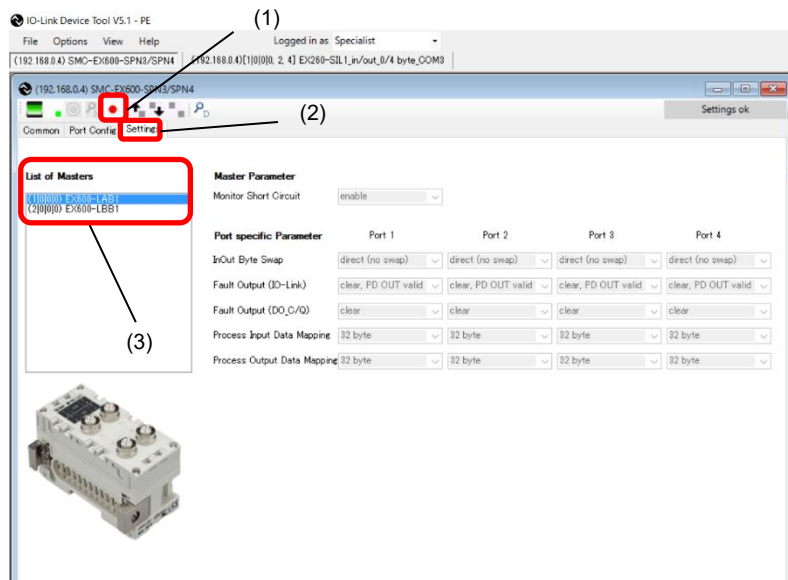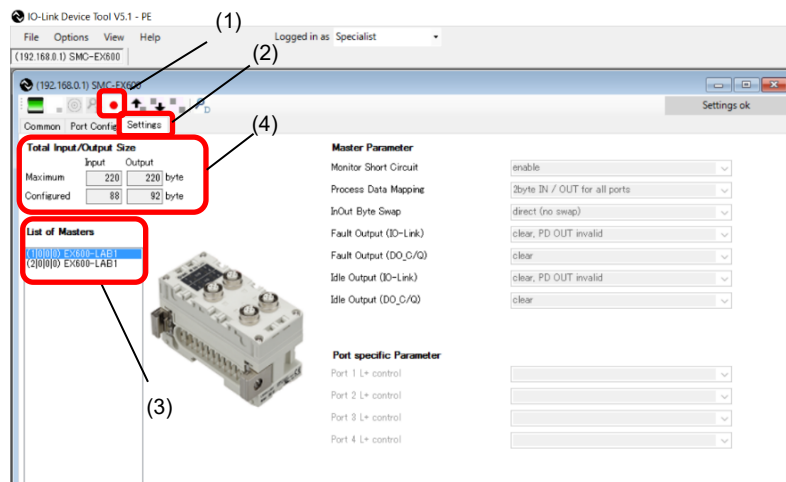

Fig. Screen for the EX600-SPN3/4

Fig. Screen for the EX600-SEN7/SEN8, and EX600-SEN3-X80

8.5.2. Setting the IO-Link Module Parameters (Only possible when not connected to PLC) (for the EX600-SEN7/SEN8, and EX600-SEN3-X80 only)

- The following shows the procedure to set the parameters of the EX600-L#B1.
- For details of the parameters, refer to the SI unit Operation Manual of protocol used.

(1) Set the status to [Go Offline].
(2) Select the [Settings] tab. The parameters of the unit selected in "List of Masters" will be shown.
(3) The units can be switched in "List of Masters" area.
(4) When the status is set to [Go Online] after changing the " Module Parameter," the "Synchronize Port Configuration" screen appears.
(5) Press [write to master] to apply the parameters to the unit.
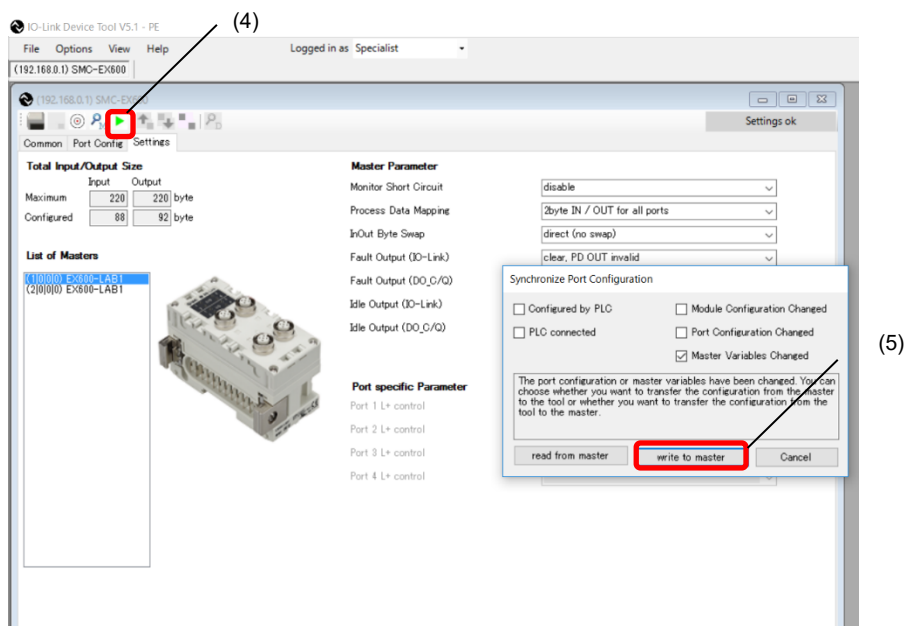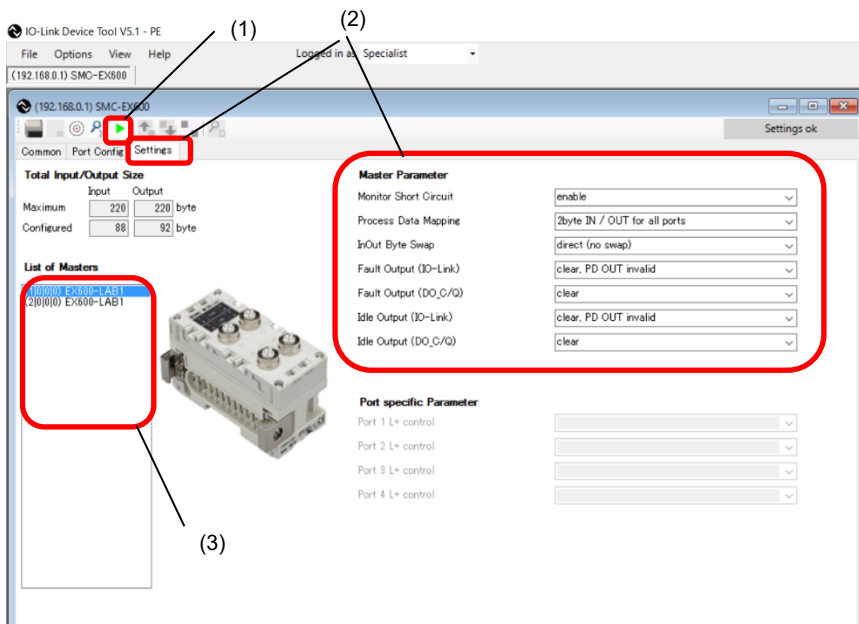
* When the SI unit is EX600-SPN3/4 or EX245-SPN#A, use the configuration software of the PLC to change the parameters of EX600-L#B1 and EX245-L#1.

* Parameters cannot be changed by the IO-Link Device Tool while communication with the PLC is established.

8.6. Setting the IO-Link Devices
8.6.1. Reading Information on IO-Link Devices
- Reading information on an IO-Link device can be performed using the following procedure.
- The following screens are examples of using a pressure switche ISE20B-L. The dedicated IODD file has
 been imported in advance.
  * Screens differ depending on the IO-Link device.

(1) Select an IO-Link device to read information, after setting the status to [Go Online], and double-click the
    row.
(2) The Common tab screen for IO-Link devices appears in a new window.
(3) Pressing the [Upload from device] button, the information on the connected IO-Link device will be read.
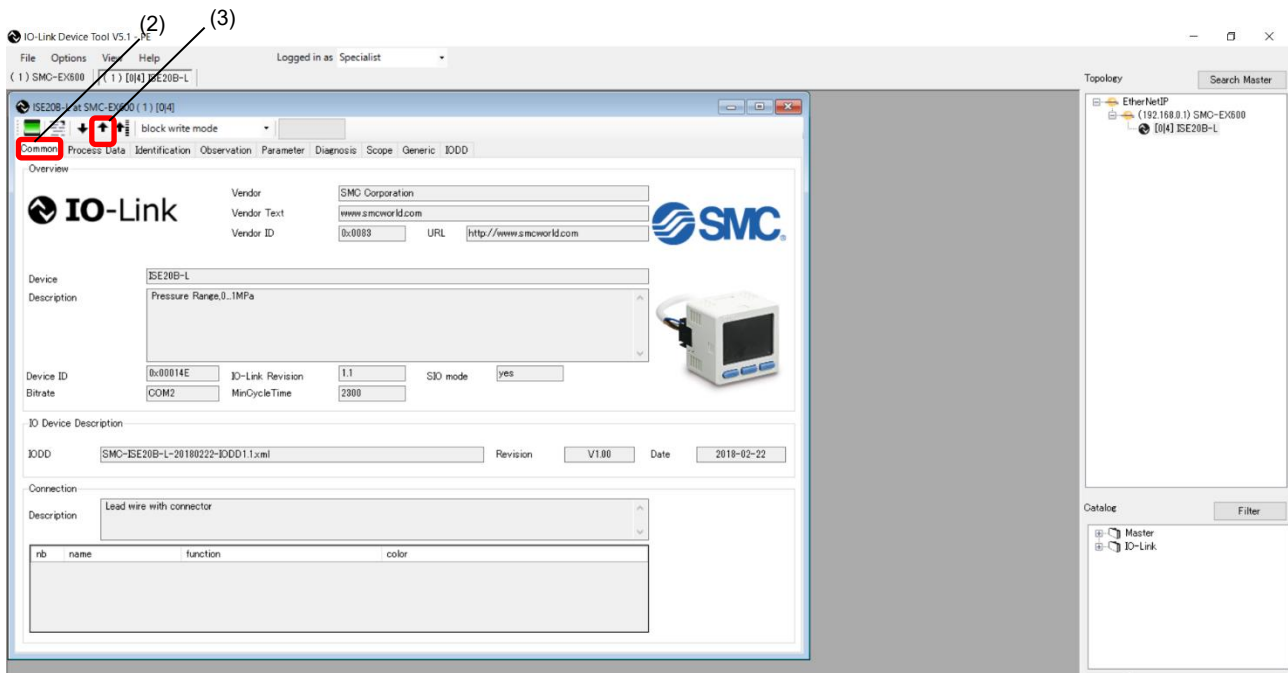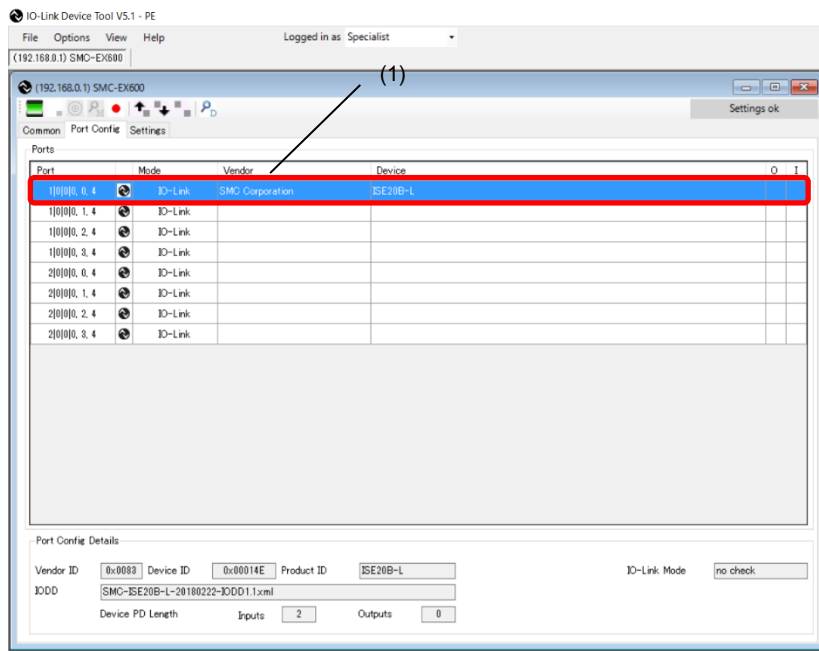
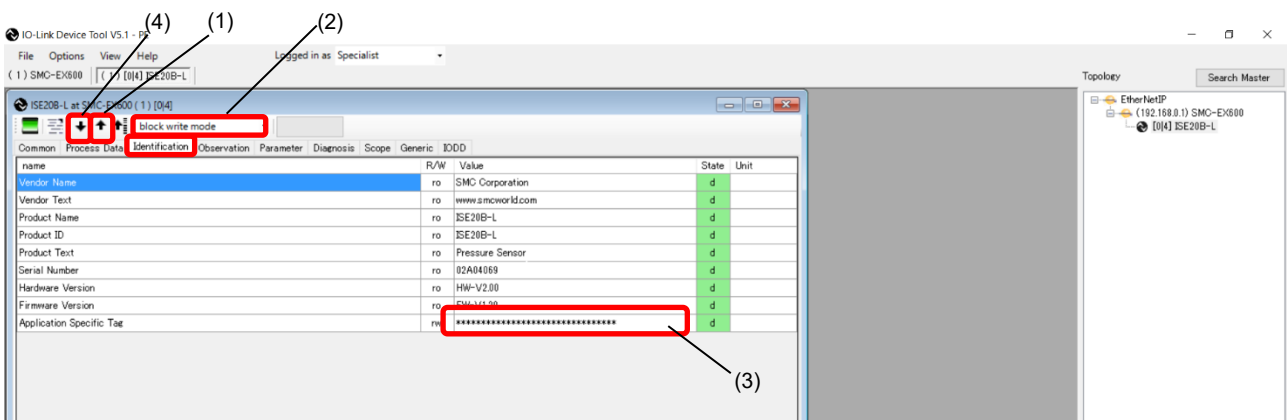### 8.6.2. IO-Link Device Process Data (Example using the ISE20B-L)
- When the "Process Data" tab of the ISE20B-L is selected, the following screen appears.
- Displays Pressure information, diagnostic information, and switch output status, which comprise the input 2 Byte process data.
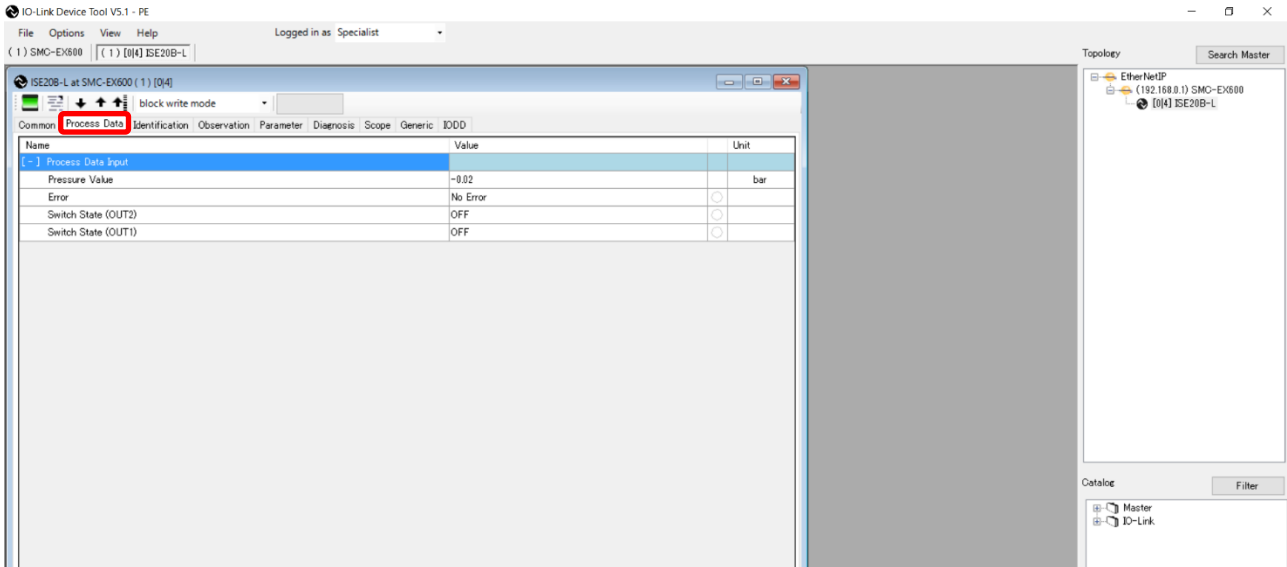
8.6.3. IO-Link Device Identification (Example using the ISE20B-L)
- When the "Identification" tab of the ISE20B-L is selected, the following screen appears.
  The specific IO-Link device data can be viewed in the "Identification" tab.
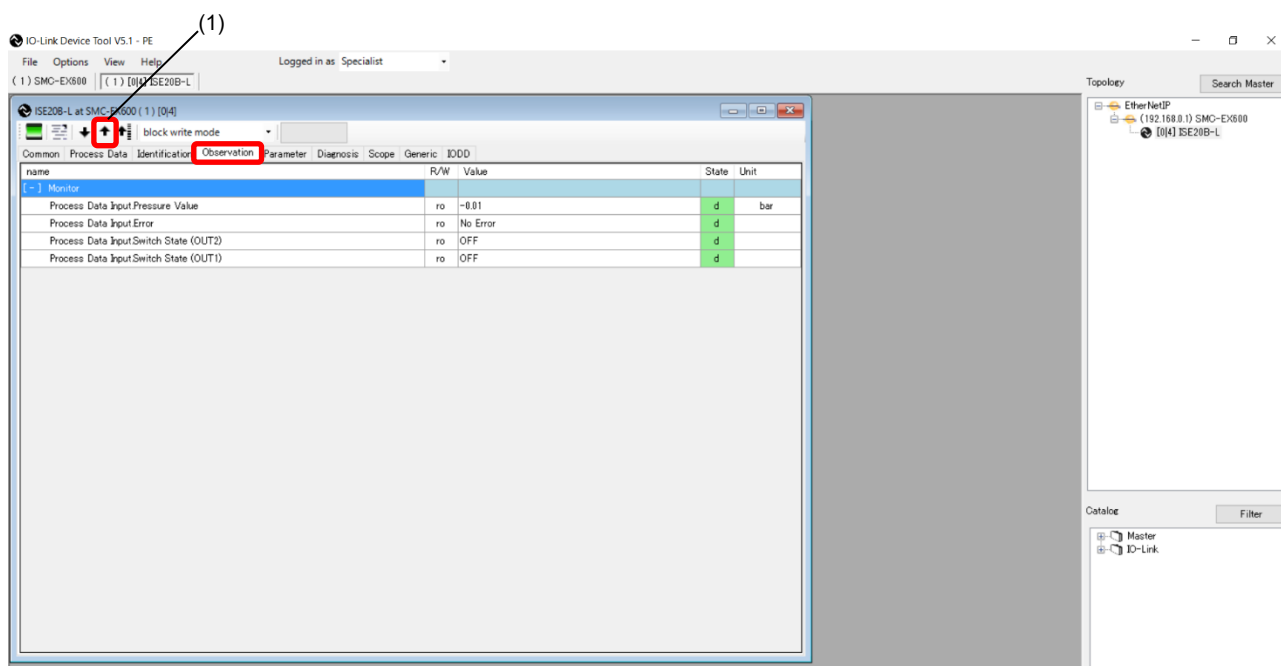- Only the "Application-Specific Tag" allows writing.

(1) Pressing the [Upload from device] button, the information on the connected device will be read.
(2) Select either the "block write mode" or "direct write mode" for the device writing mode.
    * For details of the difference between the writing modes, see the User Manual prepared by TMG.
(3) Any value within 32 characters can be set for the value of "Application-Specific Tag."
    To change this value, press the [Enter] button after directly entering the characters.
(4) Press the [Download to device] button to write this change to the IO-Link device.

SMC

No.EX※※-OMY0032-B

8.6.4. IO-Link Device Observation (Example using the ISE20B-L)
- When the Observation tab of the ISE20B-L is selected, the following screen appears.
- Pressure information, diagnostic information, and switch output status are shown.
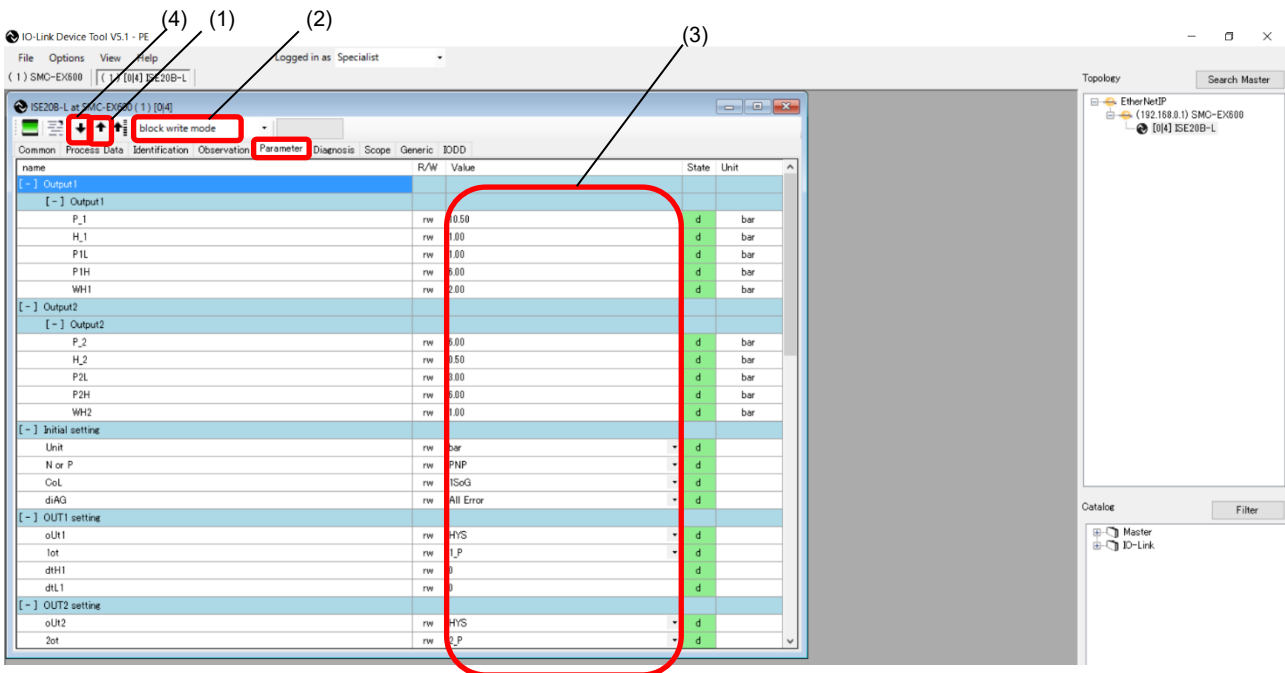
(1) Pressing the [Upload from device] button, the information on the connected device will be read.

No.EX※※-OMY0032-B

8.6.5. IO-Link Device Parameter (Example using the ISE20B-L)
- When the Parameter tab of the ISE20B-L is selected, the following screen appears.
  The set parameters can be checked.
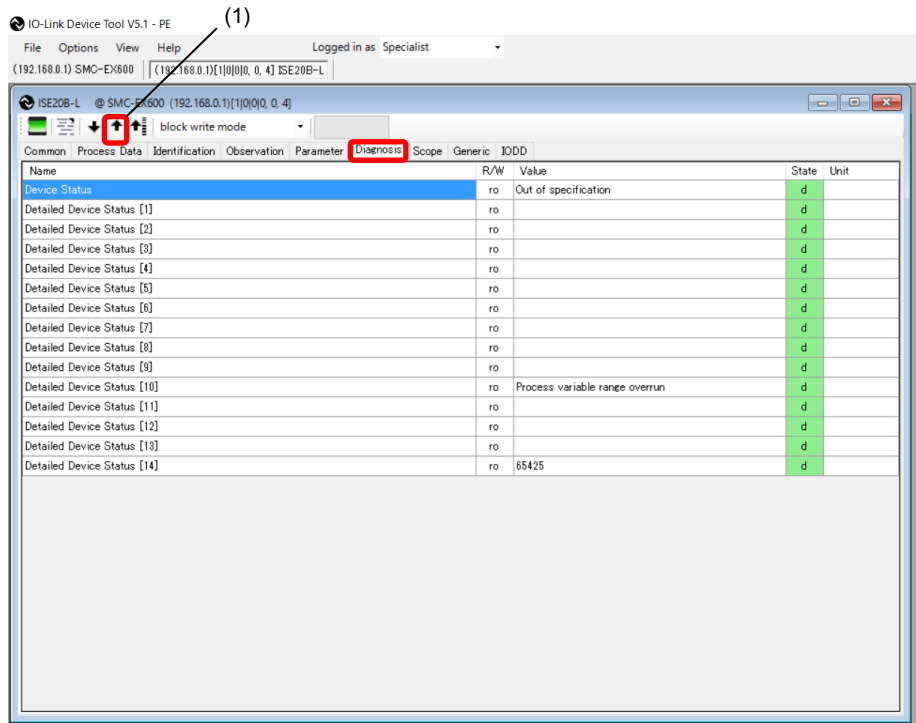- For details of the parameters, refer to the Operation Manual of the using IO-Link device.

(1) Pressing the [Upload from device] button, the information on the connected device will be read.
(2) Select either the "block write mode" or "direct write mode" for the device writing mode.
    * For details of the difference between the writing modes, refer to the User Manual prepared by TMG.
(3) Change "Value." ("State" will change to "c.")
(4) Press the [Download to device] button to write this change to the IO-Link device.

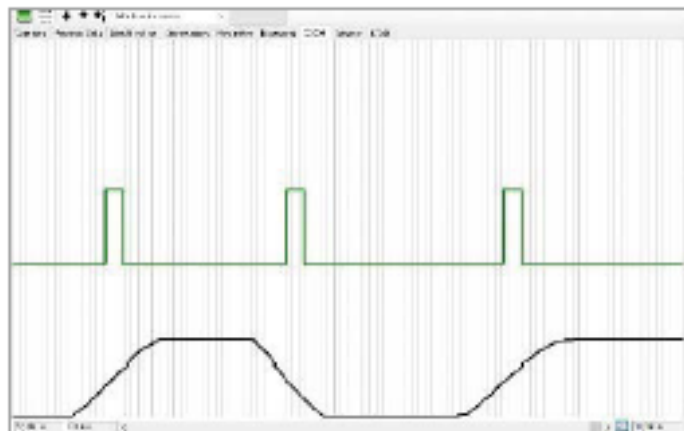### 8.6.6. IO-Link Device Diagnosis (Example using the ISE20B-L)
- When the Diagnosis tab of the ISE20B-L is selected, the following screen appears.
- For details of the Diagnosis data, refer to the Operation Manual of the relevant IO-Link device.

(1) Pressing the [Upload from device] button, the information on the connected device will be read.

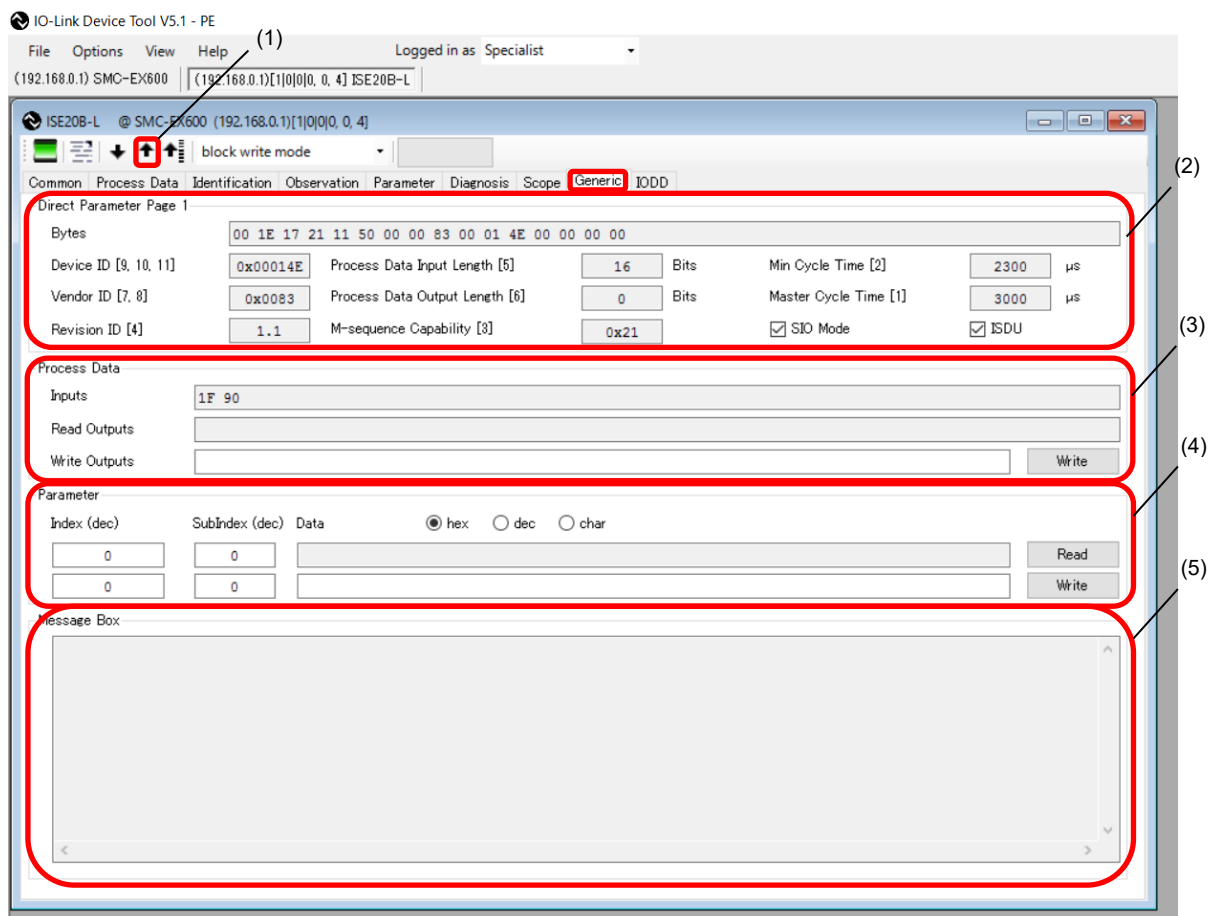### 8.6.7. IO-Link Device Scope (Example using the ISE20B-L)
- When the Scope tab of the ISE20B-L is selected, the Scope screen appears. In th Scope screen, process data can be displayed in charts.
- For details on the Scope function, refer to the User Manual prepared by TMG.

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### 8.6.8. IO-Link Device Generic (Example using the ISE20B-L)
- When the Generic tab of the ISE20B-L is selected, the following screen appears.
- For details of the Generic data, refer to the Operation Manual of the using IO-Link device.

(1)   When the [Upload from device] button is pressed, the information on the connected device will be read.
(2)   The information on Direct Parameter Page 1 is shown.
(3)   The current value of input/output Process Data is displayed.
      If the PLC is not connected, output Process Data can be written.
      (EX600-SEN3-X80 does not support writing output Process Data.)
(4)   Parameters of IO-Link devices are able to Read/Write by specifying ISDU (indexed service data unit).
(5)   Message Box records the appearance and disappearance log of event information.

8.6.9. IO-Link Device IODD (Example using the ISE20B-L)
- When the IODD tab of the ISE20B-L is selected, the following screen appears.
- Detailed information on the IODD file is shown.

No.EX※※-OMY0032-B
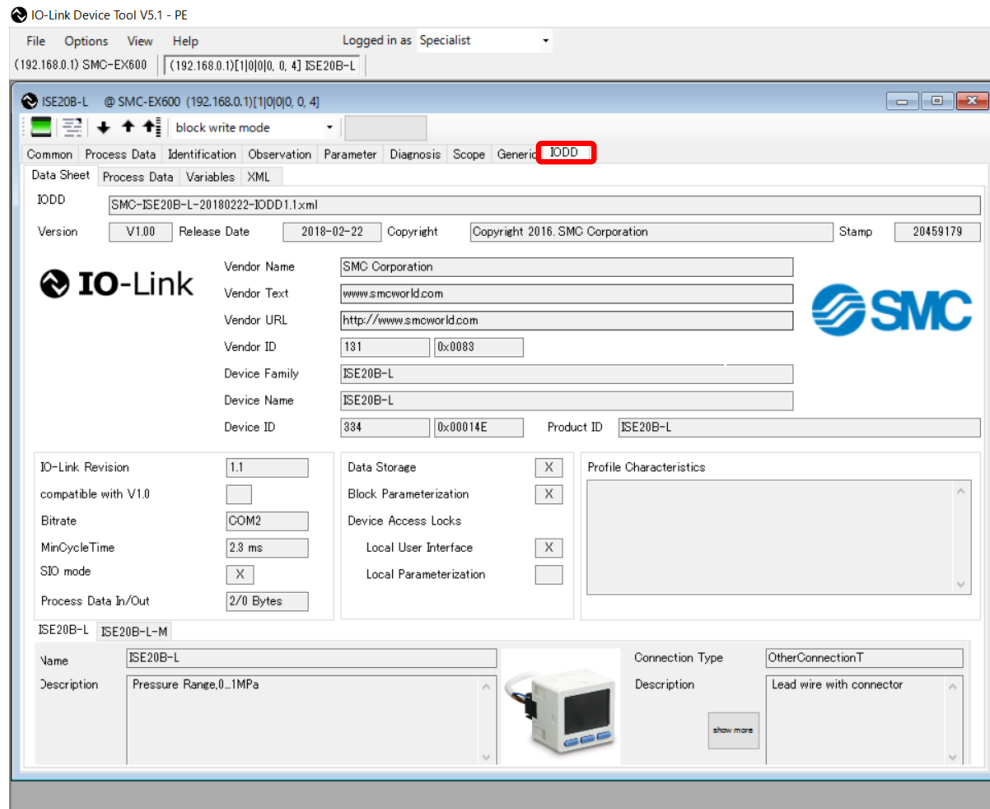
Revision history		
A : Addition of IO-Link modules EX245-L#1. [April 2022]		
B : Addition of EX600-SEN7/8 and EX600-SEC3/4. [March 2023]		

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