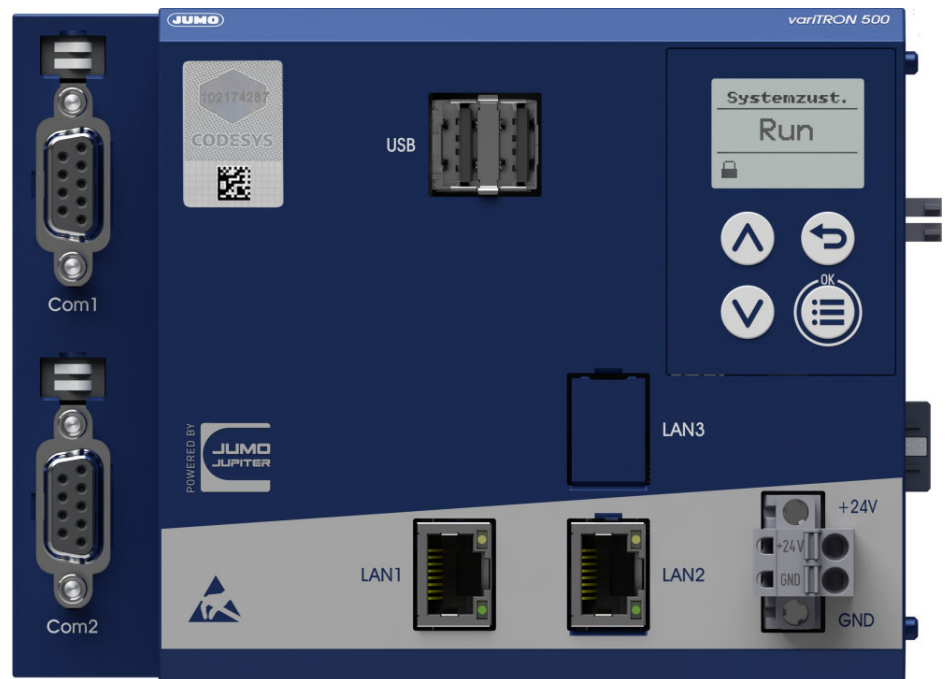


# JUMO variTRON 500

## Automation system



## PROFINET interface description



70500207T92Z001K000

V1.00/EN/00768869/2023-03-30



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# Contents

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## 1.1 Warning symbols



### DANGER!

This symbol indicates that **personal injury from electrocution** may occur if the appropriate precautionary measures are not taken.



### WARNING!

This symbol in connection with the signal word indicates that **personal injury** may occur if the respective precautionary measures are not carried out.



### CAUTION!

This symbol in connection with the signal word indicates that **material damage or data loss** will occur if the respective precautionary measures are not taken.



### CAUTION!

This symbol indicates that **components could be destroyed** by electrostatic discharge (ESD = Electro Static Discharge) if the respective cautionary measures are not taken.

Only use the ESD packages intended for this purpose to return device inserts, assembly groups, or assembly components.



### READ THE DOCUMENTATION!

This symbol, which is attached to the device, indicates that the associated **documentation for the device** must be **observed**. This is necessary to identify the nature of the potential hazard, and to take measures to prevent it.

## 1.2 Note symbols



### NOTE!

This symbol refers to **important information** about the product, its handling, or additional benefits.



### REFERENCE!

This symbol refers to **additional information** in other sections, chapters, or other manuals.



### FURTHER INFORMATION!

This symbol is used in tables and indicates that **further information** is provided after the table.



### DISPOSAL!

At the end of its service life, the device and any batteries present do not belong in the trash! Please ensure that they are **disposed of** properly and in an **environmentally friendly** manner.

## 1.3 Notes on trademark

All trademarks and trade and company names used are the property of their rightful owners or authors.

# 1 Introduction

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# 2 Compatibility and system requirements

---

## 2.1 Certification

### JUMO variTRON 500

The JUMO variTRON 500 automation system (product group 705002) is certified to Conformance Class A (abbreviated to CC-A) and net load class "Netload Class I."

The certificate is available for download from the product page on the Internet.

The following QR code or web address will take you to the product page:



[qr-705002-en.jumo.info](http://qr-705002-en.jumo.info)

## 2.2 PROFINET IO and Ethernet standard services

The PROFINET IO communication occurs in a parameterizable time pattern (RT channel). This ensures that the IO data are transferred in real-time without being affected by Ethernet standard services. The remaining time between the RT phases (NRT channel) is used for the communication between the Ethernet standard services. Broadband bottlenecks impair the performance of the standard services. The real-time capability of the PROFINET IO communication is guaranteed by the reserved RT channel.

## 2.3 Requirements for hardware, software, and cabling

### Network installation

Any switches used to network PROFINET IO devices must support the following standards and functions:

- 100 Mbit/s (transfer rate of the switchports)
  - Auto negotiation (automatic setting of the switchport transfer rate)
  - Cut through (direct relaying of the data between the switchports)
- Full duplex support for the switchports  
IEEE 802.1 Q (VLAN support for at least 4 priority classes)

The network installation must be carried out so that it is compliant with the requirements of a 100BASE-TX Ethernet network with cabling to CLASS D or higher. The "PROFINET Cabling and Interconnection Technology" guideline also provides information on correct cabling.

## 2 Compatibility and system requirements

---

### JUMO variTRON 500

To use PROFINET IO with the JUMO variTRON 500, the device must meet the following minimum requirements:

- Device software version 388.7.1.0.4
- Hardware compatibility index (EM = electronic module):  
EM of CPU: 7050020301300001.01.01  
EM of USB/Ethernet: 7050020000500001.01.01
- Network interface card of PROFINET IO device (incl. Ethernet)
- CODESYS® SP17.3 engineering tool
- CODESYS® Runtime SP17.3
- CODESYS® compiler version 3.5.17.30
- CODESYS® PROFINET version V4.3.0.0
- JUMO smartWARE Setup variTRON version 432.7.0.0.28 or newer

The device-related information can be displayed and reviewed with the aid of the device menu. The CODESYS® versions must be checked accordingly in the engineering tool.

### Versions of device software and hardware

The versions of the individual software and hardware components can be found in the device menu.

#### ***Main menu > Device info > Device information > Software versions***

The following information can be read out:

- Bootloader version
- Software version
- Application building kit version
- Operating system version
- Version type

#### ***Main menu > Device info > Device information > Hardware versions***

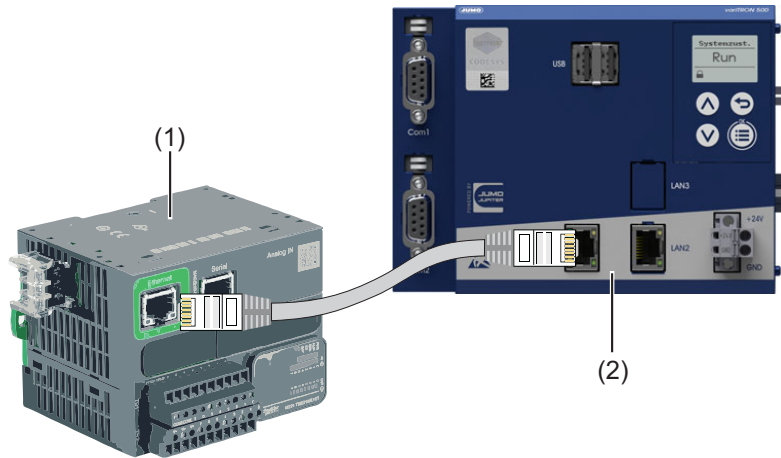
The following information can be read out for each category, as shown by way of example:

- Bus: Hardware type, hardware version, compatibility index, CB-ID (circuit board ID)
- Ethernet (option)

# 3 Electrical connection

## Cabling

The JUMO field device with PROFINET IO interface is a single-port PROFINET device. It can be connected to the end of a line or in a star design to an IO controller, an IO supervisor (programming device and/or PC for project planning), or other Ethernet components such as switches and routers.



- (1) PROFINET IO controller (PLC, control station PC, or similar)
- (2) JUMO PROFINET IO devices (LAN1 is configurable as an IO device in CODESYS®)



### NOTE!

The cyclical data exchange with JUMO PROFINET IO devices is based on the RT protocol (Conformance Class A). PROFINET RT communication cannot be routed. It is thus necessary that the PROFINET IO controller and the IO devices be in a common broadcast domain (not connected via a router). Ethernet standard services (web server, access via JUMO setup program and email function) and NRT communication (e.g. project planning on the IO supervisor, system boot, noncyclical data) also function via routers as before.

## JUMO variTRON 500



Fig. 3-1 LAN interfaces of the JUMO variTRON 500 (LAN1 as a standard feature, LAN2 as an optional extra)

LAN1 can be configured as a PROFINET IO device interface in CODESYS® (including Ethernet; extra code).

LAN1 = Port 1, LAN2 = Port 2 (optional extra), LAN3 = Port 3 (optional extra, for future use)

## 3 Electrical connection

---

### 4.1 General information

The GSDML file of the JUMO field device contains all the information required to provide your PLC engineering system with the PROFINET IO functionality. The file must be imported into the engineering system so that the field device is available here for project planning. After the import, the field device and its IO functions can be integrated into the programming of your PLC projects.

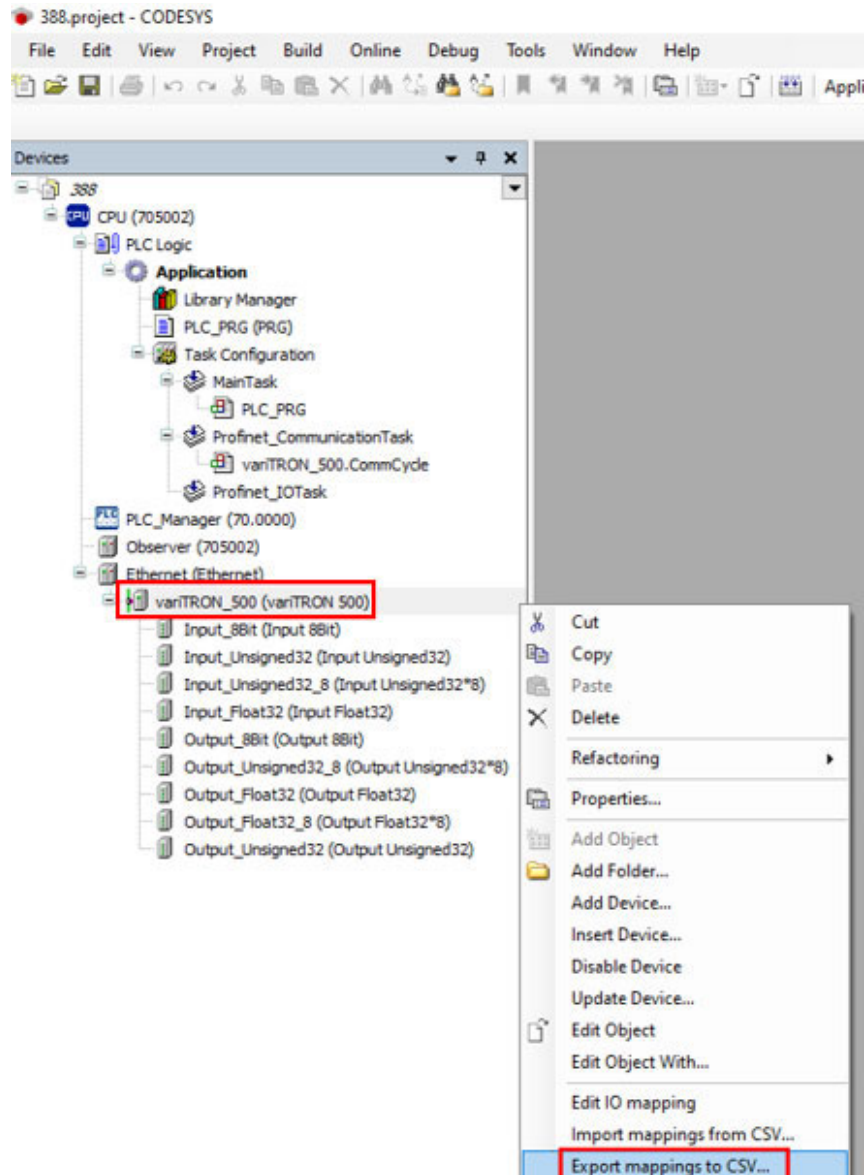
### 4.2 Module description

#### 4.2.1 Module concept

The PLC programmer can choose how to put together the IO items that will be transferred via PROFINET IO. Up to 19 modules are available for this purpose, which can be placed into slots 1 to 64. In contrast to other JUMO IO devices, on the JUMO variTRON 500 no module is permanently integrated in a particular slot. All available modules are provided as optional extras and can be integrated and positioned as required. The IO items to be transferred for the individual modules should be considered placeholders that the PLC programmer needs to fill with the relevant contents (variables).

**The finished module configuration can be exported as a CSV file and printed to serve as the basis for the project planning of the IO controller, as shown below.**

# 4 The GSDML file



In the project configuration of the IO controller, the modules to be transferred via the PROFINET IO have to be assigned to the free slots of the JUMO IO device in the project structure of the IO controller. The IO items of the inserted modules are then available for the programming of the IO controller. The assignment of the JUMO field device data to the IO items of the individual modules is provided for the programmer in the exported/printed module configuration list.

⇒ chapter 5 "Project planning", Page 15

## 4.2.2 Modules

### Configurable modules of the JUMO variTRON 500

The configurable modules are intended exclusively for transferring cyclical IO items.

The JUMO variTRON 500 supports up to 64 slots in total in the device and 64 slots in the IO controller project. The possible types of configurable modules are listed in the table below.

Module designation	Module types (from the perspective of the IO controller)	Data type	Data direction IO controller
Input 8Bit	Input values	USINT8 (bit field)	Read
Output 8Bit	Output values	USINT8 (bit field)	Write
InOut 8Bit	Input values	USINT8 (bit field)	Read
	Output values	USINT8 (bit field)	Write
InOut 64 Byte	Input data field (64 bytes)	64x BYTE	Read
	Output data field (64 bytes)	64x BYTE	Read
Input Unsigned32	Input value	USINT32	Read
Output Unsigned32 DataRecord	Output value	USINT32	Write
Output Unsigned32	Output value	USINT32	Write
InOut Unsigned32	Input value	USINT32	Read
	Output value	USINT32	Write
Input Unsigned32*8	8x input value	8x USINT32	Read
Output Unsigned32*8	8x output value	8x USINT32	Write
InOut Unsigned32*8	8x input value	8x USINT32	Read
	8x output value	8x USINT32	Write
Input Float32	Input value	REAL	Read
Output Float32	Output value	REAL	Write
InOut Float32	Input value	REAL	Read
	Output value	REAL	Write
Input Float32*8	8x input value	8x REAL	Read
Output Float32*8	8x output value	8x REAL	Write
InOut Float32*8	8x input value	8x REAL	Read
	8x output value	8x REAL	Write
InOut Structured	2x input values	2x USINT8 (bit field)	Read
	Input value	USINT16	Read
	Input value	USINT32	Read
	Input value	USINT64	Read
	2x output values	2x USINT8 (bit field)	Write
	Output value	USINT16	Write
	Output value	USINT32	Write
	Output value	USINT64	Write
Module with Subslots	For each pluggable subslot: 4x input/output values	For each subslot: 4x USINT32	Read/write

Tab. 4-1 Module overview (optional modules)



### NOTE!

According to the GSDML file, the "Output Unsigned32 DataRecord" module contains non-cyclical data that is not evaluated in the device. For this reason, this data must not be used.

## 4 The GSDML file

---

## 5.1 Project integration of JUMO IO devices in CODESYS®

This chapter provides a general description of how to integrate a JUMO IO device into an engineering system such as CODESYS®.

The two subsequent chapters contain detailed instructions for configuring and integrating a JUMO IO device using the JUMO variTRON 500 by way of example.

⇒ chapter 5.2 "Configuring the JUMO IO device", Page 17

⇒ chapter 5.3 "Project integration of JUMO IO device into IO controller", Page 26



### NOTE!

The JUMO IO device uses the **little endian format** – please note this when configuring the IO controller and set it if required. Otherwise the transferred data will not be interpreted correctly!

---

For JUMO field devices to be integrated into the project structure of the IO controller as an IO device, the GSDML file of the respective device must be imported into the engineering system of your IO controller. The GSDML file describes all PROFINET IO features of IO devices and delivers to the engineering system all the information required for the project planning phase. This file is located on the DVD from the scope of delivery of your JUMO field device, or can alternatively be downloaded from the JUMO website. Once the GSDML file has been imported into the engineering system, the corresponding field device is available as an IO device in the engineering system (e.g. "Hardware catalog" for SIMATIC® or "Device repository" for CODESYS®), and can be incorporated into the hardware structure of your projects. With JUMO IO devices, modules can then be added as slots. In the engineering system, modules are treated as modular devices for expanding IO devices. They are selected from the engineering system catalog and assigned to the slots in the JUMO IO device. The procedure for integrating devices into project structures is described in the documentation for the engineering system of your IO controller.

### Process

1. Import the GSDML file of your JUMO IO device into the engineering system of your IO controller.



### NOTE!

The GSDML file for the current device version is located on the DVD from the scope of delivery of your JUMO field device. Alternatively, you can download the GSDML file from the JUMO website.

---

2. Configure the PROFINET modules for your JUMO field device using the setup program (JUMO smartWARE Setup variTRON).
3. Integrate the desired JUMO field device into the project structure of your IO controller. Make sure the device software version matches the version data of the JUMO field device integrated into the project structure.



### NOTE!

The exact procedure for integrating PROFINET IO devices can be found in the description of your engineering system.

---

4. Assign a device name.



### NOTE!

Engineering systems offer a function for identifying field devices. If JUMO field devices are addressed via the "Identification function" of the engineering system, this is signaled by the flashing of the front display.

---

5. Set the communication parameters (device name, IP address, etc.) of the JUMO field device in the project structure of the IO controller.

## 5 Project planning

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6. The JUMO IO device uses the little endian format – please note this when configuring the IO controller and set it if required.
7. Insert the configured modules in the project structure of the IO controller in the desired slot position on the JUMO IO device.



**NOTE!**

The finished module configuration can be exported as a CSV file and printed to serve as the basis for the project planning of the IO controller.

⇒ chapter 4.2.1 "Module concept", Page 11

---

*The IO data of the JUMO IO device are now available for the programming of the IO controller.*

## 5.2 Configuring the JUMO IO device

Using the JUMO variTRON 500 by way of example, this chapter explains how to integrate and configure a PROFINET IO device in CODESYS® using the setup program (JUMO smartWARE Setup variTRON) so that it can be found by an IO controller. This can then assign the IO device a device name and an IP address.

First, configure the network settings of the JUMO variTRON 500 using the device display:

⇒ chapter 5.2.1 "Network settings", Page 17

Then use the setup program to create and open a CODESYS® project:

⇒ chapter 5.2.2 "Configuration in CODESYS® (using the setup program)", Page 18

The configuration process for the PROFINET IO device is described in steps 1 to 8. Once the configuration work is complete, close the CODESYS® project in the setup program and apply the changes. You can then load the application into the JUMO variTRON 500.

The CODESYS® project can also be transferred directly from CODESYS® into the JUMO variTRON 500. Direct transfers from CODESYS® are described in steps 12 to 14.



### NOTE!

If possible, do not use the LAN1 interface for the configuration work as LAN1 is used for PROFINET. Otherwise an error message will occur when starting up the system for the first time.

⇒ chapter 6.2 "Error message in the setup program", Page 35

Use either a free LAN port (e.g. LAN2) or a USB Ethernet adapter (eth0 in the device info).

---

### 5.2.1 Network settings

On the JUMO variTRON 500, the network settings are configured using the device display.

#### Process:

1. Unlock the configuration: **Menu > User management > Log in**
  - a) Select user (e.g. master).
  - b) Enter password.  
*The configuration will be unlocked.*
2. Configure IP parameters for LAN1 (use IP address as in IO controller).
  - a) Set method (manual IP/automatic IP via DHCP):  
**Menu > Configuration > Ethernet > LAN1 > Method:**  
Select **Manual**.
  - b) Set IP address (as in the IO controller; required for project planning):  
**Menu > Configuration > Ethernet > LAN1 > IP address:**  
Enter IP address (for example 192.168.0.3).
  - c) Set subnet mask:  
**Menu > Configuration > Ethernet > LAN1 > Subnet mask:**  
Enter subnet mask (for example 255.255.255.0).
  - d) Check and if necessary set standard gateway:  
**Menu > Configuration > Ethernet > LAN1 > Standard gateway:**  
Enter **0.0.0.0**.
3. Exit configuration by pressing the **Back key** several times and confirm **Save settings**.



### NOTE!

Check the device information to see whether the IP settings for LAN1 have been correctly applied: **Menu > Device info > Ethernet > LAN1**

# 5 Project planning

The configured IP address is displayed there if there is an active LAN connection.

## 5.2.2 Configuration in CODESYS® (using the setup program)



### NOTE!

CODESYS® SP17.3 and the setup program (JUMO smartWARE Setup variTRON) must have been installed on the PC being used. The setup program is provided on the supplied DVD or alternatively you can download it from the JUMO website.



### NOTE!

This document does not cover how to start the setup program, create a project in the setup program, or start the CODESYS PLC programming system.

These topics are covered in the operating manual for the JUMO variTRON 500 (705002). The operating manual can be downloaded from the relevant product page (705002) on the JUMO website (see chapter 2.1).

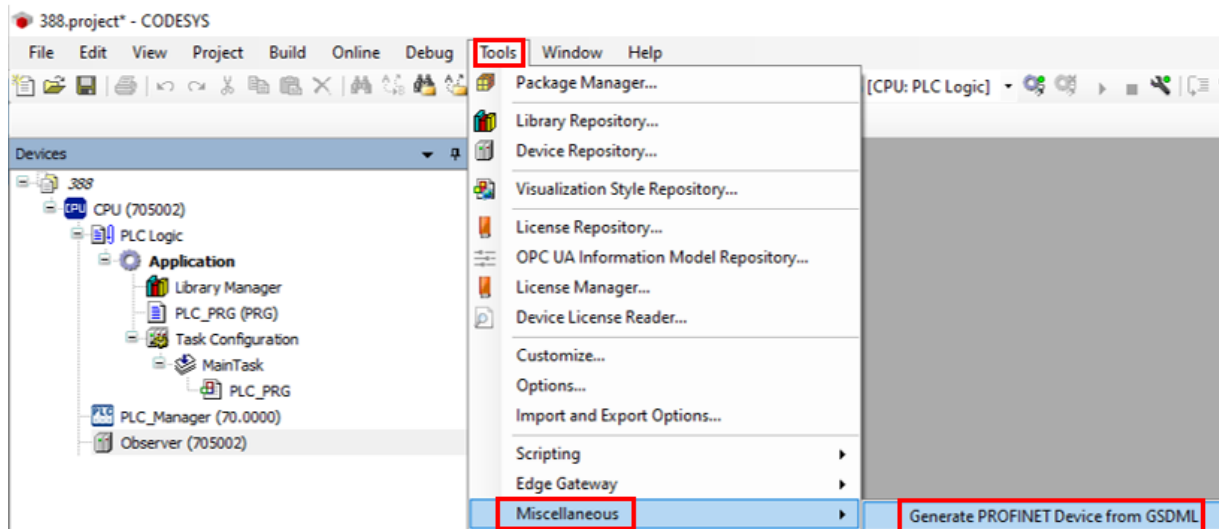
### Process:

1. Install PROFINET device (JUMO variTRON 500) (install GSDML file).

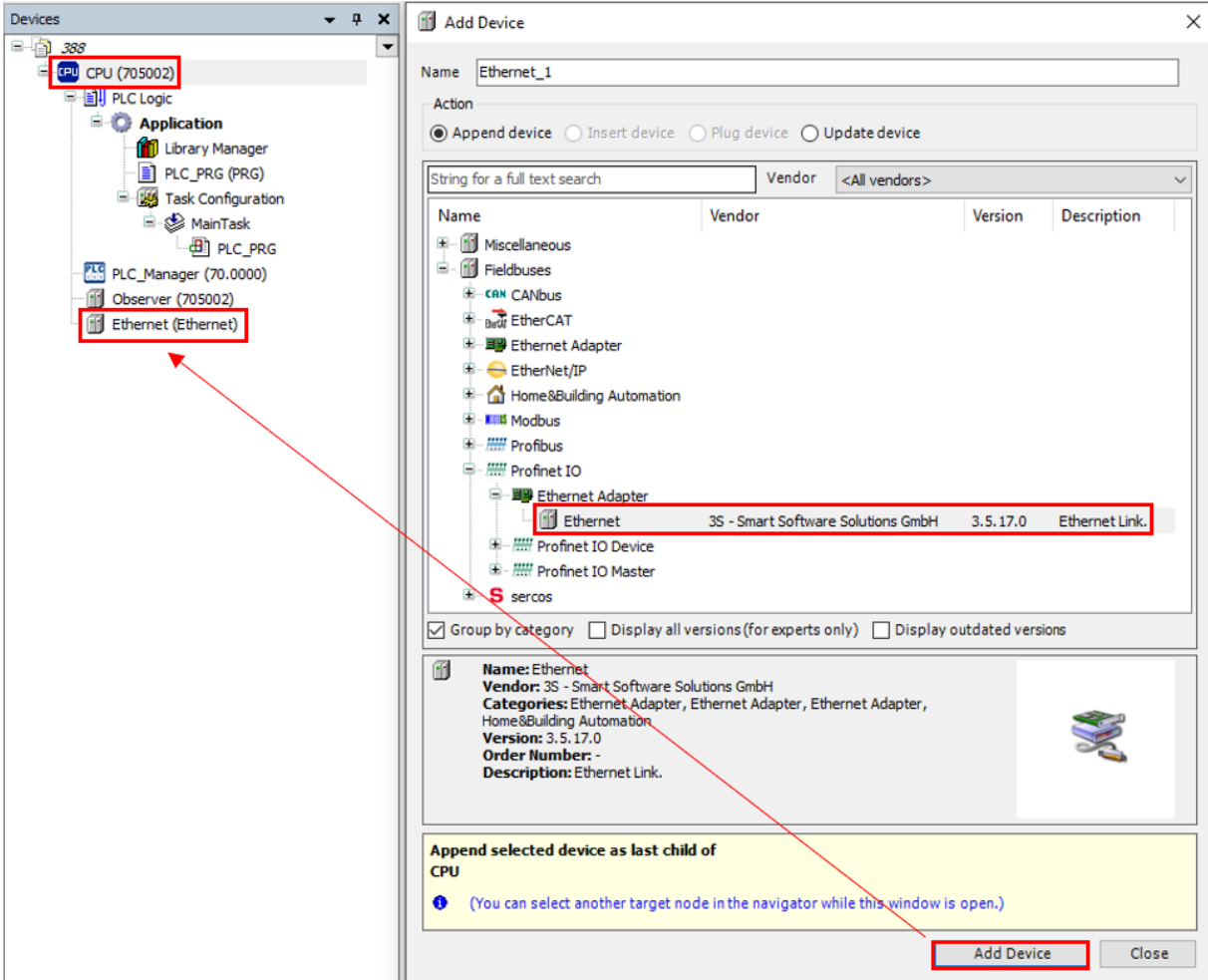


### NOTE!

The GSDML file for the current device version is located on the DVD from the scope of delivery of your JUMO field device. Alternatively, you can download the GSDML file from the JUMO website.



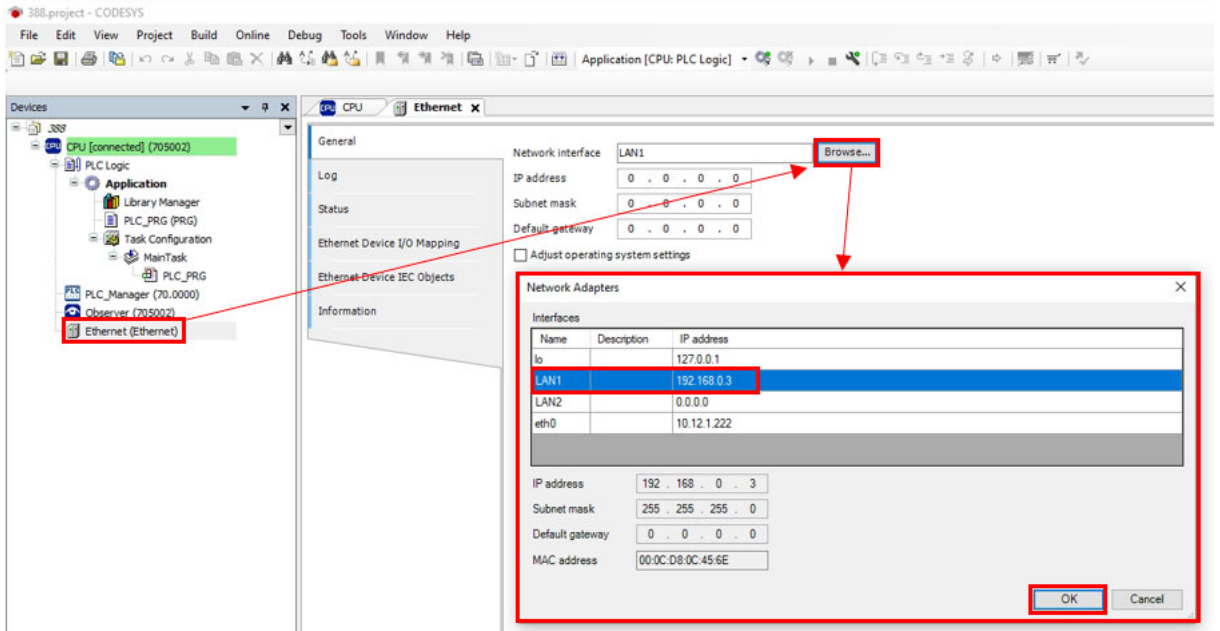
## 2. Create Ethernet interface.



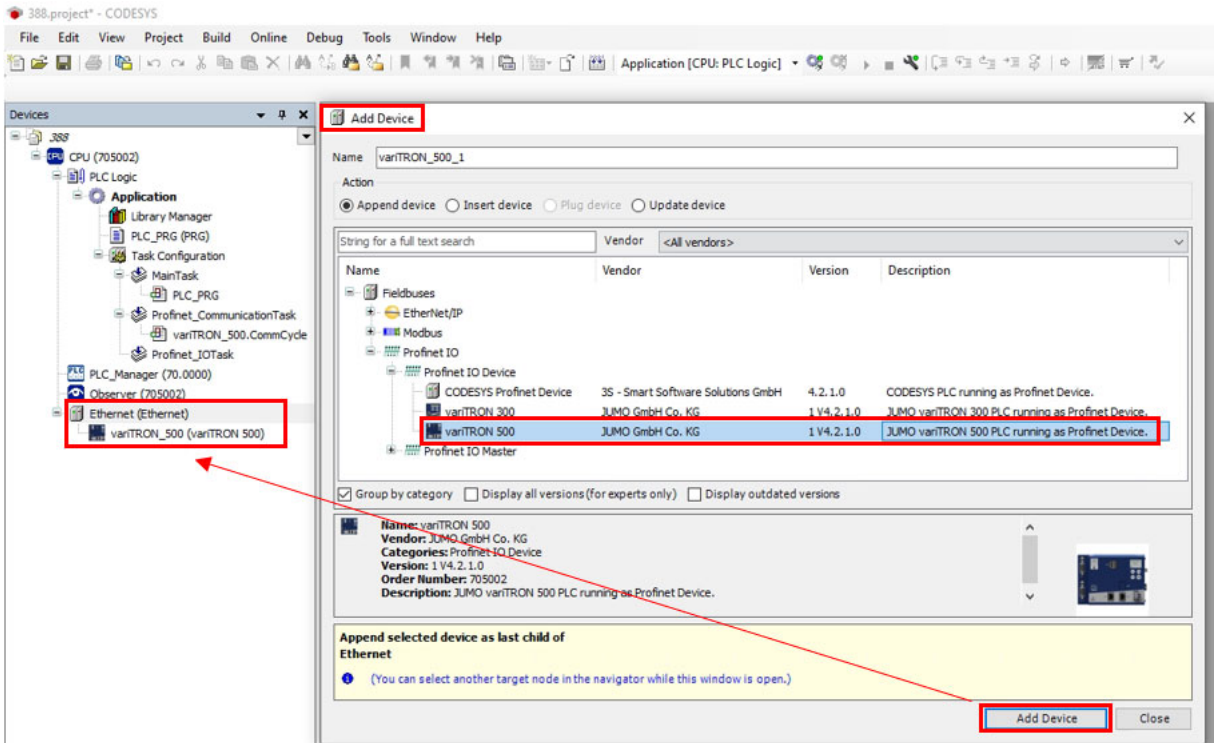
# 5 Project planning

## 3. Configure network settings.

The IP address must be identical to the IP address of the device created in the IO controller. Click **Browse...** to select the PROFINET interface (LAN port). Here, select the LAN1 interface that you previously configured manually (with the IP address 192.168.0.3 by way of example).

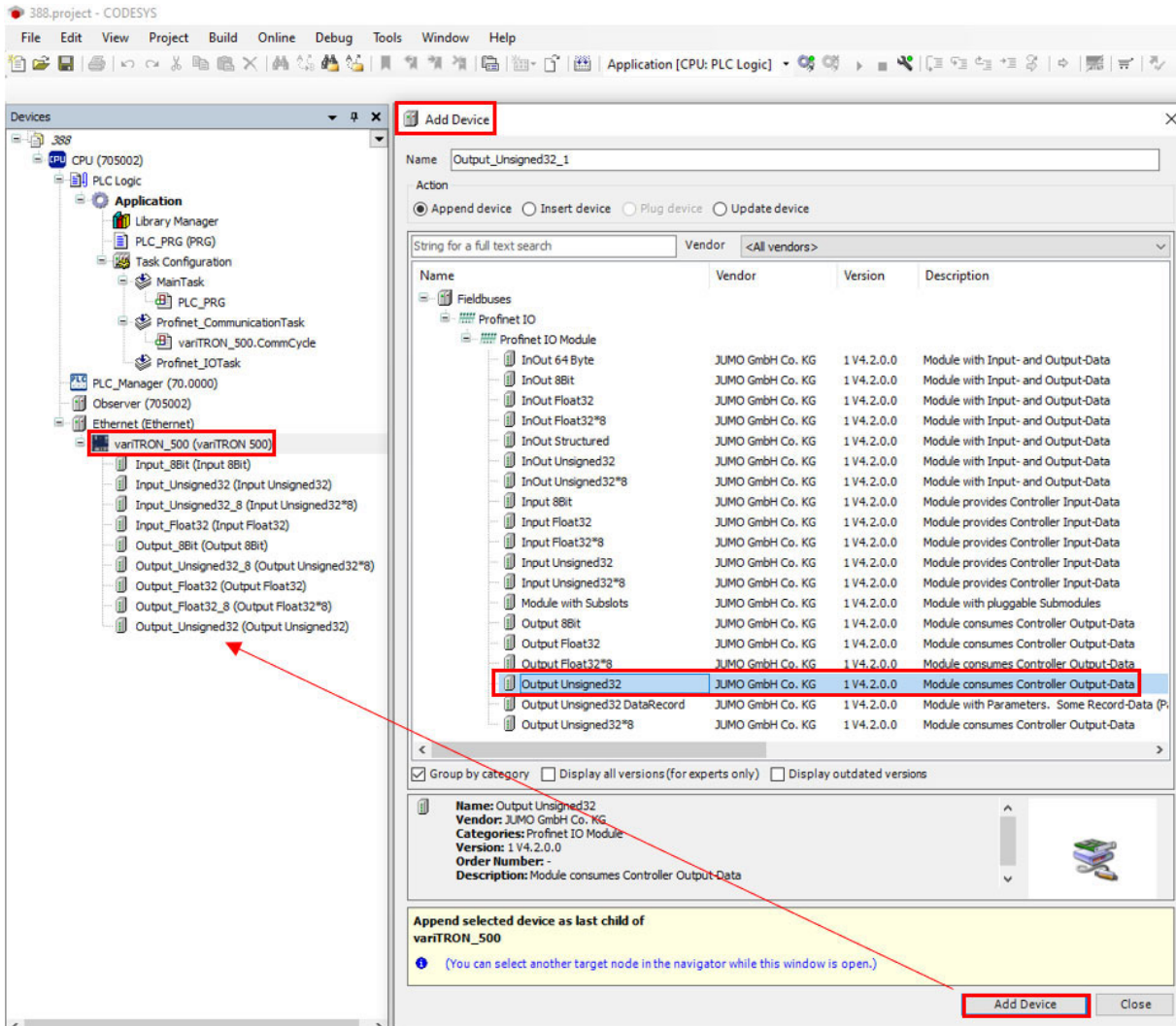


## 4. Click **Add Device** to add PROFINET device to Ethernet interface.



# 5 Project planning

- 5. Click Add Device to create an IO mapping of the PROFINET device (must be identical to the device in the IO controller).  
chapter 4.2.2 "Modules", Page 12



# 5 Project planning

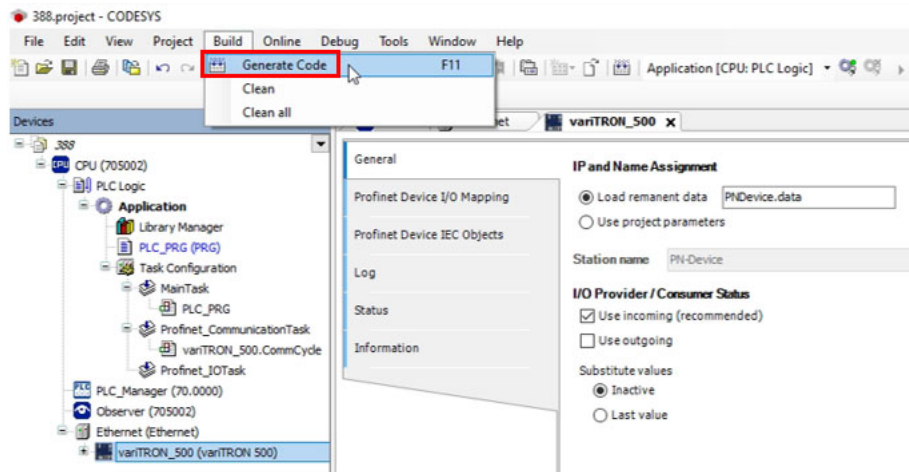
6. Map variables for IO mapping (receive 8 float values **from** controller).

Variable	Mapping	Channel	Address	Type
Application.PLC_PRG.stAnalogInput_TR6100.rValue		Output Data	%QD265	REAL
Application.PLC_PRG.stAnalogInput_TR6101.rValue		Output Data	%QD266	REAL
Application.PLC_PRG.stAnalogInput_TR6102.rValue		Output Data	%QD267	REAL
Application.PLC_PRG.stAnalogInput_TR6201.rValue		Output Data	%QD268	REAL
Application.PLC_PRG.stAnalogInput_TR6203.rValue		Output Data	%QD269	REAL
Application.PLC_PRG.stAnalogInput_PRA6100.rValue		Output Data	%QD270	REAL
Application.PLC_PRG.stAnalogInput_PICR6200.rValue		Output Data	%QD271	REAL
Application.PLC_PRG.stAnalogInput_M6100.rValue		Output Data PS	%QD1092	Enumeration of BYTE

7. Map variables for IO mapping (provide 1 float value **for** controller).

Variable	Mapping	Channel	Address	Type
Application.PLC_PRG.stventil_Y6300.OUT.stLeistung.rValue		Input Data CS	%I6733	Enumeration of BYTE

8. Generate the code so that the application can be loaded into the JUMO variTRON 500 afterward.



### NOTE!

The following steps 9 to 11 explain how to load an application into a CPU using CODESYS®. These steps are not required for configuration work using the setup program, but have nevertheless been included here for the sake of completeness.

# 5 Project planning

9. Connect to the PROFINET device and go online.

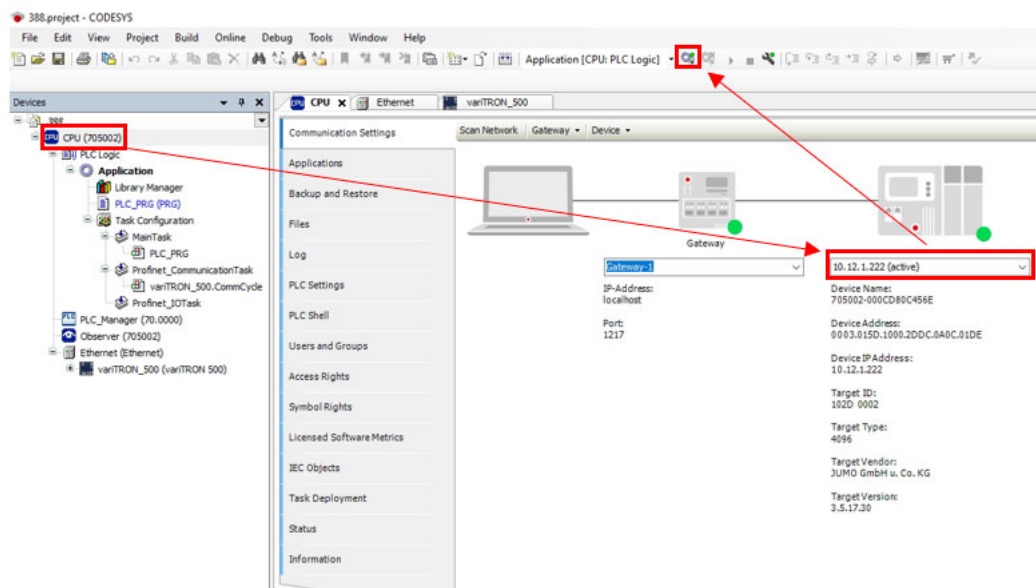


### NOTE!

Here, enter the interface used to configure the JUMO variTRON 500. Use a free LAN interface (LAN2 or LAN3, if available) or a USB Ethernet adapter for this purpose (the IP address is provided at **Device info > Ethernet > eth0**). By default, the interface "eth0" automatically obtains the IP address (and the LAN ports) via DHCP. If this cannot be done, a manual IP address will need to be assigned for "eth0" beforehand (see the instructions at the start of the chapter).

LAN1 can also be used for the configuration. However, when transferring the application the connection will be interrupted because the LAN1 IP parameters are reset for PROFINET. In this case, perform a reset on the JUMO variTRON 500 (power off/on) so that the application starts up and the PROFINET device can be found by the IO controller.

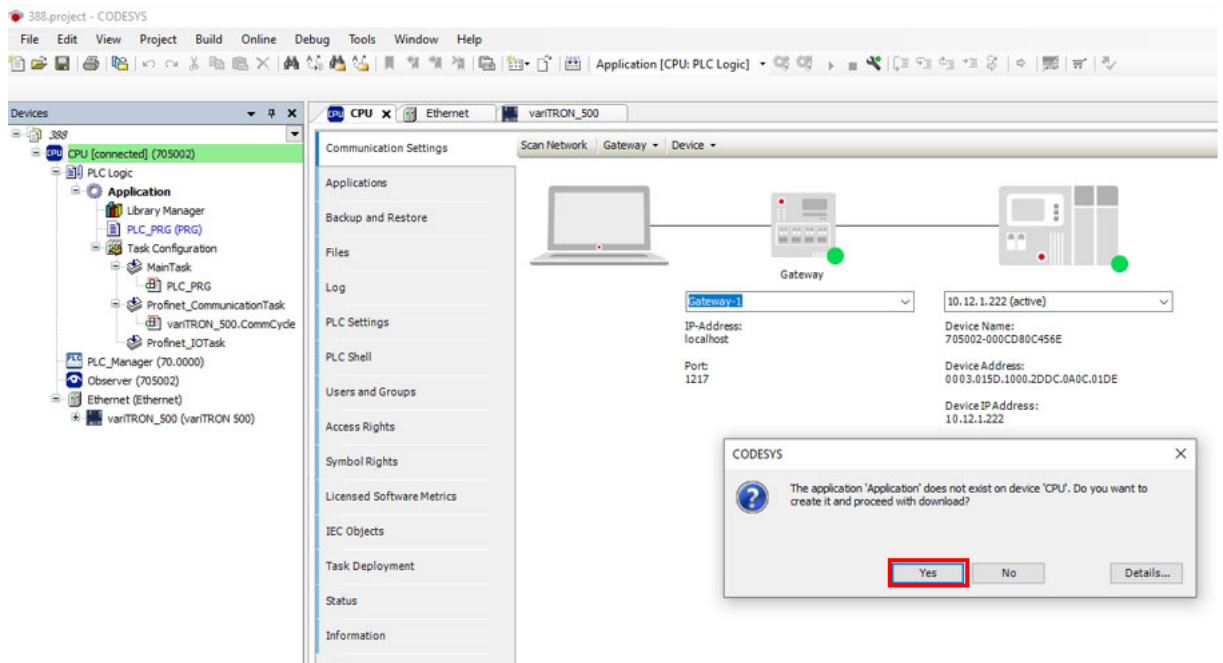
⇒ chapter 6.2 "Error message in the setup program", Page 35



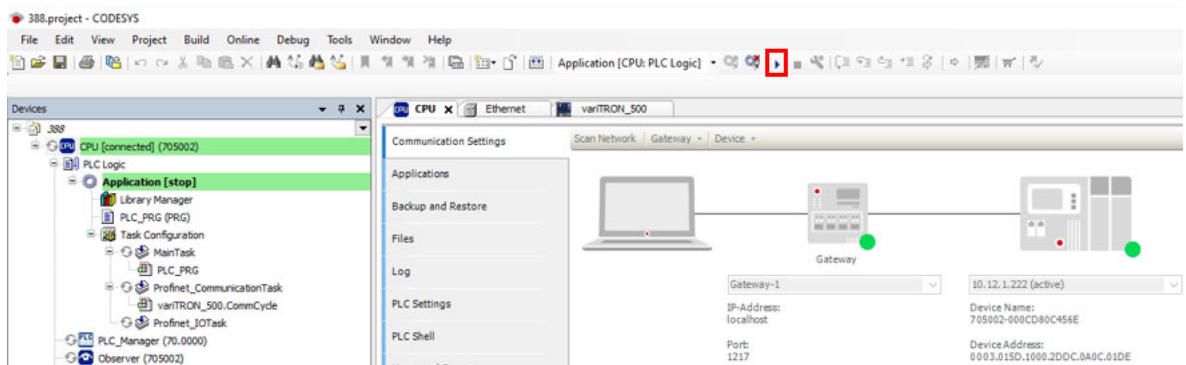
In this example, a USB Ethernet adapter (TP-Link UE300) has been used for the configuration work.

# 5 Project planning

10. Load the application into the JUMO variTRON 500.



11. Click RUN to start the application.



*The PROFINET device is now ready for the IO controller to assign the device name and IP address.*



## NOTE!

This document does not cover how the configuration that was created in CODESYS® is applied to the setup project or transferred to the device (IO device).

These topics are covered in the operating manual for the JUMO variTRON 500 (705002). The operating manual can be downloaded from the relevant product page (705002) on the JUMO website (see chapter 2.1).

## 5.2.3 Device information

The device info for the JUMO IO device displays, for inspection and error diagnostics, information about network configuration, hardware and software component versions, as well as counters for evaluating data traffic. For more details about the displayed data, see the operating manual for your JUMO IO device.

# 5 Project planning

## 5.3 Project integration of JUMO IO device into IO controller

Using the JUMO variTRON 500 by way of example, this chapter explains how to add the PROFINET IO device to an IO controller in CODESYS® and configure it.

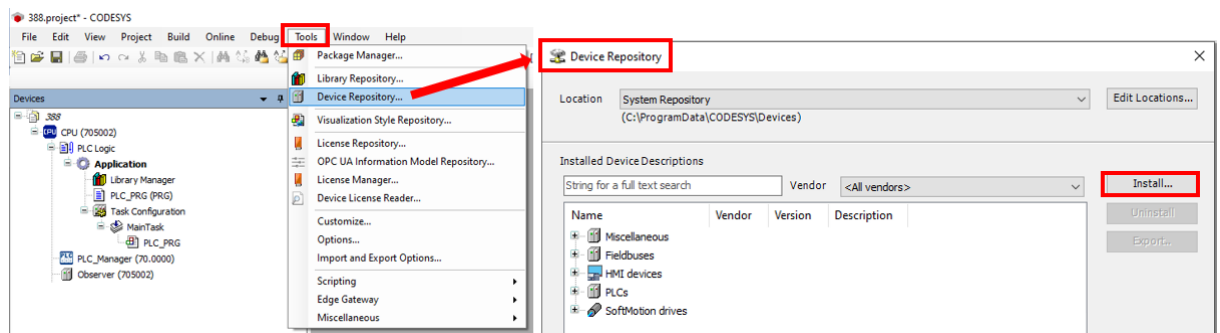
### Process:

1. Import the GSDML file of the JUMO IO device into the engineering system of the IO controller. Make sure the device software version matches the version data in the GSDML file.



### NOTE!

The GSDML file for the current device version is located on the DVD from the scope of delivery of your JUMO field device. Alternatively, you can download the GSDML file from the JUMO website.



## 2. Create Ethernet interface.



### NOTE!

The exact procedure for integrating PROFINET IO devices can be found in the description of your engineering system.

The screenshot displays the Siemens TIA Portal interface. On the left, the 'Devices' tree shows a project structure with 'CPU (705002)' and 'Ethernet (Ethernet)' highlighted. A red arrow points from the 'Ethernet (Ethernet)' node to the 'Add Device' dialog box on the right. The dialog box is titled 'Add Device' and shows the following details:

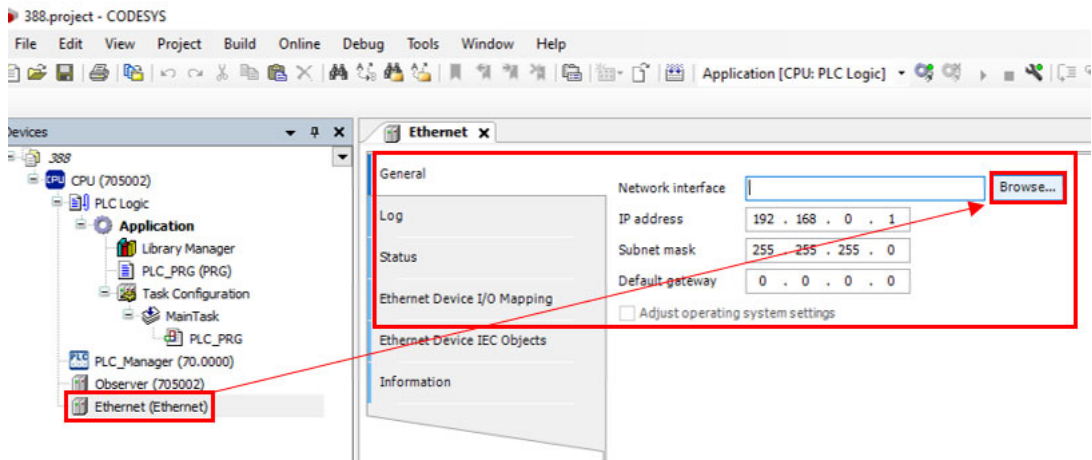
- Name: Ethernet\_1
- Action: Append device (selected), Insert device, Plug device, Update device
- String for a full text search: [Empty]
- Vendor: <All vendors>
- Table of search results:

Name	Vendor	Version	Description
Ethernet	3S - Smart Software Solutions GmbH	3.5.17.0	Ethernet Link.

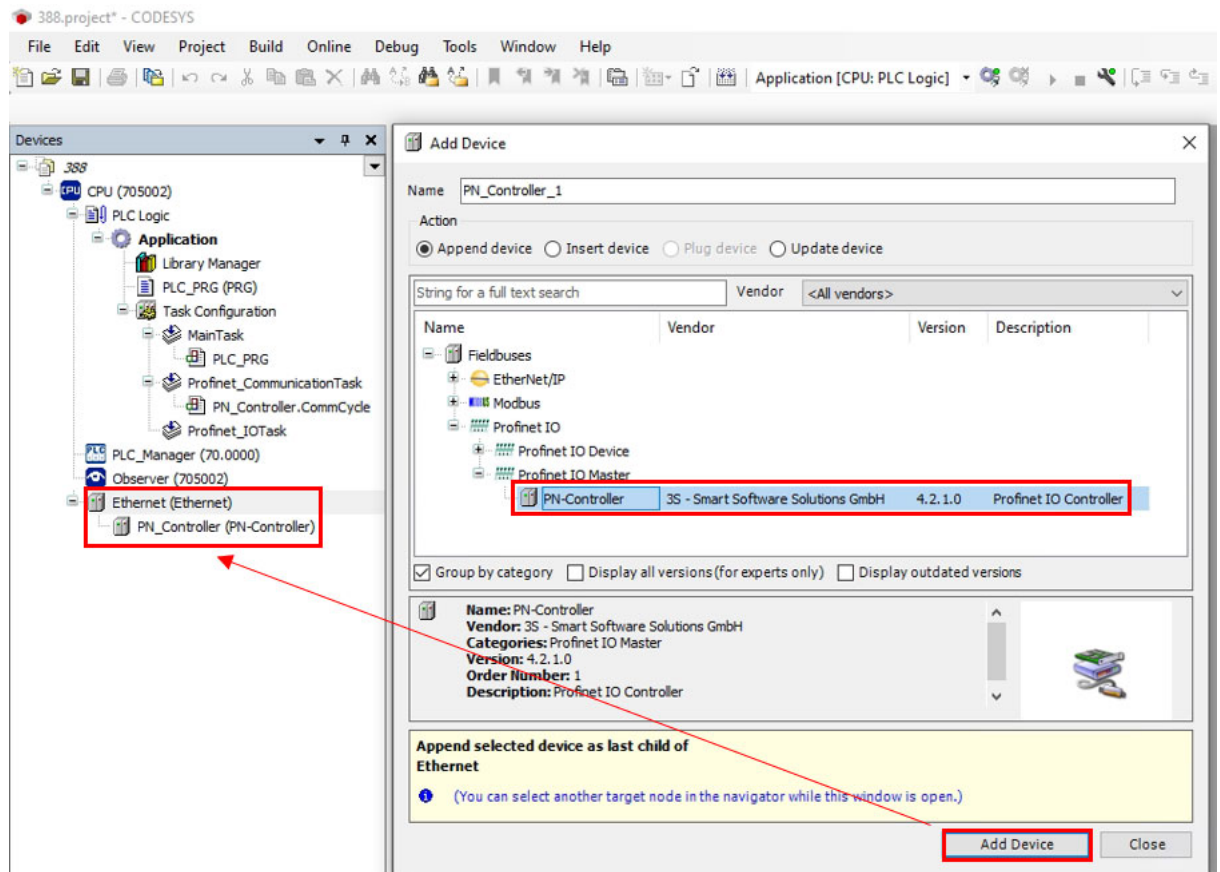
Below the table, there are checkboxes for 'Group by category', 'Display all versions (for experts only)', and 'Display outdated versions'. The 'Name' field is filled with 'Ethernet', and the 'Vendor' is '3S - Smart Software Solutions GmbH'. The 'Description' is 'Ethernet Link.'. At the bottom right, the 'Add Device' button is highlighted with a red box. A yellow banner at the bottom of the dialog box reads: 'Append selected device as last child of CPU (You can select another target node in the navigator while this window is open.)'.

# 5 Project planning

- 3. Configure network settings.  
Click **Browse...** to select the relevant interface.

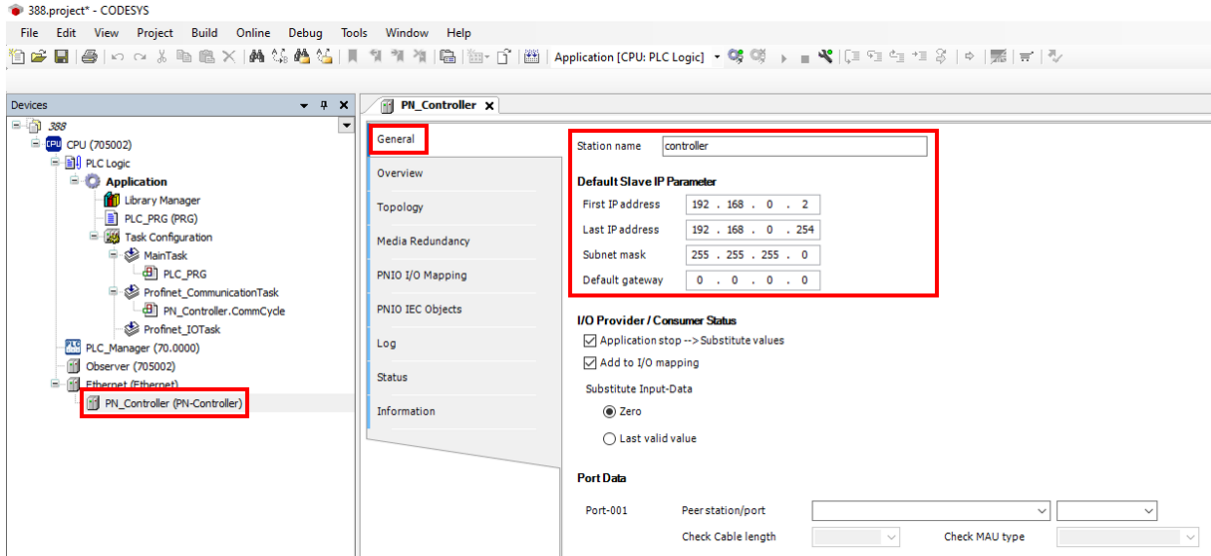


- 4. Click **Add Device** to add the PROFINET controller to the Ethernet interface.



# 5 Project planning

## 5. Configure the PROFINET controller.

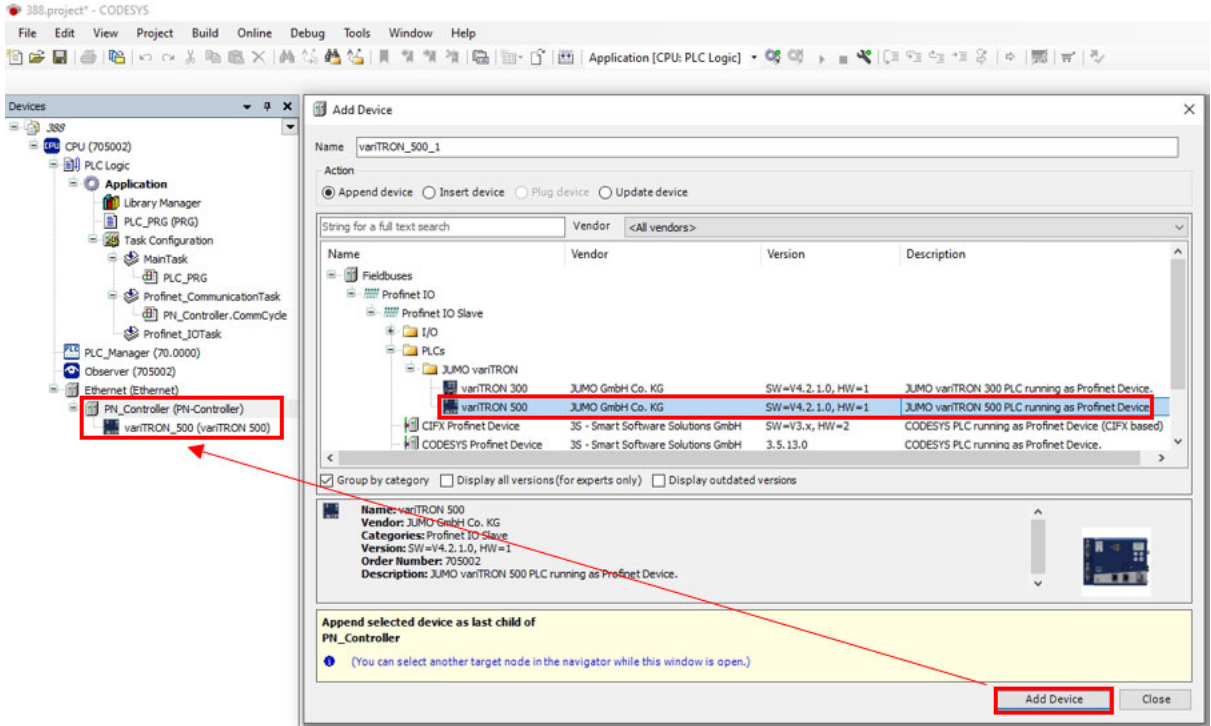


6. Click "Add Device" to integrate the desired JUMO field device into the project structure of the IO controller. Make sure the device software version matches the version data of the JUMO field device integrated into the project structure.



### NOTE!

Make sure that your JUMO IO device has the software version required to use PROFINET IO (⇒ chapter 2.3 "Requirements for hardware, software, and cabling", Page 7).



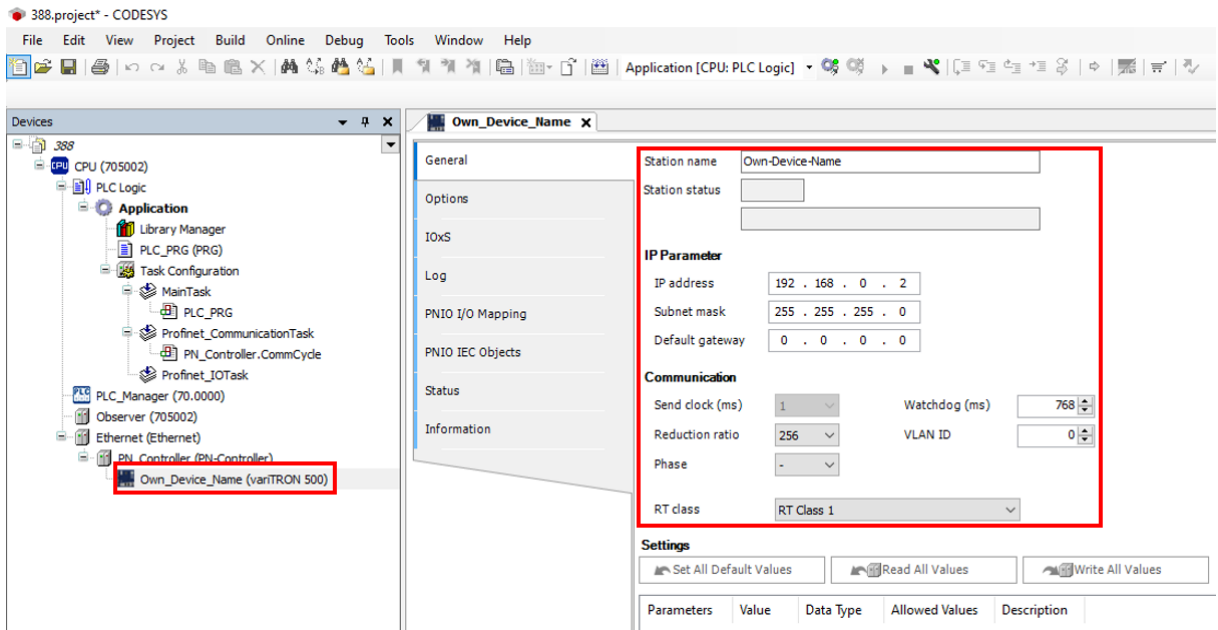
# 5 Project planning

- 7. Configure the station name/device name and IP address of the PROFINET device. Also configure the communication parameters.



### NOTE!

Engineering systems offer a function for **identifying** field devices. If JUMO field devices are addressed via the "**Identification function**" of the engineering system, this is signaled by the flashing of the front display.



The communication parameters set here (Send clock, Reduction ratio, etc.) are merely examples.

### Station name:

To improve the overview in the IO controller project structure, each device should be assigned a self-explanatory and unique station name. This permits a better overview for programming and project planning. The station name is entered in the engineering system of your IO controller at the PNIO identification data of the JUMO IO device.

### IP configuration:

The engineering system requires a valid IP configuration for the Ethernet interface of the JUMO IO device. The device will not connect to the IO controller without a valid IP configuration for the Ethernet interface.



### NOTE!

The JUMO IO device is still accessible using the JUMO setup program or a web browser via Ethernet. The IP address of the Ethernet interface must be used for communication.

### Cyclical transfer timing:

Send clock and reduction ratio determine the frequency at which an IO device transfers cyclical data in a PROFINET IO network. The transfer cycle time of the JUMO IO device is calculated by dividing the send clock by the reduction ratio. On JUMO field devices, these parameters apply globally for all slots. The setting is configured in the engineering system of your IO controller at the PNIO parameters of the JUMO IO device.

# 5 Project planning

8. Insert the configured modules in the project structure of the IO controller in the desired slot position on the JUMO IO device. Click "Add Device" to integrate the input/output mapping of the PROFINET device into the IO controller.



## NOTE!

The JUMO IO device uses the **little endian format** – please note this when configuring the IO controller and set it if required. Otherwise the transferred data will not be interpreted correctly!

The screenshot shows the 'Add Device' dialog in CODESYS. The left pane shows the project tree with 'Own\_Device\_Name (varITRON 500)' selected. The main pane shows a table of modules:

Name	Vendor	Version	Description
Input 8Bit	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module provides Controller Input-Data
Input Float32	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module provides Controller Input-Data
Input Float32*8	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module provides Controller Input-Data
Input Unsigned32	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module provides Controller Input-Data
Input Unsigned32*8	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module provides Controller Input-Data
Output 8Bit	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module consumes Controller Output-Data
Output Float32	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module consumes Controller Output-Data
Output Float32*8	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module consumes Controller Output-Data
Output Unsigned32	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module consumes Controller Output-Data
Output Unsigned32*8	JUMO GmbH Co. KG	SW=V4.2.0.0, HW=1	Module consumes Controller Output-Data

Below the table, the selected module details are shown:

Name: Output Unsigned32  
Vendor: JUMO GmbH Co. KG  
Categories: Profnet IO Module  
Version: SW=V4.2.0.0, HW=1  
Order Number:  
Description: Module consumes Controller Output-Data

Append selected device as last child of Own\_Device\_Name  
(You can select another target node in the navigator while this window is open.)

Buttons: Add Device, Close

For project configuration in the engineering system of your PROFINET IO controller, you can populate all slots on your JUMO IO device with modules. You can use the engineering system to create the modules for various data types in the field device concerned and configure their contents to suit your needs. An overview of the module types can be found in the "Module description" chapter.

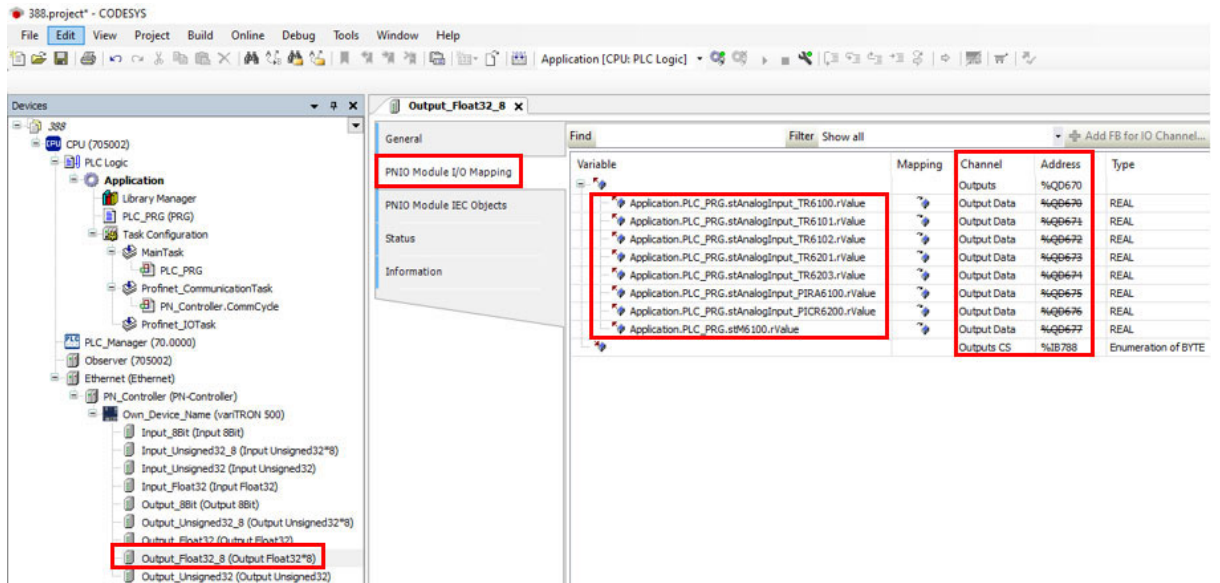
⇒ chapter 4.2 "Module description", Page 11

The contents of the configurable modules can be determined by the user. In the engineering system, the modules must be assigned to the free slots in the JUMO IO device, so that they can be queried by the IO controller during the cyclical communication.

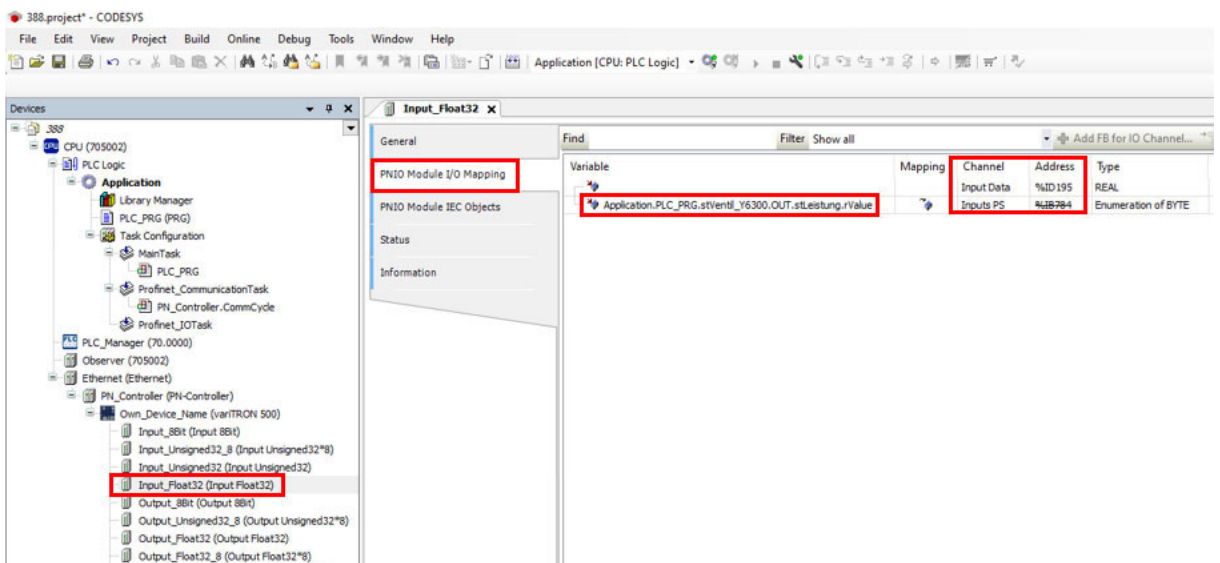
In the project structure of the IO controller, the modules then have to be assigned to the free slots in line with the configuration of the JUMO IO device.

# 5 Project planning

9. Map variables for IO mapping (send 8 float values to device).



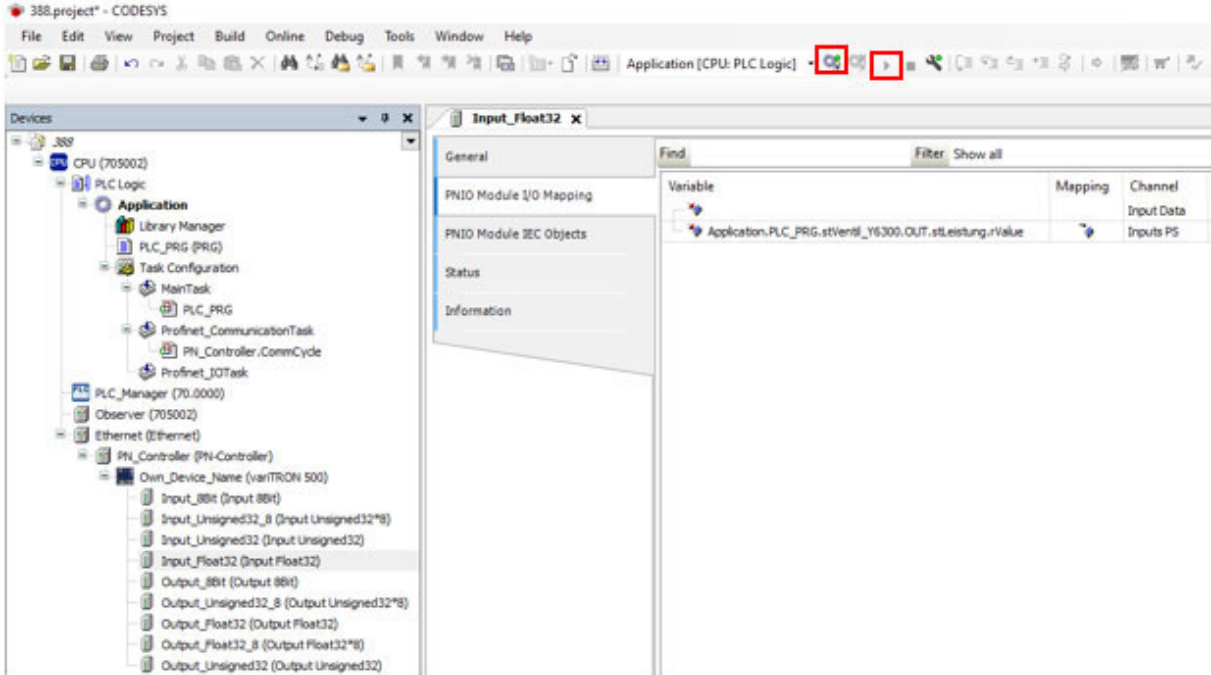
10. Map variables for IO mapping (query 1 float value from device).



The IO items of the JUMO IO device are now available for the programming of the IO controller.

# 5 Project planning

11. Connect to the PROFINET controller and click RUN to start the application.



## 5 Project planning

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# 6 Error messages and status information

## 6.1 Error messages

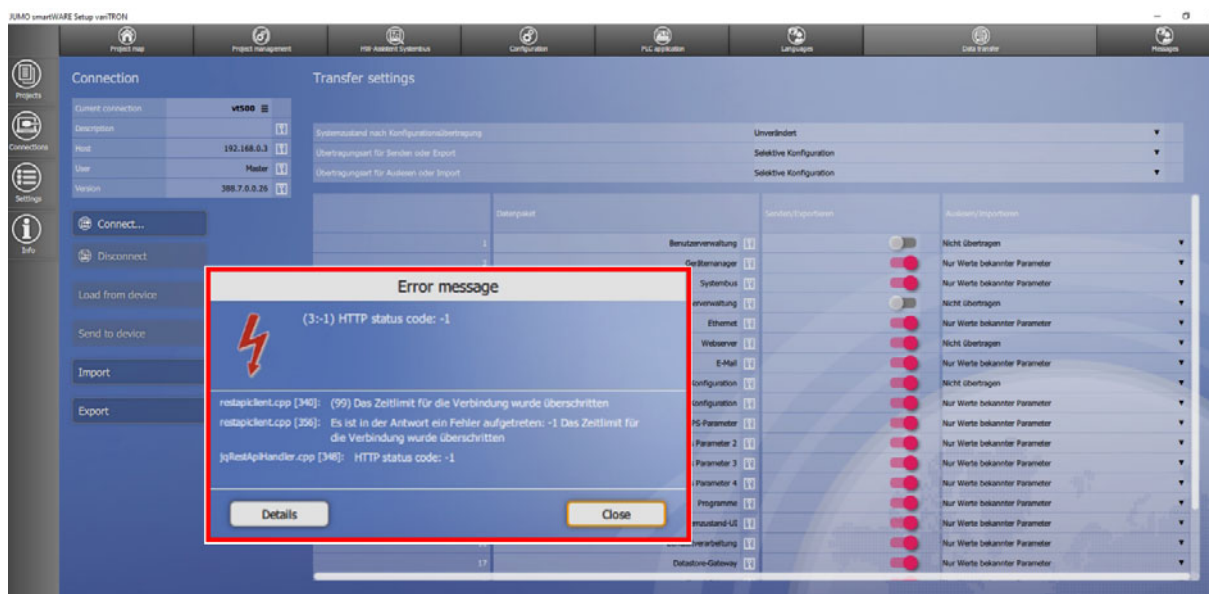
The JUMO variTRON 500 does not generate any JUMO-specific error messages relating to PROFINET. However, it does support the error messages in CODESYS®.

Click the following link to access the CODESYS® online help pages containing information about PROFINET (diagnostics, troubleshooting).

[CODESYS® online help](#)

## 6.2 Error message in the setup program

If the JUMO IO device (e.g. JUMO variTRON 500) is configured using the LAN1 interface (which is also used for PROFINET), the following error message may appear in the setup program.



When the configuration is transferred, the Ethernet connection is interrupted because the LAN1 IP parameters are reset. This is required to ensure that an IO controller can assign the IO device a device name and IP address. However, the configuration is still transferred correctly. Normally the application will start and switch to the status RUN. The IO device can then be found and configured by an IO controller.

This error message only occurs when starting up the system for the first time. If the IO device has already been assigned a device name and IP address by an IO controller, the data will be transferred without errors.

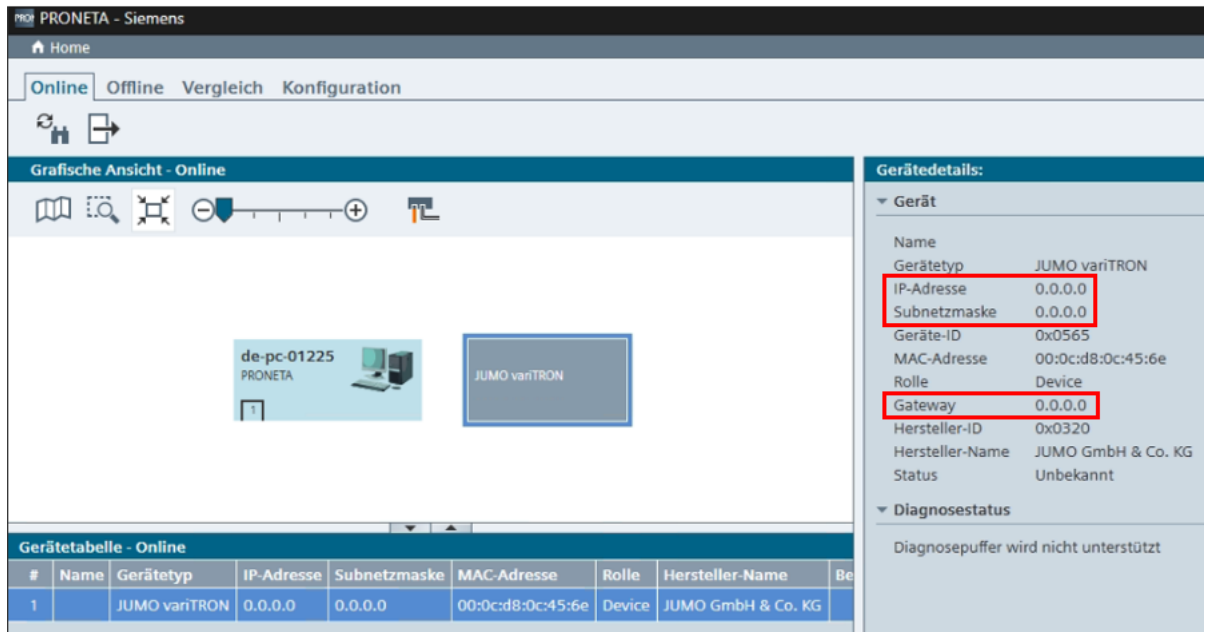
### NOTE!



To configure the JUMO IO device, use a free LAN interface (LAN2 or LAN3, if available) or a USB Ethernet adapter.

As can be seen below, the configuration was successfully transferred to the device because the application has the status RUN and is ready for use. The JUMO IO device can now be found by an IO controller so that it can be assigned a device name and IP address. This is shown using the PRONETA tool from Siemens by way of example. As can be seen, the IP parameters were reset when the configuration was applied, causing the connection to be interrupted in the setup program.

## 6 Error messages and status information



The screenshot shows the PRONETA - Siemens web interface. The main area displays a graphical view of the network topology with two devices: 'de-pc-01225 PRONETA' and 'JUMO variTRON'. Below this is a table titled 'Gerätetabelle - Online' with the following data:

#	Name	Gerätetyp	IP-Adresse	Subnetzmaske	MAC-Adresse	Rolle	Hersteller-Name	Be
1		JUMO variTRON	0.0.0.0	0.0.0.0	00:0c:d8:0c:45:6e	Device	JUMO GmbH & Co. KG	

To the right, the 'Gerätedetails:' panel shows the following information:

- Name: JUMO variTRON
- Gerätetyp: JUMO variTRON
- IP-Adresse: 0.0.0.0
- Subnetzmaske: 0.0.0.0
- Geräte-ID: 0x0565
- MAC-Adresse: 00:0c:d8:0c:45:6e
- Rolle: Device
- Gateway: 0.0.0.0
- Hersteller-ID: 0x0320
- Hersteller-Name: JUMO GmbH & Co. KG
- Status: Unbekannt

The 'Diagnosestatus' section indicates: 'Diagnosepuffer wird nicht unterstützt'.

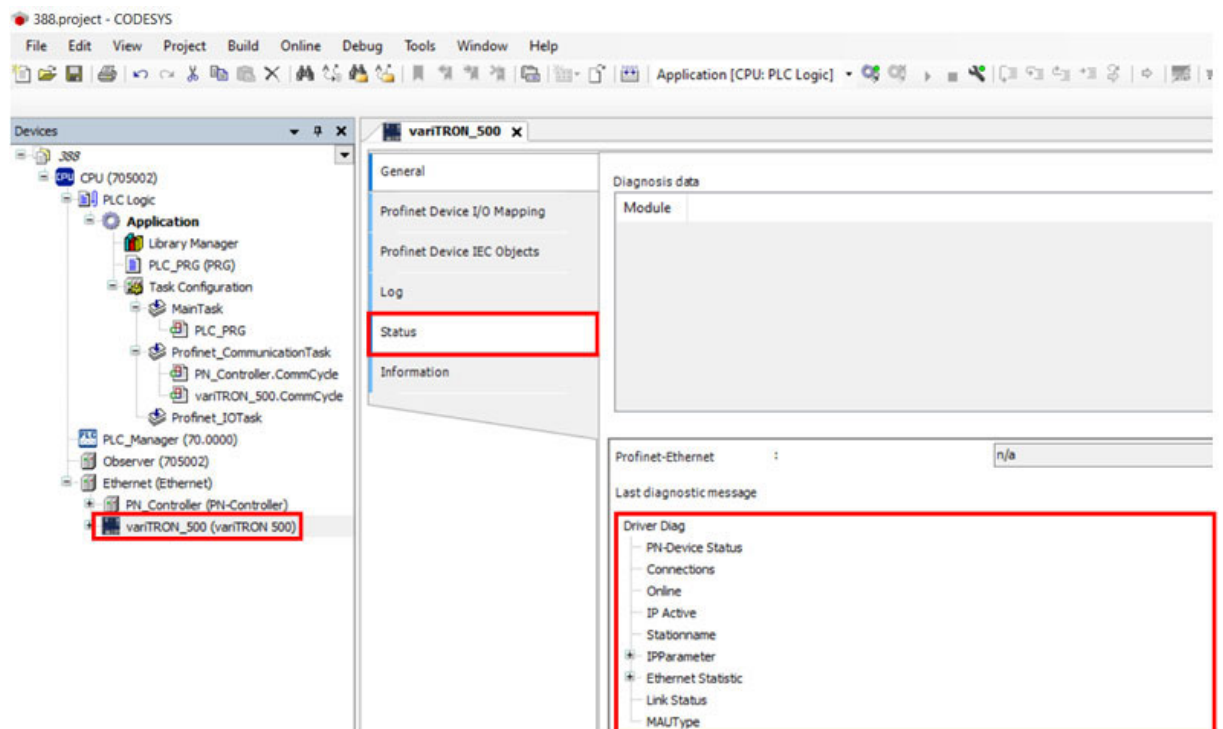


### NOTE!

If the JUMO IO device is not found by the IO controller, the application in the IO device will not have the status RUN. In this case, switch the IO device off and back on. Following the restart, the application will then automatically switch to the status RUN.

### 6.3 Status information

The status of the PROFINET device can be viewed in CODESYS®. The figures below show how to view the status and which statuses are provided for the PROFINET device.



The screenshot shows the CODESYS software interface for a project named '388.project - CODESYS'. The 'Devices' tree on the left shows the 'variTRON\_500 (variTRON 500)' device selected. The main window displays the 'Status' tab for this device, which is highlighted with a red box. The 'Status' tab shows the following information:

- General
- Profinet Device I/O Mapping
- Profinet Device IEC Objects
- Log
- Status (highlighted)
- Information

The 'Diagnosis data' section shows the 'Module' field. The 'Profinet-Ethernet' section shows the 'Last diagnostic message' field, which is highlighted with a red box. The 'Driver Diag' section shows the following information:

- Driver Diag
- PN-Device Status
- Connections
- Online
- IP Active
- Stationname
- IPParameter
- Ethernet Statistic
- Link Status
- MAUType

## 6 Error messages and status information

### Overview of PROFINET device statuses

Inputs/Outputs [? Documentation](#)

ENUM DeviceState

Name	Type	Inherited from	Address	Initial	Comment
<b>NotInit</b>	UDINT			0	Initial state
<b>Init</b>	UDINT			1	Initialized
<b>Open</b>	UDINT			2	Ethernet Adapter is open
<b>Run</b>	UDINT			5	Devicie running and ready for connect
<b>Error</b>	UDINT			16#100	unspecified error
<b>ErrorLicenceCheck</b>	UDINT			16#101	error checking licence
<b>ErrorGetIP</b>	UDINT			16#105	ErrorStationname, //controller stationname already used by other device ErrorIP, //IP address already used by other device ErrorNoIP, //Ethernet Adapter's IP Address is 0.0.0.0 (not plugged ?)
<b>ErrorInitRPC</b>	UDINT			16#106	
<b>ErrorFindEthernet</b>	UDINT			16#107	specified ethernet adapter was not found
<b>ErrorEthernet</b>	UDINT			16#108	
<b>ErrorNoLicence</b>	UDINT			16#109	no licence
<b>ErrorSetIP</b>	UDINT			16#110	

## 6 Error messages and status information

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**JUMO GmbH & Co. KG**

Street address:  
Moritz-Juchheim-Straße 1  
36039 Fulda, Germany

Delivery address:  
Mackenrodtstraße 14  
36039 Fulda, Germany

Postal address:  
36035 Fulda, Germany

Phone: +49 661 6003-0  
Fax: +49 661 6003-607  
Email: [mail@jumo.net](mailto:mail@jumo.net)  
Internet: [www.jumo.net](http://www.jumo.net)

**JUMO Instrument Co. Ltd.**

JUMO House  
Temple Bank, Riverway  
Harlow, Essex, CM20 2DY, UK

Phone: +44 1279 63 55 33  
Fax: +44 1279 62 50 29  
Email: [sales@jumo.co.uk](mailto:sales@jumo.co.uk)  
Internet: [www.jumo.co.uk](http://www.jumo.co.uk)

**JUMO Process Control, Inc.**

6724 Joy Road  
East Syracuse, NY 13057, USA

Phone: +1 315 437 5866  
Fax: +1 315 437 5860  
Email: [info.us@jumo.net](mailto:info.us@jumo.net)  
Internet: [www.jumousa.com](http://www.jumousa.com)

