



# INSTRUCTION MANUAL

## IO module

# HUB-IO100

Document version 1.1 – valid for SIINEOS 2.8.0.

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# 1 Legal information

## Warning concept

This manual contains instructions that you must observe for your personal safety and to prevent damage to property. Depending on the hazard level, the warnings are presented in descending order as follows:



### **DANGER**

Indicates a direct hazard for humans. Irreversible injuries or death will result if not observed.



### **WARNING**

Indicates a recognizable hazard for humans. Irreversible injuries or death may result if not observed.



### **CAUTION**

Indicates a recognizable hazard for humans or possible damage to property. Can lead to reversible injuries or damage to property if not observed.

---

### **ATTENTION**

Note on possible damage to property. May cause damage to property if not observed.

**NOTE:** Under Note you will find tips, recommendations, and useful information on specific action steps and facts.

If several hazard levels occur, the warning for the highest level is always used. If the triangle warning against personal injury is used in a warning, then a warning against property damage can also be added to the same hazard hint.

## Qualified personnel

The product associated with this documentation may only be handled by personnel who are qualified for the respective task. Furthermore, the product may only be handled in compliance with the associated documentation and the safety and warning instructions contained therein. Due to their training and experience, qualified personnel are equipped to recognize and avoid potential hazards when handling these products.

## Required basic knowledge

Knowledge of personal computers, operating systems, and programming is required. General knowledge in the field of automation technology is recommended.

## Safety information

Before commissioning the product, be sure to read this section carefully and observe the corresponding notes in the manual. Always keep the Instruction Manual within reach.

## Intended use

[in.hub](#) products may only be used for the applications specified in the corresponding technical documentation.

If third-party products and components are used, they must be recommended or approved by [in.hub](#).

Proper storage, installation, commissioning, and operation are essential for the correct and safe operation of the product.

The permissible environmental conditions must be complied with. Notes in the associated documentation must be observed.

## Trademarks

All names marked with the protective note “®” are registered trademarks. Other names in this document may be trademarks whose use by third parties for their own purposes may infringe the rights of the owners.

## Disclaimer

The content of this publication has been checked for conformity with the hardware described. Nevertheless, discrepancies cannot be ruled out, so we do not assume any liability for its completeness and correctness. The information in this publication is reviewed on a regular basis. Any corrections needed will be included in the following editions.

## 2 General information

This Instruction Manual contains all the information you need to install and commission the HUB-IO100 for the first time.

The manual is intended for installers, programmers, and testers who commission the device themselves and connect it to other units, as well as for service and maintenance technicians who install extensions or perform error analyses.

### 2.1 Scope of delivery

1 x HUB-IO100

1 x HUB-IO100 Instruction Manual (PDF)

### 2.2 Applicable documents

In addition to this Instruction Manual, please refer to the following documents. You can find them in the [in.hub](https://download.inhub.de) download portal <https://download.inhub.de>.

- User Manual for the SIINEOS operating system
- Instruction Manual for the respective master gateway (HUB-GM200)

### 2.3 General instructions for use

[in.hub](https://www.inhub.de) GmbH assumes no liability for malfunctions of the device resulting from improper handling, mechanical damage, incorrect application, and use other than for the intended purpose. Improper handling of the device can significantly reduce the service life of the product.

### 2.4 Intended use

The HUB-IO100 has been specially developed for the industrial sector for monitoring machines, systems, and processes. Process data can be recorded, processed, controlled, and analyzed using the various connection options provided.

### 2.5 Safety requirements

The product should be handled in accordance with the following DIN standards:

- DIN EN 61340-5-1:2017-07 Electrostatics - Part 5-1: Protection of electronic components against electrostatic phenomena - General requirements
- DIN EN 61010-1:2020-03 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements
- DIN EN 60664-1:2008-01 Insulation coordination for electrical equipment in low-voltage systems - Part 1: Principles, requirements and tests

## 2.6 Disposal



The device must be disposed of properly. It does not belong in the normal household waste.

## 2.7 Service & Support

If you have any questions about specific use cases or about technical parameters, please contact us.

Community: <https://community.inhub.de/>

Mail: [service@inhub.de](mailto:service@inhub.de)

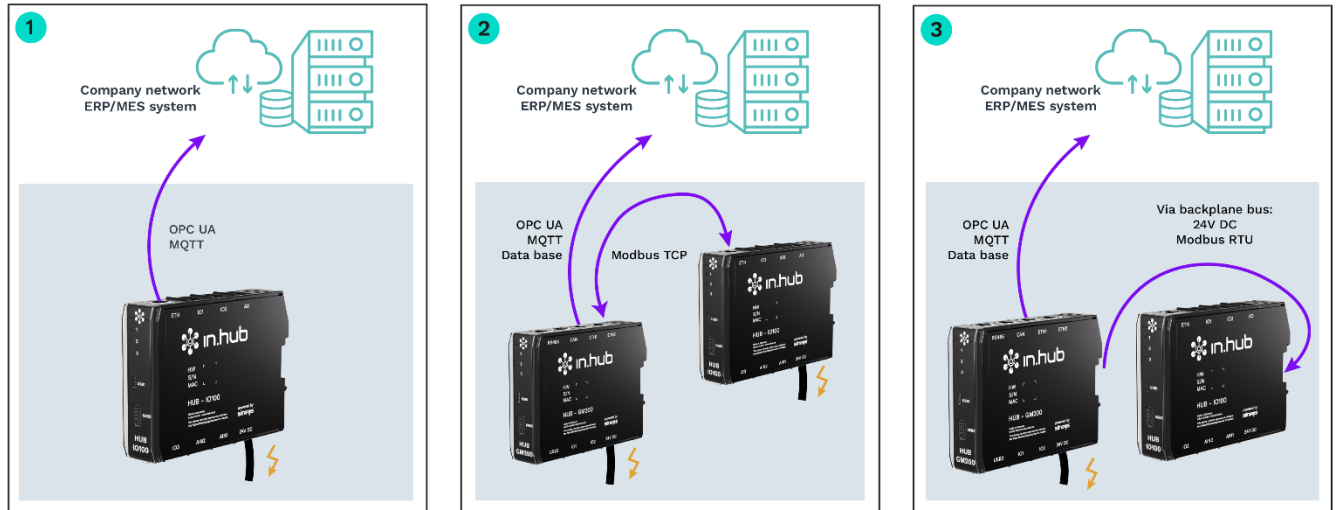
Tel: +49 371 335 655 00 (Technical Sales Staff)

These contact details will connect you with the relevant contact persons.

### 3 Product information

The HUB-IO100 expands your network of sensors, gateways, modules or peripheral devices. It has the [in.hub](#)'s own SIINEOS operating system (and is compatible with all systems that use SIINEOS) and can therefore be easily integrated into a wide range of operating conditions and networks.

There are three different application scenarios:



**Fig. 1: Application scenarios for the HUB-IO100**

#### 1 Single device with its own power supply and without connection to an [in.hub](#) master gateway

If you want to integrate the HUB-IO100 into an existing, higher-level company network or MES/ERP system, you can operate it as a stand-alone device. The HUB-IO100 only records the data from the connected devices and sensors and sends it to the higher-level system via a protocol, e.g. OPC UA, in which the data is then further processed and visualized.

#### 2 Individual device with its own power supply, but connected to an [in.hub](#) master gateway via Ethernet because it is physically separated

You can combine the HUB-IO100 with an [in.hub](#) gateway (from model HUB-GM200), even if the two devices are physically separated from each other. The HUB-IO100 requires its own power supply for this; the data is collected by the master gateway via Ethernet. Data storage and processing therefore takes place in the master gateway. This has the advantage that you can link the signals from the HUB-IO100 with signals from other devices or sensors individually and as required.

#### 3 As an extension of an [in.hub](#) master gateway connected via backplane bus and without its own power supply

If the HUB-IO100 is to be supplied with power via the [in.hub](#) master gateway, connect it to the backplane bus. The data is also transferred to the master gateway via Modbus RTU. Here too, data storage and processing takes place in the master gateway.

**TIP:** The HUB-IO100 should be combined with a master gateway if, for example, the number of interfaces on the master gateway is not sufficient or if you require more comprehensive signal processing and data visualization functions for the measured sensor and device data.

The combination of master gateway and HUB-IO100 allows a holistic view of the machines and systems and a wide range of use cases, as a whole range of other data can be collected and processed via the master gateway.

### **3.1 Use cases**

The HUB-IO100 is ideal for:

- Use as a stand-alone device when integrated into an existing operating ecosystem
- Extension of a master gateway (from model HUB-GM200) with additional interfaces
- Lean management
- Cost efficiency
- Process control

### **3.2 SIINEOS - System software**

The HUB-IO100 uses the Linux-based operating system SIINEOS to run InCore & Docker apps. SIINEOS is accessible via a management console (SMAC) and can be configured there. All network parameters are also set up here to enable communication with other network components.

When using a HUB-IO100 as an extension of a gateway, the SIINEOS operating system of the master gateway is used to activate and configure the interfaces on the HUB-IO100, where "all the threads come together".



### 3.3 Hardware - Structure and interfaces

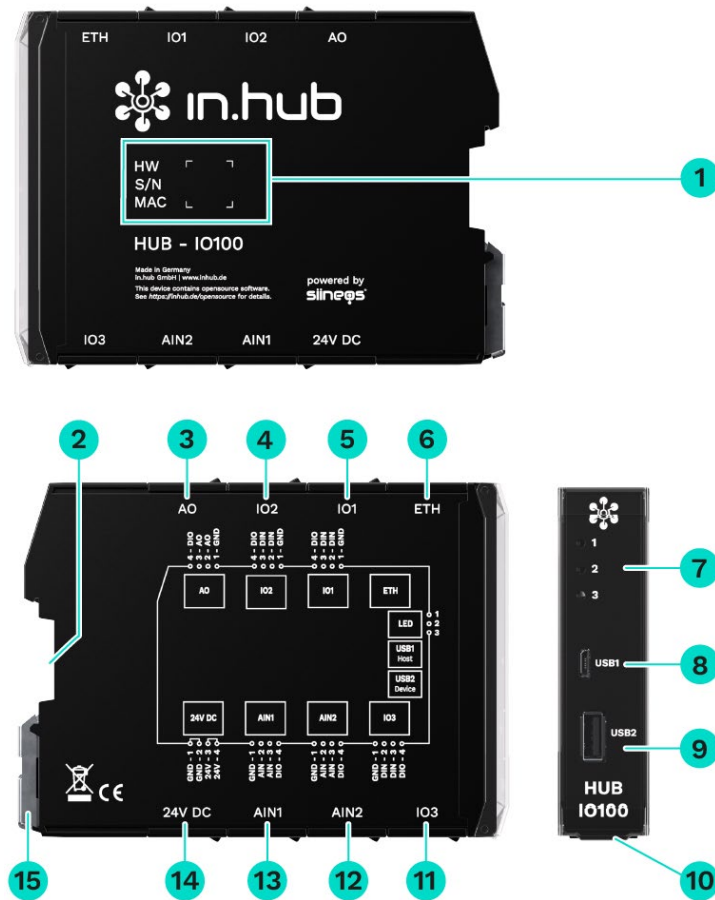


Fig. 2: Side views and front view of the HUB-IO100 incl. interfaces

- |    |   |
|----|---|
| 1  | Device-specific information is stored in a barcode:<br>HW: Hardware revision<br>S/N: in.hub internal serial number<br>MAC: Hardware address of the Ethernet network adapter |
| 2  | Backplane bus   |
| 3  | Analog output   |
| 4  | Digital input/output (IO2)  |
| 5  | Digital input/output (IO1)  |
| 6  | Ethernet (ETH)  |
| 7  | LEDs for displaying the operating status  |
| 8  | USB1 port (host)  |
| 9  | USB2 connection (Device)  |
| 10 | Protective cap<br>Can be folded upwards.  |
| 11 | Digital input/output (IO3)  |
| 12 | Analog input (AIN2)   |

13	Analog input (AIN1)
14	24V DC power supply
15	Clamping device for DIN rail installation

### 3.4 LED display

The three LEDs on the front of the device indicate the following states:



Fig. 3: LED status display on the front panel of the HUB-IO100

1	Device status
2	Function freely configurable in SIINEOS
3	Function freely configurable in SIINEOS   LED for device identification

#### 3.4.1 LED 1: Device status

LED behavior	Color	Meaning
LED off		Device is out of service
Flashing	Red	Memory access
Flashing in heartbeat mode	Green	Module ready for operation
Permanent light	Green	Error in the boot process

#### 3.4.2 LED 3: Device identification

LED behavior	Color	Meaning
20 x 1 Hz flashing	Red	The <b>Device identification</b> action has been triggered in the SIINEOS of the HUB-IO100.

## 4 Assembly

The HUB-IO100 is designed for mounting on a DIN rail compliant with DIN EN 60715 (35 mm).

Observe the applicable safety and accident prevention regulations for specific areas of application, e.g. the Machinery Directive.

- Always switch the power supply off.



**WARNING** Electric shock due to conductive contamination can cause physical injury!

- Avoid conductive contamination.
  - Only install devices in a control cabinet with the appropriate protection class.
- 
- When inserting several modules, start on the left with a CPU / interface module, a system power supply, or main power supply.
  - **RECOMMENDATION:** For ease of installation, maintain a minimum distance of 25 mm between cable channel and housing edge (top and bottom).

### 4.1 Mounting as a single device

1. Switch off the power supply.
2. Rotate the module so that the metal clamping device is facing downward.
3. Hold the module at an angle to the DIN rail.  
The recess on the back of the module is located above the clamping device.
4. Push the module onto the DIN rail until the clamping device audibly clicks into place.
5. After installation, check that the device is firmly fixed and straight on the DIN rail.

## 4.2 Mounting on backplane bus

1. Switch off the power supply.
2. Plug the backplane bus connector into the backplane bus interface of the HUB-IO100.
3. Check that the connector is also attached to the master gateway or the previous module to which you want to connect the HUB-IO100.
4. Click the HUB-IO100 onto the DIN rail and slide it up to the gateway or module so that the pins of the two backplane bus connectors interlock.



Fig. 4: Master gateway HUB-G200 with one HUB-IO100

## 4.3 Dismounting

1. Switch off the power supply.
2. Pull down the metal clamping device with a screwdriver and remove the module from the DIN rail.



Fig. 5: Removing the HUB-IO100 from the DIN rail

## 5 Commissioning

### 5.1 Interfaces of the HUB-IO100

The following chapter gives an overview of the interfaces of the HUB-IO100 and provides the information you need to connect these interfaces.

#### 5.1.1 USB

- **USB1**

- Micro-USB connection (type B socket) for use during parameterization and short-term power supply of the module, not for permanent power supply.

**NOTE:** Under certain circumstances, the power supply may not be sufficient, e.g. with energy-hungry USB devices, with high computing power and/or if the power of the USB port of your connected device is too low.

- Located on the front panel of the HUB-IO100
- Maximum power consumption = 5 W (1 A)  
May vary depending on the connected device and power supply.  
With an active 24 V power supply, the power consumption = 0.
- USB2.0 supports full, high and low speed (480, 12 and 1.5 Mbit/s)

- **USB2**

- Type A socket
- Located on the front panel of the HUB-IO100
- Maximum power output = 2.5 W (500 mA) at 24 V DC supply voltage
- USB2.0 supports full, high and low speed (480, 12 and 1.5 Mbit/s)

**NOTE:** To access the two USB ports, you must fold up the protective cap on the front panel.

#### 5.1.2 LED display

- 2 x LED (red/green) on the front panel

#### 5.1.3 Ethernet

- Ethernet via RJ45 up to 100 Mbit/s

#### 5.1.4 Power supply

- 24 V DC  $\pm$  10 %
- Max. power consumption = 24 W (1 A)

### 5.1.5 Backplane bus

- Max. number of modules on one master gateway: 10
- Voltage of the backplane bus of the master gateway = 24 V DC  $\pm$  10 %
- Communication via Modbus RTU

### 5.1.6 Inputs and outputs

Pin assignment of interfaces IO1, IO2 and IO3		
1	GND	Ground / 0 V / V-
2	DIN	Digital input
3	DIN	Digital input
4	DIO	Configurable in SIINEOS as: Digital input <u>or</u> digital output
Pin assignment of the AO interface		
1	GND	Ground / 0 V / V-
2	AO	Analog output
3	AO	Analog output
4	DIO	Configurable in SIINEOS as: Digital input <u>or</u> digital output
Pin assignment of the AIN1 and AIN2 interfaces		
1	GND	Ground / 0 V / V-
2	AIN	Analog input
3	AIN	Analog input
4	DIO	Configurable in SIINEOS as: Digital input <u>or</u> digital output

#### Specification digital output

- Voltage drop is max. 1 V to the 24 V operating voltage
- Max. output current = 120 mA
- Polarity reversal protection
- Reverse current protection

#### Specification digital input

- Conforms to EN61131-2 Type 1/3
- Switching threshold between 5 V and 11 V
- Pull-down current ~2 mA
- Bandwidth < 100 kHz
- Dielectric strength according to EN61131-2 30V

**Specification analog input**

- Overload protection
- Polarity reversal protection
- Operating modes: voltage, current
- Measuring range = 0 to 11 V
- Dielectric strength = 30 V
- Resolution = 12 bit
- Input resistance = 101 k
- Bandwidth = 1 kHz
- Measuring range = 0 to 24 mA
- Max. input current = above 22~30mA (depending on device, temperature, etc.) is limited in the device
- Resolution = 12 bit
- Bandwidth = 1 kHz

**Specification analog output**

- Overload protection
- Polarity reversal protection
- Reverse current protection
- Max. voltage drop to 24 V = 2 V
- Max. output current = 25 mA

## 5.2 Establishing own power supply

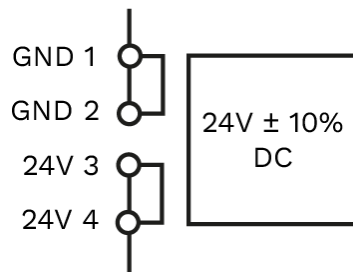
The HUB-IO100 requires its own power supply if it is NOT connected directly via the backplane bus as an extension of a master gateway. As soon as the HUB-IO100 is installed as a stand-alone device or spatially separated from the master gateway, you must supply it with power separately.



**WARNING** An incorrect power supply can cause irreparable damage to property!

- Make sure that the power supply meets the specification of  $24\text{ V} \pm 10\%$ .

1. For easier mounting, you can remove the connector with the terminal contacts from the 24V DC interface.
2. Clamp the power connection cable into the connector as shown in the following diagram:



**Fig. 6: Schematic drawing of the power supply**

When the operating voltage is correctly applied, the status LEDs on the front of the module light up - depending on the configuration - and signal the booting of the SIINEOS system software.

3. Continue with [Establishing data communication via the network, page 23](#).

## 5.3 Establishing power supply via backplane bus

The HUB-IO100 is automatically supplied with power as soon as it is connected to a master gateway via the backplane bus.

Continue with [Establishing data communication via backplane bus, page 24](#).



## 6 First steps with SIINEOS

In this chapter you will find the first steps for your work with SIINEOS.

Details on the configuration and settings of your device in SIINEOS are described in separate user documentation, which is published with each new SIINEOS software version. This allows you to benefit from new functions and improvements to the SIINEOS software on an ongoing basis.

**NOTE:** The HUB-IO100 only runs with SIINEOS version 2.8.0 or higher.

As soon as a SIINEOS update is available, it will be made available for download from [in.hub](https://in.hub). Therefore, please check the download portal regularly at <https://download.inhub.de/siineos/> to see if new updates are available. There you will also find the latest SIINEOS user documentation and a workflow guide describing various workflows.

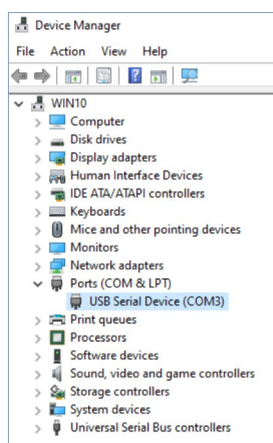
### 6.1 Connecting the HUB-IO100 to the PC

1. Use a micro-USB cable to connect your PC to the HUB-IO100.

In most cases, the USB port provides sufficient power to operate the HUB-IO100 without having to connect an extra power supply. Under certain circumstances, however, the power supply may not be sufficient, e.g. with energy-hungry USB devices, high computing power and/or a weak USB port on your connected device.

**LED 1** indicates the status of the device. If the connection is working correctly, **LED 1 lights** up and flashes after a while. SIINEOS is running on the module.

2. When you connect the HUB-IO100 for the first time, additional drivers are installed. Check in the Windows Device Manager whether a new device has been created:



**Fig. 7: Windows Device Manager (example)**

**NOTE:** If the LED display does not light up, no drivers are installed or no new device has been created, there is usually an insufficient power supply to the module. In this case, use an external power supply and follow the instructions in chapter [Establishing own power supply, page 16](#).

## 6.2 Logging in to SIINEOS

**NOTE:** The latest versions of the **Firefox**, **Edge** or **Chrome** browsers are recommended for SIINEOS. Compatibility problems may occur when using other or older browsers.

**NOTE:** Make sure that the HUB-IO100 is connected to the PC via a micro USB cable (USB port on the front).

### When you log in to SIINEOS for the first time

1. Enter the following address in your browser:

<http://192.168.123.1/smac>

2. Log in with the initial user data (**hubadmin/hubadmin**).

The SIINEOS Management Console opens.



**Fig. 8: Start page of the SIINEOS Management Console (example)**

On the start page, you will now see information about your system, e.g. the current SIINEOS version, name of the device, location, type, system resources, etc.

3. Select the **Users** page and change the password of the **hubadmin** user.

### If you have already set up SIINEOS

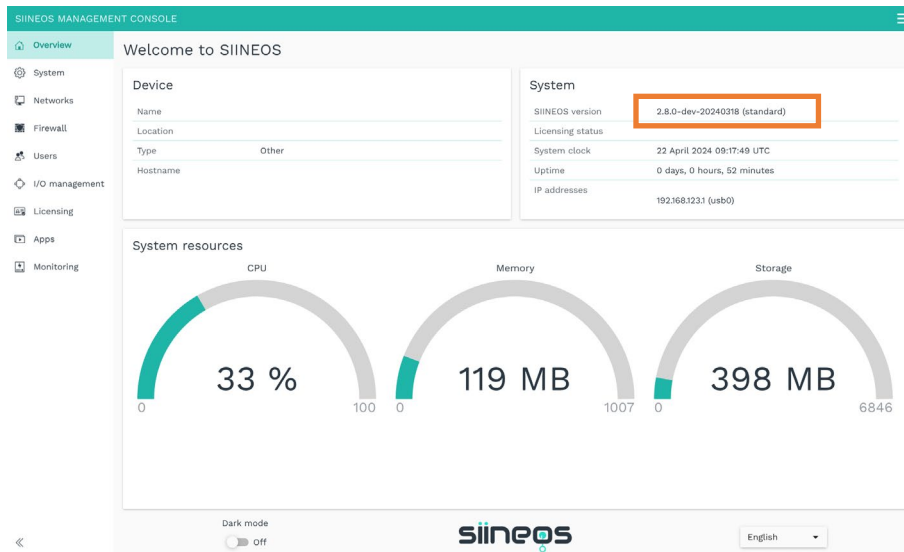
1. Enter the individual IP network address you have configured in your browser.

2. Log in with your user data and click **Log in**.

The SIINEOS Management Console opens.

### 6.3 Checking the SIINEOS version

1. Go to the SIINEOS homepage by selecting the **Overview** page on the left.



**Fig. 9: Overview page with the SIINEOS version (example)**

2. Check the **SIINEOS version** field to see which version is installed on your gateway.
3. Go to <https://download.inhub.de/siineos/> and check whether a new SIINEOS version is available.

### 6.4 Installing SIINEOS Updates

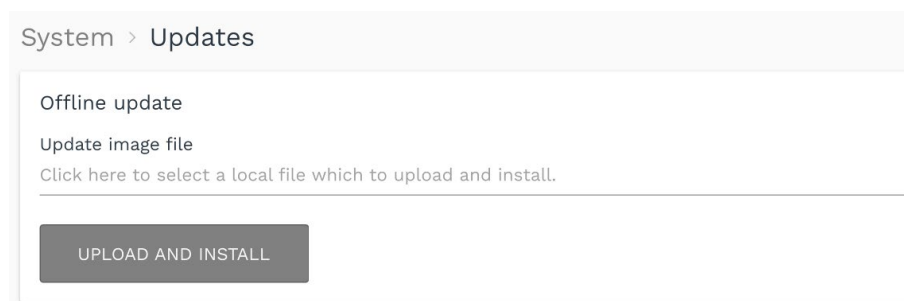
You can only upload updates on the **System** page if you have a valid SIINEOS license.

If the license has expired, you will be informed that you cannot make any updates.

1. Go to <https://download.inhub.de/siineos/> and select the current SIINEOS package.

Two versions are available - the complete software package and a light version without a Docker container with a smaller file size.

2. When the download is complete, go to the **System** page in SIINEOS and select **Updates**.



**Fig. 10: System > Updates**

3. Click in the **Update image file** input field and select the software package from your local file storage.

#### 4. Click **Upload and Install**.

The installation starts automatically.

After successful installation, the device will restart automatically.

#### 5. Check on the **Overview** page that the new version of SIINEOS is displayed.

#### 6. If the version has not been updated, proceed as follows:

- First clear your browser cache and refresh the page in your browser.
- If this does not work:
  - De-energize the gateway and reconnect it after a few seconds.
- Start SIINEOS and check the version number.

## 6.5 Managing SIINEOS licenses

With every new [in.hub](#) device you purchase, you automatically receive a SIINEOS license for 3 years. During the license period, you can update SIINEOS as often as you like and install the latest version on the device.

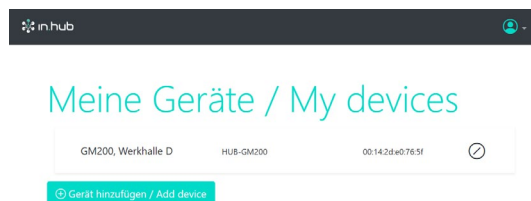
As soon as the license period has expired, you can either continue working with the currently installed SIINEOS version or you can purchase another license from [in.hub](#) to benefit from the further development and product improvement of SIINEOS.

### 6.5.1 Requesting a voucher and activating the software license

1. Contact [in.hub](#) either by e-mail or telephone and let us know for which term you would like to purchase the license.

You will then receive a voucher with which you can activate a software license.

2. Navigate to the website <https://apps.inhub.de/> and register or log in if you are already registered.



**Fig. 11: My devices (example)**

3. If you want to activate a license for a new device, click **Add device**.

-or-

If you want to extend the license for a device that has already been created, click on the relevant device under **My devices**.

## Gerät hinzufügen / Add device

Name\*

Name

Gerätetyp / Device type\*

HUB-GM200

MAC-Adresse\*

MM:MM:MM:SS:SS:SS

Abbrechen / Cancel Hinzufügen / Add

**Fig. 12: Add device**

4. Enter the **Name** of the device, select the **Device type** and enter the **MAC-Address** of the device.

These can be found under **SIINEOS > Networks > Ethernet 1**.

5. Click **Add**.

The **License activation** window opens:

Lizenfreischaltung / License activation

Bitte geben Sie einen Lizenzvoucher ein, um ihn einzulösen und die erworbene Softwarelizenz für dieses Gerät zu aktivieren. Wenn Sie keinen Voucher haben, wenden Sie sich bitte an den Händler, bei dem Sie das Gerät erworben haben.

Please enter a license voucher to redeem it and activate the purchased software license for this device. If you do not have a voucher, please contact the dealer from whom you purchased the device.

Gerät / Device

GM200, Werkhalle D

Voucher

|

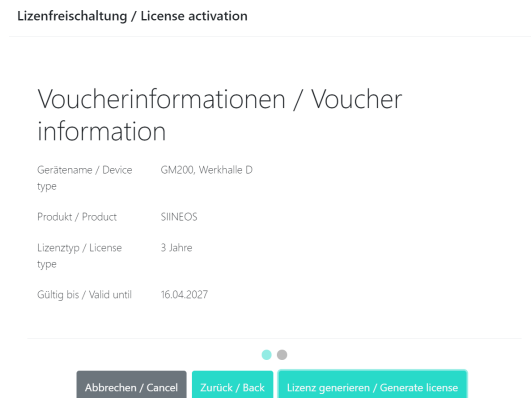
Abbrechen / Cancel Weiter / Continue

**Fig. 13: License activation**

6. Copy the name of the voucher you received from [in.hub](https://in.hub) into the **Voucher** field.

## 7. Click **Continue**.

All voucher information is displayed:

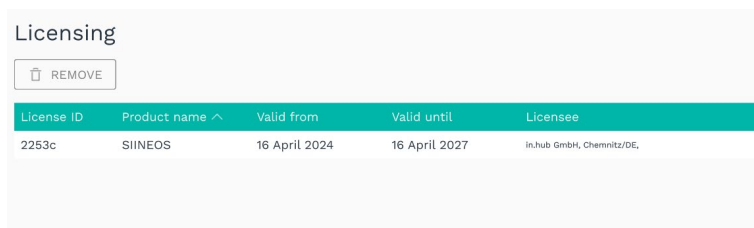


**Fig. 14: Voucher information**

8. Check the details, especially the validity and the license type (i.e. whether the requested license term matches the term specified here).
9. If the information is correct, click **Generate license**.
10. The license file is downloaded automatically.

## 6.5.2 Adding licenses in SIINEOS

In SIINEOS, on the **Licensing** page, you will find all [in.hub](#) software licenses that you have purchased.



**Fig. 15: "Licensing" page (example)**

1. Click **Add license**.
2. Select the license file that you received from [in.hub](#) from your file directory and click **OK**.  
The license is added to the list.
3. To remove a license, e.g. because it has become invalid, select the license ID and click **Remove**.  
The license file itself is not deleted, but only removed from the list.
4. Only now can you install a new SIINEOS software bundle on the **System > Updates** page.

## 6.6 Establishing data communication via the network

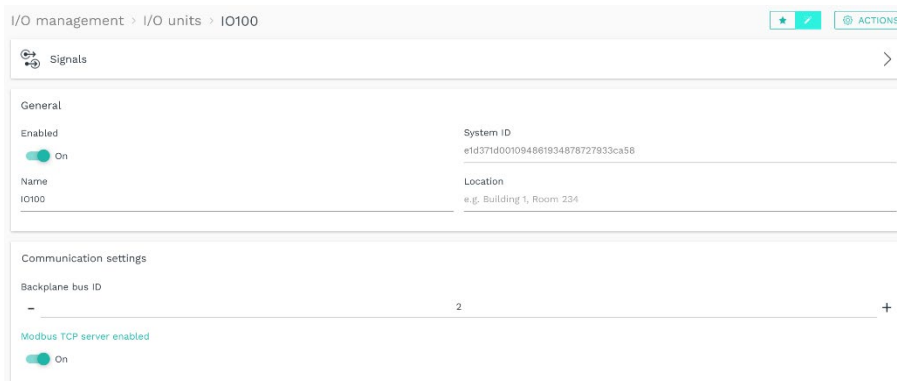
This procedure applies to applications in which the HUB-IO100 and master gateway are installed separately from each other and are to communicate with each other via the network.

Perform the following steps in the **SIINEOS of the master gateway**:

1. Navigate to the **I/O management** page and create a new I/O unit of the type **Modbus Client**.
2. To obtain all signals and settings of a Modbus TCP client for data communication with a HUB-IO100 via network, download the corresponding JSON file from the [in.hub](https://download.inhub.de/io200/) download portal: <https://download.inhub.de/io200/>
3. Import these settings via **Actions > Load settings from file**.
4. Click **Save**.

Now perform the following steps in the **SIINEOS of the HUB-IO100**:

5. Navigate to the **I/O management** page and select the I/O unit **HUB-IO100** that has already been created.



**Fig. 16: Device settings of the HUB-IO100 (example)**

6. Optional: Change the **Name** for the I/O unit and enter a **Location** to make the device easy to find.
7. The following information is required in the **Communication settings** area:
  - **Backplane bus ID:** This ID is not relevant for communication via the network.
  - **Modbus TCP server enabled:** If data communication takes place via the network and you have created a Modbus TCP client in the master gateway, set the slider here to **On**.
8. Click **Save**.

## 6.7 Establishing data communication via backplane bus

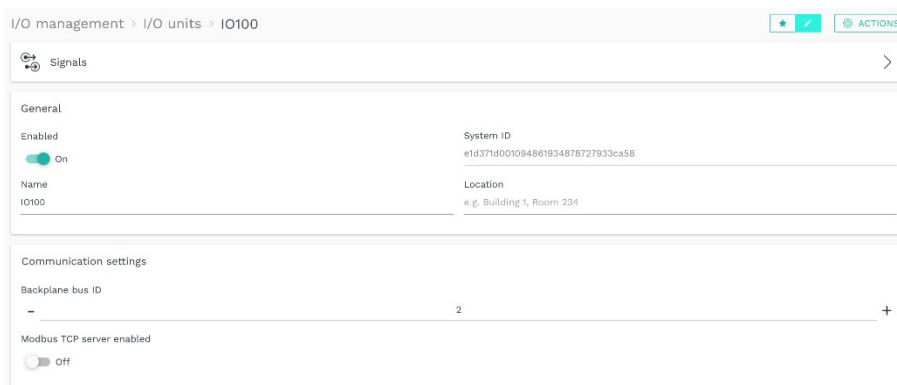
This procedure applies to the application in which the HUB-IO100 and master gateway are installed next to each other in the control cabinet and connected to each other via the backplane bus.

Perform the following steps in the **SIINEOS of the master gateway**:

1. Navigate to the **I/O management** page and create a new I/O unit of the type **Modbus Client**.
2. To obtain all signals and settings of a Modbus RTU client for data communication with a HUB-IO100 via backplane bus, download the corresponding JSON file from the [in.hub](https://download.inhub.de/io100) download portal: <https://download.inhub.de/io100>
3. Import these settings via **Actions > Load settings from file**.
4. Click **Save**.

Now perform the following steps in the **SIINEOS of the HUB-IO100**:

5. Navigate to the **I/O management** page and select the I/O unit **HUB-IO100** that has already been created.



I/O management > I/O units > IO100

Signals >

**General**

Enabled	System ID
<input checked="" type="checkbox"/> On	e1d371d001094861934878727933ca58
Name	Location
IO100	e.g. Building 1, Room 234

**Communication settings**

Backplane bus ID:

Modbus TCP server enabled:  Off

**Fig. 17: Device settings of the HUB-IO100 (example)**

6. Optional: Change the **Name** for the I/O unit and enter a **Location** to make the device easy to find.
7. The following information is required in the **Communication settings** area:
  - **Backplane bus ID**: Enter a backplane bus ID that has not yet been assigned.
  - **Modbus TCP server enabled**: For data communication via the backplane bus, leave this slider set to **Off**.
8. Click **Save**.



## 6.8 Configuring the HUB-IO100 signals

1. In the SIINEOS of the HUB-IO100, navigate to **I/O management > I/O units** and select the HUB-IO100 you have created.
2. Click on **Signals**.

The signals for all channels of the HUB-IO100 are already applied.

I/O management > I/O units > HUB-IO100 > Signals

<input type="checkbox"/>	Identifier ^	Name	Group	Type	Value
<input type="checkbox"/>	AIN1	Analog input 1		DOUBLE	0 V
<input type="checkbox"/>	AIN2	Analog input 2		DOUBLE	0 V
<input type="checkbox"/>	AIN3	Analog input 3		DOUBLE	0 V
<input type="checkbox"/>	AIN4	Analog input 4		DOUBLE	0 V
<input type="checkbox"/>	AOUT1	Analog output 1		DOUBLE	0,00 mA
<input type="checkbox"/>	AOUT2	Analog output 2		DOUBLE	0,00 mA
<input type="checkbox"/>	DIN1	Digital input 1		BOOL	0
<input type="checkbox"/>	DIN2	Digital input 2		BOOL	0
<input type="checkbox"/>	DIN3	Digital input 3		BOOL	0
<input type="checkbox"/>	DIN4	Digital input 4		BOOL	0
<input type="checkbox"/>	DIN5	Digital input 5		BOOL	0
<input type="checkbox"/>	DIN6	Digital input 6		BOOL	0
<input type="checkbox"/>	DIO1	Digital I/O 1		BOOL	0
<input type="checkbox"/>	DIO2	Digital I/O 2		BOOL	0
<input type="checkbox"/>	DIO3	Digital I/O 3		BOOL	0
<input type="checkbox"/>	DIO4	Digital I/O 4		BOOL	0
<input type="checkbox"/>	DIO5	Digital I/O 5		BOOL	0
<input type="checkbox"/>	DIO6	Digital I/O 6		BOOL	0
<input type="checkbox"/>	LED_GREEN	Green LED		BOOL	1
<input type="checkbox"/>	LED_RED	Red LED		BOOL	0

**Fig. 18: Signals of the HUB-IO100**

3. Select the signal you want to configure.

A window opens in which you will find three tab cards.

I/O management > I/O units > IO100 > Signals > Digital Input

SIGNAL SETTINGS      SIGNAL PROCESSING      MEASUREMENT MODELLING

**General**

Name: Digital Input      System ID: \_\_\_\_\_

Enabled:  On      Sampling interval [ms]: - 1000 +

Record signal values:  On      Recording interval [s]: - 1 +

Use custom identifier:  Off      Custom identifier: \_\_\_\_\_

**Details**

Count rising edges:  On      Count falling edges:  Off

**Fig. 19: Tab card "Signal settings" in the „Advanced" viewing mode**

4. Activate and configure the interface in the **Signal settings** tab.
  - Optional: Change the name of the interface.
  - Set the **Enabled** slider to **On**.
  - In the **Sampling interval** field, enter the intervals at which the signal is to be scanned (in milliseconds).
  - Set the **Record signal values** slider to **On** if the values are to be recorded in the local VictoriaMetrics database.
  - Enter the desired time interval for the recording in the **Recording interval** field.
5. Two additional settings are available in the **Advanced** viewing mode:
  - **Use custom identifier**: Set the slider to **On** if you want to enter your own identifier name.
  - **Custom identifier**: Enter your own identifier name.
6. Depending on the type of signal selected, further entries may be necessary:

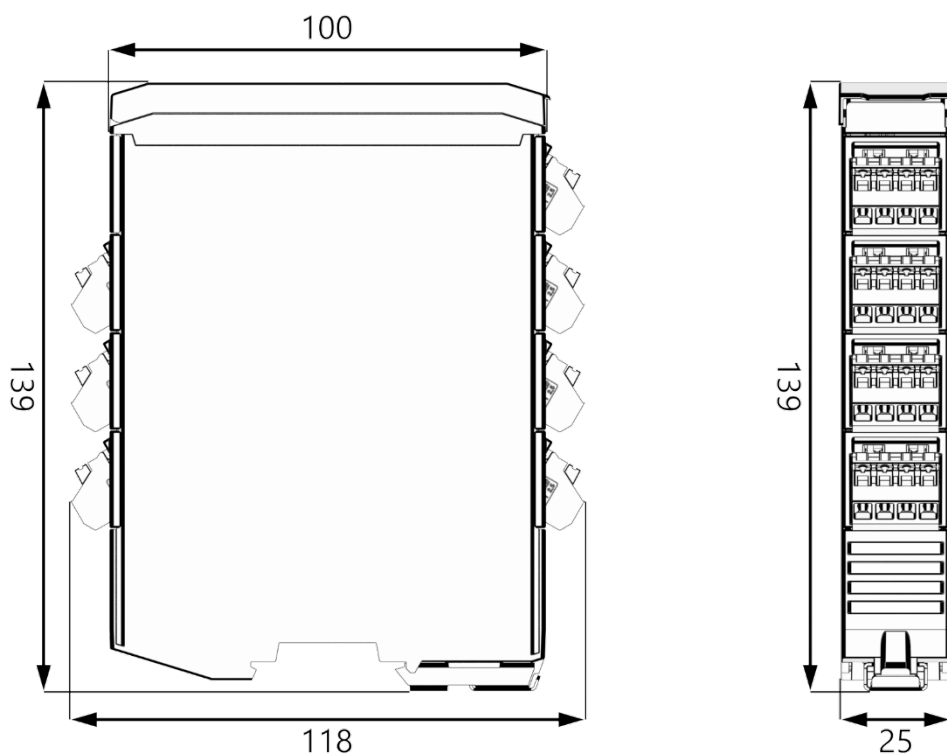
<b>AIN</b> (analog input)	<b>Mode</b> Select the type of analog interface of the connected sensor. The following are available: 0...10 V / 4...20 mA
<b>AO</b> (analog output)	<b>Output current</b> Output current in mA. Values from 0 to 24 can be set.
<b>DIN</b> (digital input)	To count how often the signal value has changed from 0 to 1, set the <b>Count rising edges</b> slider to <b>On</b> . To count how often the signal value has changed from 1 to 0, set the <b>Count falling edges</b> slider to <b>On</b> .
<b>DIO</b> (Digital input/output)	<b>Mode</b> Specify whether this interface should function as an input or output. <ul style="list-style-type: none"> <li>• You have selected <b>Input</b>: To count how often the signal value has changed from 0 to 1, set the <b>Count rising edges slider</b> to <b>On</b>. To count how often the signal value has changed from 1 to 0, set the <b>Count falling edges slider</b> to <b>On</b>.</li> <li>• You have selected <b>Output</b>: Under <b>Default state</b>, set the slider to <b>On</b> if a positive voltage is to be output at the digital output.</li> </ul>
<b>LED</b>	<b>Standard state</b> Specify whether the LED should be switched off or on as the default state.

7. In the **Signal processing** tab, you can specify how the signal value is to be processed, see the SIINEOS user manual.
8. Click on **Save**.
9. In the **Measured value modelling** tab, you define how the measured values are to be visualized, see the SIINEOS user manual.
10. Finally, click on **Save & Close**.

## 7 Technical data

Data	Values
Power supply	24 V DC, max. 1 A
Typical power consumption	5 W
Max. Power consumption	24 W
Processor	NXP® i.MX 6ULL
Memory	RAM: 256 MB DDR3L, Flash: 512 MB SLC NAND
Interfaces	6 x digital input/output, 6 x digital input, 4 x analog input and 2 x analog output, USB host (Micro USB), USB device (USB-A), Ethernet up to 100 Mbit/s, 3 x status LEDs, backplane bus
Operating system	IIoT operating system SIINEOS for configuration and data visualization (via Micro-USB or Ethernet)
Protocols	OPC UA, MQTT, Modbus TCP/IP
Temperature range	Operation: 0 °C to 50 °C Storage: -40 °C to 85 °C
Relative humidity	Operation: 20 % to 90 % RH non-condensing Storage: 10 % to 95 % RH non-condensing
Housing	Plastic (polyamide), black Flammability class according to UL 94 V0
Protection class	IP20
Dimensions (L x H x W)	139 mm x 100 mm x 25 mm 5.47 in x 3.94 in x 0.98 in
Weight	150 g

**NOTE:** For the technical data of the sensors and devices that you connect to the HUB-IO100, please refer to the data sheet of the respective device.



**Fig. 20: Schematic drawing of the HUB-IO100**

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