

MOUNTING AND OPERATING INSTRUCTIONS



EB 6611-2 EN

Translation of original instructions



TROVIS 6611-2 Control and Automation Unit TROVIS 6600 Automation System

Firmware version 3.7x



Edition June 2019

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service Department (aftersaleservice@samson.de).



The mounting and operating instructions for the devices are included in the scope of delivery. The latest documentation is available on our website at www.samson.de > **Service & Support** > **Downloads** > **Documentation**.

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

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i Note

*These Mounting and Operating Instructions **EB 6611-2** are valid for firmware versions **3.70** to **3.79**. The latest edition of these instructions, detailing the firmware version and modifications compared to the previous version, is available on our website.*

1 Safety instructions and measures

Intended use

The TROVIS 6611-2 Control and Automation Unit is freely programmable and allows autonomous operation and management of six I/O modules. It has an integrated color touch screen for visualization.

To allow the control and automation unit to access the I/O modules in the required manner, the I/O modules must be mapped logically as a project in the unit. For this purpose, SAMSON provides ready-made applications. Alternatively, a project can be programmed using the SAMSON graphical project management tool (logic circuits, menu navigation, visualization and start-up).

The control and automation unit as well as the I/O modules are designed to operate under exactly defined conditions (e.g. power supply, ambient conditions). Therefore, operators must ensure that the unit is only used in applications where the operating conditions correspond to the technical data. In case operators intend to use the unit in other applications or conditions than specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data for limits and fields of application as well as possible uses. See section 3.3.

The operator is responsible for the physical and logical project management, if not agreed otherwise.

Reasonably foreseeable misuse

The control and automation unit is not suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data

Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts

- Performing service and repair work not described in these instructions

Safety instructions and measures

Qualifications of operating personnel

- The unit must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed.
- The projects must be configured and set by trained and experienced personnel only.

According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Personal protective equipment

No personal protective equipment is required.

Revisions and other modifications

Revisions, conversions or other modifications to the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

Safety features

The operation of the unit is password-protected to protect it from unauthorized access. A user role with individual privileges and password is assigned to each user.

Warning against residual hazards

The control and automation unit has direct influence on controlled plant components (e.g. control valves and pumps) over the I/O modules. To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the plant components by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. They must observe all hazard statements, warning and caution notes in the referenced documents.

Responsibilities of the operator

The operator is responsible for proper operation and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions to the operating personnel and to instruct them in proper operation. Furthermore, the operator must ensure that operating personnel or third persons are not exposed to any danger.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the specified hazard statements, warning and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards and regulations

The control and automation unit fulfills the requirements of the Directives 2014/30/EU and 2011/65/EU. The declaration of conformity includes information about the applied conformity assessment procedure. This declaration of conformity is included in the appendix of these instructions.

The control and automation unit is designed for use in low voltage installations.

→ For wiring, maintenance and repair, observe the relevant safety regulations.

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- ▶ AB 6600: System integration guidelines for electrical technicians
- ▶ T 6620-1 for TROVIS 6620-1 I/O Module
- ▶ T 6625 for TROVIS 6625 Input Module
- ▶ T 6630 for TROVIS 6630 AO Module
- ▶ T 6640 for TROVIS 6640 AI Module
- Technical documentation for the room panel in use

1.1 Notes on possible property damage

NOTICE

Damage due to water entering the device.

The front pane of the control and automation unit is protected against vertically falling drops of water (IP 41).

→ Avoid drops, sprays and jets of water.

Manipulation of settings due to unauthorized access.

The TROVIS 6611-2 Control and Automation Unit supports various communications protocol (e.g. a web server). This allows remote access. To protect it from unauthorized access, the onsite and remote operation of the unit is password-protected:

→ Change the initial administrator password after first start-up.

→ Regularly change all user passwords.

→ Do not pass login data on to unauthorized persons. Keep them in a safe place inaccessible to unauthorized persons.

2 Markings on the device

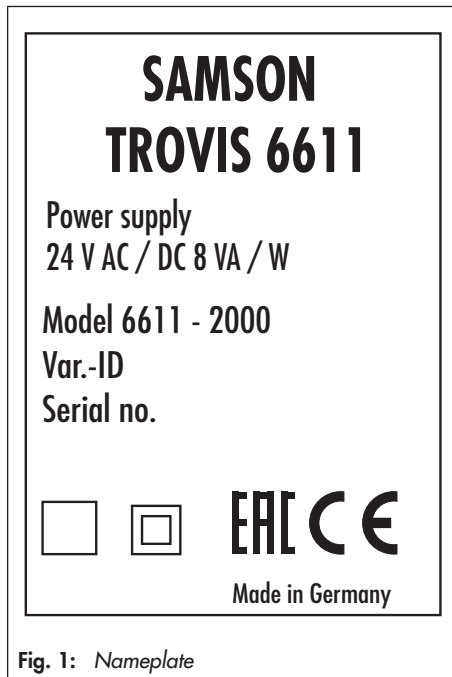


Fig. 1: Nameplate

3 Design and principle of operation

TROVIS 6611-2 is a freely programmable control and automation unit for autonomous operation and management of six I/O modules (up to 120 physical data points). It has an integrated color touch screen for visualization. The SAMSON graphical project management tool is required to create applications.

i Note

The control and automation unit does not contain any applications in the delivered state.

System-specific applications can be ordered from SAMSON.

Max. number of units

Modules

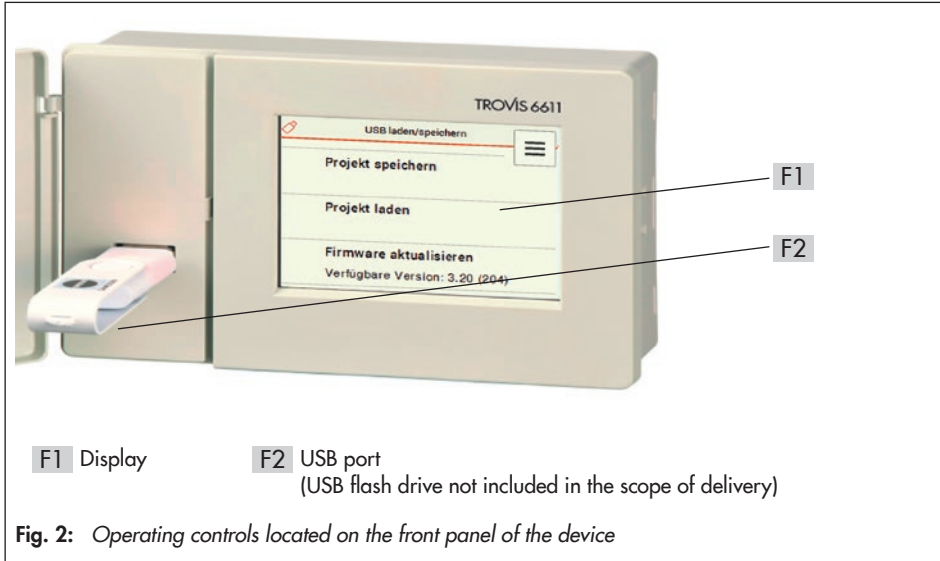
- 32x I/O modules (TROVIS 6620, 6625, 6630 or 6640) per TROVIS 6611-2
- 32x TROVIS 6611-2 per application (graphical project management tool)

Cable length without repeaters, hubs, etc.

- Ethernet 100BASE-T type: LAN
- I/O bus 1200 m
- 24 V AC/DC Max. 1.5 mm² strand (12 mm-long wire end ferrule)
- Ethernet Min. Cat 5 cable, shielded (STP)
- I/O bus Jy(St) Y 2 x 2 x 0.8 (12 mm-long wire end ferrule)

3.1 Operating controls

3.1.1 Front panel



Touch screen (F1)

The touch screen is the main operating element.



Tap the menu button on the top right-hand corner of the screen to open various levels. Depending on the level, various functions can be executed by tapping the displayed buttons (see Fig. 3).

USB port (F2)

The USB port is accessible after opening the lid. Data can be transferred from a USB flash drive inserted into the port to the unit and vice versa.

- USB flash drive requirements: 2.0 with FAT32

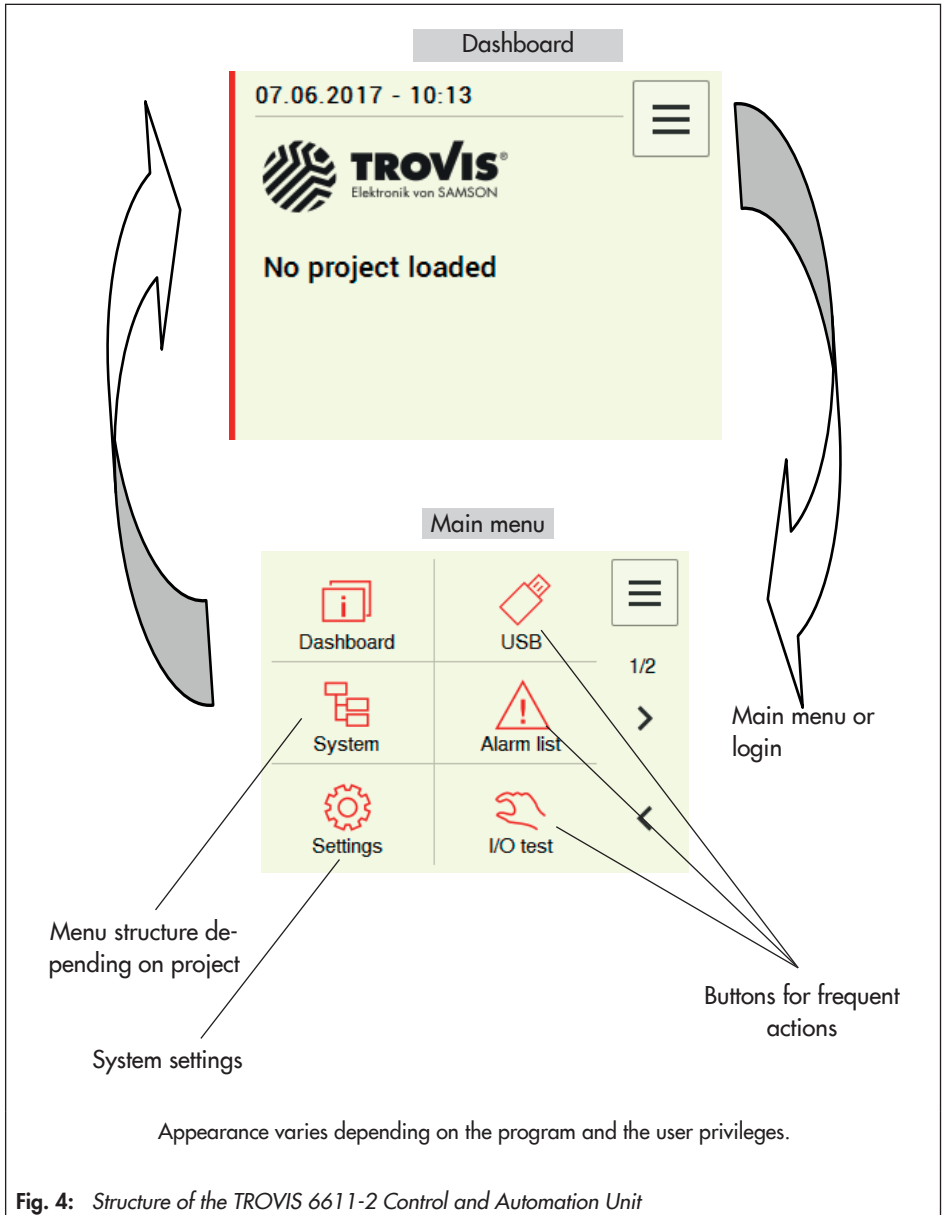


Fig. 4: Structure of the TROVIS 6611-2 Control and Automation Unit

3.1.2 Back of device

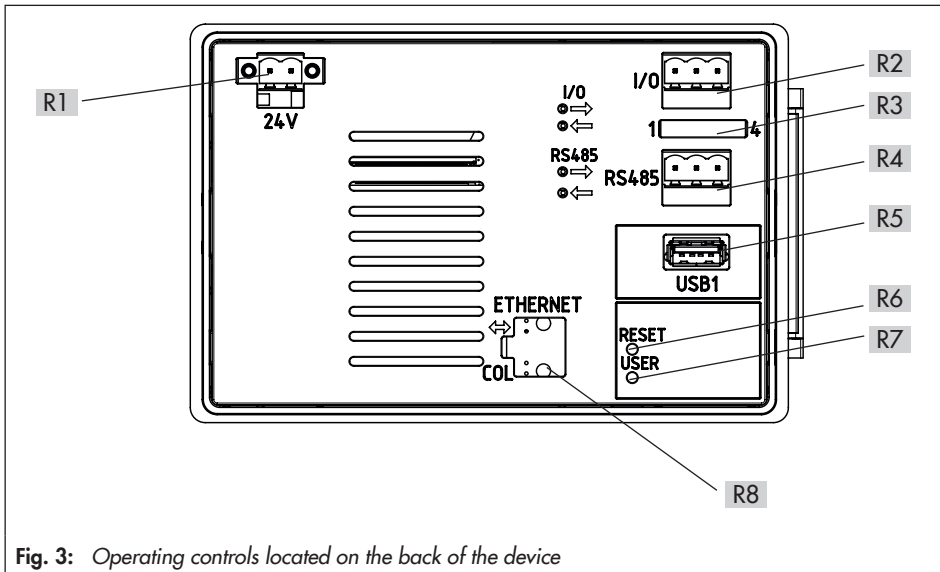


Fig. 3: Operating controls located on the back of the device

R1 Power supply (see section 5.2)

R2 Connection for I/O bus (physical inputs on the input/output modules)

Distributed I/O modules are required to connect the physical input and outputs. The two terminals are labeled "IA" and "IB" and must be wired consistently in exactly the same way.

Maximum cable core length: 1200 m

A maximum of six I/O modules (e.g. TROVIS 6620, 6625, 6630 or 6640) can be connected to one TROVIS 6611-2 Control and Automation Unit.

R3 Jumper for RS-485 configuration

The jumpers are not set in the delivered state. Refer to the following table for the required setting.

1	2	3	4
Bus termination for I/O bus	Bus bias voltage for Modbus (jumper 3 must be closed)	Bus bias voltage for Modbus (jumper 2 must be closed)	Bus termination for Modbus
Closed = Active	Closed = Active	Closed = Active	Closed = Active
Open = Not active	Open = Not active	Open = Not active	Open = Not active

Close jumper 1 if TROVIS 6611-2 is at the end of the I/O bus line.

Close jumpers 2 and 3 to activate the Modbus bias voltage (if TROVIS 6611-2 is used as a Modbus RTU master).

Close jumper 4 if TROVIS 6611-2 is at the end of the bus.

R4 Connection for Modbus (RS-485 2W)

The TROVIS 6611-2 Control and Automation Unit supports the Modbus-RTU fieldbus protocol with two-wire system. The corresponding jumpers must be set for the terminating resistors or bias voltage. Bus properties, such as master or slave operation, data bits, parity and stop bits must be configured in the SAMSON Graphical Project Management Tool software. The two terminals are labeled "RA" and "RB" and must be wired consistently in exactly the same way.

R5 USB port

Functions:

- Load and save data
- Memory extension for historical data

USB flash drive requirements: 2.0 with FAT32

R6 Reset key for restart**R7 User key****R8 Ethernet connection**

Data transmission rate: 100 Mbit/s

Host name: Fallback IP-Adresse 172.30.66.11

The Ethernet connection can be configured and activated on site at the device. The services (SSH, FTPES, HTTPS, AVAHI (see section 5.3.4) are deactivated in the delivered state. However, the TROVIS 6611-2 Control and Automation Unit in the default state obtains the IP addresses over DHCP.

3.2 Accessories

Accessories

- Terminal and installation set (included in the scope of delivery) Item no. 1 402-1561
- TROVIS 6620-1 I/O Module Conf. ID: 4829008
- TROVIS 6625 Input Module ¹⁾ Conf. ID: 2649861
- TROVIS 6630 AO Module Conf. ID: 3714719
- TROVIS 6640 AI Module Conf. ID: 3714720
- Room panel depending on application On request
- TROVIS 6690 Graphical Project Management Tool (demo version) .. Conf. ID: 3004922
- TROVIS 6690 Graphical Project Management Tool (1 AS version) ... Conf. ID: 3004921
- TROVIS 6690 Graphical Project Management Tool (3 AS version) ... Conf. ID: 3004920
- TROVIS 6690 Graphical Project Management Tool (full version) Conf. ID: 2039168

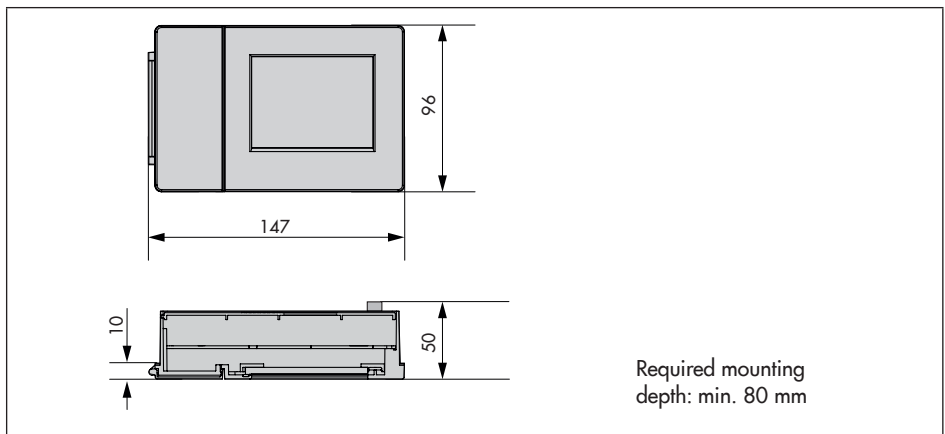
1) Only with 24 V AC power supply (not DC)

3.3 Technical data

Auxiliary power	
Power supply	24 V AC/DC
Power consumption	8 VA/W
Connection	2-pin screw clamp terminal (orange)
Wire cross-section	Up to 1.5 mm ²
Permissible ambient conditions	
Operating temperature	0 to 55 °C
Transportation and storage temperature	-20 to +70 °C
Relative humidity	5 to 95 %, no dew formation
Electromagnetic compatibility	
Noise emission	According to EN 61000-6-3
Noise immunity	According to EN 61000-6-2
Device safety	
Degree of protection	II according to DIN EN 61140
Overvoltage category	II according to DIN EN 60664-1
Degree of contamination	2 according to DIN EN 60664-1
Degree of protection	With seal for panel mounting: IP 41 according to IEC 60529

Display	
Key figures	3.5" QVGA, resistive touch screen
Resolution	320 x 240 pixel
Installation	
Dimensions	W x H x D including terminals: 147 x 96 x 50 mm
Mounting	Panel mounting
Panel cutout	W x H: 138 x 92 mm (recommended installation depth: min. 80 mm)
Weight	Approx. 0.4 kg
Interfaces	
Serial interfaces	1x RS-485 Modbus-RTU (3-pin screw clamp terminal) 1x RS-485 I/O bus (3-pin screw clamp terminal) for TROVIS 6620
Ethernet	1x RJ-45 10/100 Mbit, BACnet IP (AMEV Profile AS-A, AS-B)
USB	2x USB 2.0 A, (FAT32)
Supported protocols	Modbus RTU, Modbus TCP, BACnet IP (AMEV profile AS-A, AS-B), OPC-UA, MQTT
Service life	96 months (corresponds to 100,000 switching cycles)
Max. storage duration	96 months
Compliance	CE EAC

3.4 Dimensions in mm



4 Measures for preparation

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Compare the shipment received against the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.1 Unpacking

i Note

Do not remove the packaging until immediately before mounting and start-up.

1. Remove the packaging from the control and automation unit.
2. Dispose of the packaging in accordance with the valid regulations.

4.2 Transporting

- Protect the unit against external influences (e.g. impact).
- Protect the unit against moisture and dirt.
- Observe the permissible transportation temperature of -20 to $+70$ °C.

4.3 Storage

! NOTICE

Risk of damage to the unit due to improper storage.

- Observe storage instructions.
- Avoid long storage times.
- Contact SAMSON in case of different storage conditions or long storage periods.

i Note

We recommend regularly checking the unit and the prevailing storage conditions during long storage times.

Storage instructions

- Protect the unit against moisture, dirt and other external influences (e.g. impact).
- Make sure that the ambient air is free of acids or other corrosive media.
- Observe the permissible storage temperature from -20 to $+70$ °C.
- Do not place any objects on the unit.

5 Mounting and start-up

5.1 Installation

The control and automation unit is mainly designed for panel mounting.

Panel cut-out (W x H): 138 x 92 mm

Required mounting depth: min. 80 mm

➔ Make the panel cut-out.

- Push the unit from the front through the panel cut-out.
- Slide the supplied screw rails into the guide rails: **the clamps on the screw rails must face towards the control panel.**
- Fasten the screw rails with the supplied screws: **the tips of the screws must point towards the control panel.**
- Connect the wiring as described in section 5.2.

5.2 Electrical connection

! NOTICE

Malfunction due to incorrect electrical connection.

- Upon installation of the electric cables, you are required to observe the VDE regulations as well as the regulations of your local power supplier.
- Do not ground the power supply (transformer or switch-mode power supply).
- The wiring must be performed by properly trained and experienced personnel only.

Surge protection

- If signal lines are installed outside buildings or over large distances, make sure appropriate surge or overvoltage protection measures are taken. Such measures are indispensable for bus lines.
- The shield of signal lines installed outside buildings must have current conducting capacity and must be grounded on both sides.

- Install surge diverters at the control cabinet inlet.

Electrical connection

The terminals have reverse polarity protection:



- Connect the unit to the power supply (24 V).

5.3 Start-up

5.3.1 User login

- Select "Login" in the menu (☰ button).
- Enter your user name and password ("admin").

! NOTICE

Insufficient security due to generally accessible password.

Change the administrator password ("admin") after first login.

5.3.2 Loading a project

- Insert the USB flash drive containing the project into the front USB port.
- Go to the main menu (☰ button).
- Select "Load project" in "USB" and select the required project.

! NOTICE

Select "USB" to perform further actions:

- Save project
- Update the firmware

5.3.3 Setting the system time

- Go to the main menu (☰ button).
- Select "Date and time" in "Settings".
- Change the time and date.
- Select "Apply" in the menu (☰ button) to save changes.

5.3.4 Network settings

The unit has an integrated web server (TROVIS MOBILE), which can be simply accessed over the network and browser through the IP address. It must have the same address as the end device (smartphone, notebook, tablet computer, computer, etc.) and an active HTTPS.

TROVIS MOBILE is designed for modern web browsers, e.g. Mozilla Firefox in version V.45 and higher. Access to the Internet requires port forwarding using a router (e.g. VPN) to be set up on site.

i Note

The LAN setting is set to DHCP in the default setting. In this setting, it is assumed that the TROVIS 6611-2 Control and Automation Unit is assigned to an IP address, e.g. belonging to a router. However, the IP address is not assigned, for example, when the TROVIS 6611-2 unit is directly connected to a laptop using a network cable. In this case, DHCP must be deactivated to allow the preset static IP address to be used. The currently used and active IP address can be found in [Main menu > Device information > Network: eth0]. This information is available regardless of the user role.

- Go to the main menu (☰ button).
- Select "Network settings" in "Settings".
- Set the "LAN port" to ON.
- Select "Back one level" in the menu (☰ button) to exit the level.
- Set all other parameters in "LAN settings":
 - DHCP: ON (= default)
 - IP address: 172.30.66.11 (= default)
 - Subnet mask: 255.255.0.0 (= default)
 - Host name: TROVIS-6111-2-xxx (xxx = device-specific MAC address)
 - DNS server
 - NTP server
- If necessary, select "Services" in "Network":
 - Activate FTPS for use with graphical project management (default = OFF)
 - Activate HTTPS for the use of the integrated TROVIS-MOBILE web server (default = OFF)
 - SSH for console access using the "root" user role

! NOTICE

Impaired device function and loss of warranty through the improper use of the "root" user role.

- Only activate SSH for troubleshooting and administration activities performed by trained personnel.
 - Do not leave the SSH constantly activated.
 - Assign a "root" password to protect its access.
-

- Select "Apply" in the menu (☰ button) to save changes.

5.3.5 Assigning modules

- Go to the main menu (☰ button).
- Select "Module assignment" in "Settings".
The logical modules are listed.
- Select one physical module for each logical module one after the other.
- The LEDs of a physical module blink after it has been selected. Confirm selection by checking the box (top right) or repeat selection procedure until the correct physical module has been selected.
- Select "Apply" in the menu (☰ button) to save changes.

i Note

We recommend performing the restore function ("Restoring the system" in "Settings") after assigning the module. This ensures that the settings remain saved even after a power failure.

5.3.6 Calibrating the touch screen

- Go to the main menu (☰ button).
- Select "Touch screen calibration" in "Settings". Select "Start touch screen calibration".
- Tap the crosshair with a pointed item each time it appears on the screen.

5.4 Quick check

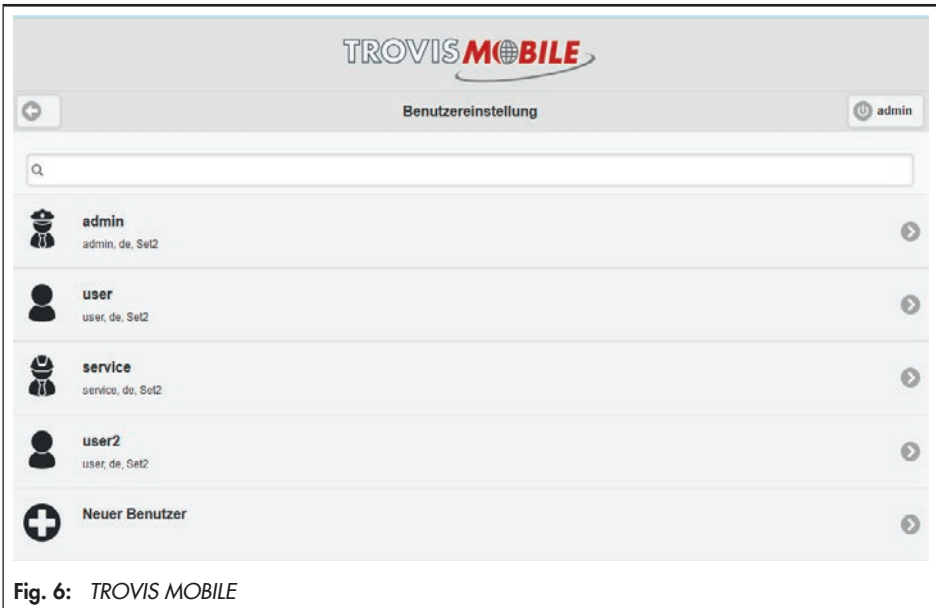
"I/O test" allows the unit's ability to function to be checked. It allows you to check all the connected modules and the physical inputs and outputs.

- After changing to the main menu (☰ button), select "I/O test".
- Manually switch the outputs one after the other to check that they function.

Mounting and start-up

User	Load project	Set system time	Set network	Assign modules	Calibrate touch screen	Operate system on site	Reset unit	Create new user	Update the firmware
Default user	NO	NO	NO	NO	NO	YES	NO	NO	NO
User	NO	YES	NO	NO	NO	YES	NO	NO	NO
Service	YES	YES	YES	YES	YES	YES	YES	NO	NO
Administrator	YES	YES	YES	YES	YES	YES	YES	YES	YES

Fig. 5: *User roles*



6 Operation

6.1 User administration

User administration is performed over the TROVIS MOBILE web server (see section 5.3.4 and Fig. 6).

Four different user roles can be assigned to users (see Fig. 5).

6.2 Operating the system

The system is operated in "System". It depends on the loaded project.

→ After changing to the main menu (☰ button), select "System".

6.3 Reset unit

Resetting to first start-up

By resetting to first start-up, all system parameters are set to the state upon delivery of the project.

→ Press the reset key on the back of the device.

Restoring the system

The "Restore system" command in "Settings" allows the system to be restored to a certain point. Once set, settings can be reset to this point again at any time.

→ Go to the main menu (☰ button).

→ Select "Restore system" in "Settings".

Resetting to default settings

Resetting to default settings causes all settings made during start-up (project, system time, network, module assignment) to be deleted.

→ Save data to a USB flash drive before resetting to default settings.

→ Press reset and user keys on the back of the device simultaneously. Hold the user key pressed until the reading indicates a reset to default settings.

6.4 Setting up a WiFi hotspot

External hardware (e.g. computer, laptop, smartphone, tablet computer) can be used to establish a WiFi connection to the TROVIS 6611-2 Control and Automation Unit. The unit's released services (e.g. web server, connection to the graphical project management tool) can be accessed over a WiFi hotspot. It can only be established using a WiFi stick ¹⁾, within wireless coverage and when the end devices have been connected properly to the WiFi provided by the stick.

¹⁾ WiFi sticks must support the approved chips with appropriate drivers, e.g. Edimax EW-7811Un.

7 Servicing

i Note

The control and automation unit was checked by SAMSON before it left the factory.

- The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service department.*
 - Only use original spare parts by SAMSON, which comply with the original specifications.*
-

7.1 Updating the firmware

The unit's firmware needs to be updated after certain applications and functions have been revised. The firmware is updated using a USB flash drive ¹⁾ containing the latest firmware.

¹⁾ The USB flash drive must have the FAT32 format, assigned the name "TROVIS 6611" and have the same folder structure.

This procedure requires administrator privileges.

- ➔ Insert the USB flash drive containing the firmware into the front USB port.
- ➔ Go to the main menu (☰ button).
- ➔ Select "Update firmware" in "USB" and select the required project.

7.2 Preparation for return shipment

Defective units can be returned to SAMSON for repair.

Proceed as follows to return devices to SAMSON:

1. Put the unit out of operation.
2. Send the unit to your nearest SAMSON subsidiary. SAMSON subsidiaries are listed on our website at
▶ www.samson.de > About SAMSON > Sales offices.

8 Malfunctions

→ Troubleshooting (see Table 1)

i Note

Contact SAMSON's After-sales Service department for malfunctions not listed in the table.

Table 1: *Troubleshooting*

Error	Possible reasons	Recommended action
Screen remains black.	No or incorrect power supply connected.	Check the power supply and connections (see section 5.2).
Readings on screen not legible.	No or incorrectly set reading area of the screen.	Recalibrate screen (see section 5.3.6).
System components do not perform the required actions.	Wrong project loaded or project deleted.	Reload project (see section 5.3.2).
	Modules incorrectly/not assigned.	Perform quick check (see section 5.4) and reassign modules, if necessary (see section 5.3.5).
TROVIS MOBILE web server cannot be used.	Network settings are incorrect.	Check settings and change, if necessary (see section 5.3.4).

9 Decommissioning and disassembly

9.1 Decommissioning

1. Disconnect the unit from the power supply.
2. Undo the screws on the guide rails and remove the unit.

9.2 Disposal



We are registered with the German national register for waste electric equipment (stiftung ear) as a producer of electrical and electronic equipment, WEEE reg. no.: DE 62194439

- Observe local, national and international refuse regulations.
- Do not dispose of components, lubricants and hazardous substances together with your other household waste.

i Note

We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at aftersalesservice@samson.de giving details of your company address.

💡 Tip

On request, we can appoint a service provider to dismantle and recycle the product.

10 Annex

10.1 After-sales service

Contact SAMSON's After-sales Service department for support concerning service or repair work or when malfunctions or defects arise.

E-mail

You can reach the After-sales Service Department at aftersalesservice@samson.de.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on the SAMSON website (www.samson.de) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, serial number, firmware version, device version

10.2 Licenses

10.2.1 GNU GENERAL PUBLIC LICENSE, Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

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