

SIMA² Master Station
for AUMA actuator controls
MODBUS RTU and MODBUS Loop
with
MODBUS RTU, MODBUS TCP/IP

Control
Profibus DP
→ Modbus RTU



Read operation instructions first.

- Observe safety instructions.
- These operation instructions are part of the product.
- Store operation instructions during product life.
- Pass on instructions to any subsequent user or owner of the product.

Target group:

This document contains information for assembly, commissioning and maintenance staff.

Reference documents:

Manual (Device integration) SIMA²

Reference documents can be downloaded from the Internet (www.auma.com) or ordered directly from AUMA (refer to Addresses).

Table of contents	Page
1. Safety instructions.....	4
1.1. Basic information on safety	4
1.2. Range of application	4
1.3. Warnings and notes / symbols and text design	5
2. Identification.....	6
2.1. Important terms (terminology)	6
2.2. Name plate	9
2.3. Short description	11
3. Transport, storage and packaging.....	13
3.1. Transport	13
3.2. Storage	13
3.3. Packaging	13
4. Assembly.....	14
4.1. Notes for installation	14
4.2. Dimensions	14
4.3. SIMA ² system components	17
5. Electrical connection and fieldbus connection.....	18
5.1. Electrical connection	18
5.2. Earth connection	18
5.3. Shield connection	18
5.4. Lightning protection	18
5.5. Interface and communication to the actuators via Modbus RTU	19
5.6. Interface to the distributed control system	20
5.7. Fieldbus cable specifications	20
5.8. Redundancy change-over	20
6. System configuration.....	21
6.1. Settings	21
7. Indications.....	22
7.1. Indications on the housing	22
7.2. Indications on the system components	23

8.	Commissioning.....	27
8.1.	User level	27
8.2.	Actuator status	27
8.3.	Time synchronisation	28
8.4.	Configuration	28
9.	Servicing and maintenance.....	32
9.1.	Lithium battery	32
10.	Technical data.....	34
10.1.	Technical data SIMA² Master Station	34
11.	Certificates.....	39
11.1.	EU Declaration of Conformity	39
	Index.....	40
	Addresses.....	42

1. Safety instructions

1.1. Basic information on safety

Standards/directives Our products are designed and manufactured in compliance with recognised standards and directives. This is certified in a Declaration of Incorporation and an EU Declaration of Conformity.

The end user or the contractor must ensure that all legal requirements, directives, guidelines, national regulations and recommendations with respect to assembly, electrical connection, commissioning and operation are met at the place of installation.

They include among others applicable configuration guidelines for digital communication interfaces.

Safety instructions/warnings All personnel working with this device must be familiar with the safety and warning instructions in this manual and observe the instructions given. Safety instructions and warning signs on the device must be observed to avoid personal injury or property damage.

Qualification of staff Assembly, electrical connection, commissioning, operation, and maintenance must be carried out by suitably qualified personnel authorised by the end user or contractor of the plant only.

Prior to working on this product, the staff must have thoroughly read and understood these instructions and, furthermore, know and observe officially recognised rules regarding occupational health and safety.

Commissioning Prior to commissioning, it is important to check that all settings meet the requirements of the application. Incorrect settings might present a danger to the application, e.g. cause damage to the valve or the installation. The manufacturer will not be held liable for any consequential damage. Such risk lies entirely with the user.

Operation Prerequisites for safe and smooth operation:

- Correct transport, proper storage, mounting and installation, as well as careful commissioning.
- Only operate the device if it is in perfect condition while observing these instructions.
- Immediately report any faults and damage and allow for corrective measures.
- Observe recognised rules for occupational health and safety.
- Observe national regulations.
- The housing heats up during operation. The ventilation slots must not be covered to ensure sufficient air circulation.

Protective measures The end user or the contractor are responsible for implementing required protective measures on site, such as enclosures, barriers, or personal protective equipment for the staff.

Maintenance To ensure safe device operation, the maintenance instructions included in this manual must be observed.

Any device modification requires prior consent of the manufacturer.

1.2. Range of application

The SIMA² Master Station is designed for controlling and monitoring AUMA actuators. Availability of fieldbus communication to the actuators can be considerably increased thanks to manifold redundancy options. All these redundancy options are monitored during running operation by SIMA² thanks to efficient troubleshooting mechanisms allowing to introduce countermeasures if required and to automatically switch without delay to alternative communication channels or communication systems. Operation of other field devices or actuators require projecting and must be agreed with AUMA.

Other (software) applications using SIMA² require explicit (written) confirmation by the manufacturer.

No liability can be assumed for inappropriate or unintended use.

Observance of these operation instructions is considered as part of the device's designated use.

1.3. Warnings and notes / symbols and text design

Warnings and notes

The following warnings draw special attention to safety-relevant procedures in these operation instructions, each marked by the appropriate signal word (DANGER, WARNING, CAUTION, NOTICE).



Indicates an imminently hazardous situation with a high level of risk. Failure to observe this warning results in death or serious injury.



Indicates a potentially hazardous situation with a medium level of risk. Failure to observe this warning could result in death or serious injury.



Indicates a potentially hazardous situation with a low level of risk. Failure to observe this warning could result in minor or moderate injury. May also be used with property damage.



Potentially hazardous situation. Failure to observe this warning could result in property damage. Is not used for personal injury.

Arrangement and typographic structure of the warnings



Type of hazard and respective source!

Possible consequence(s) in case of non-observance (option)

- Measures to avoid the danger
- Further measure(s)

Safety alert symbol  warns of a potential personal injury hazard.
The signal word (here: DANGER) indicates the level of hazard.

Symbols and further notes in the text

The following references and symbols are used in these instructions:

Information

The term **Information** preceding the text indicates important notes and information.

2. Identification

2.1. Important terms (terminology)

This chapter includes the key designations and the terminology required for the basic understanding of SIMA² installations. All other designations are explained in the respective chapters.

Information The simplified term SIMA² is used to refer to the SIMA² Master Station.

AUMA redundancy As an alternative to loop redundancy, the fieldbus connection to the actuators can also be designed as line topology. In this case, two separate fieldbus cables are installed in line topology to each actuator and the actuators are configured for AUMA redundancy I.

Auto configuration Automated procedure during commissioning of loop redundancy whereby the fieldbus addresses are automatically assigned on the basis of the actuator sequence within the loop.

Host Superordinate automation system. Also referred to as DCS or SCADA.

**Hot standby
System redundancy** If two SIMA² subsystems are jointly operated, this redundant configuration is designated as hot standby system redundancy. Both SIMA² subsystems can either be located in a joint housing or in two separate housings.

In this version, both SIMA² subsystems are identified by SIMA A or SIMA B. Each of these two SIMA² subsystems functions completely independently of the other subsystem, since each system is equipped with an own power supply, an own CPU sub-assembly as well as separate multi-touchscreens.

In standard operation, SIMA A always adopts system control while SIMA B is working in standby mode, continuously monitoring the overall system. If SIMA A fails, SIMA B takes over control and thus ensures the complete function including the communication to the actuators and the host.

When selecting the configuration with separate housings, up to four loops are supported. In turn, the configuration with one joint housing only supports one loop.

Figure 1: Hot standby system redundancy in separate housings (example)

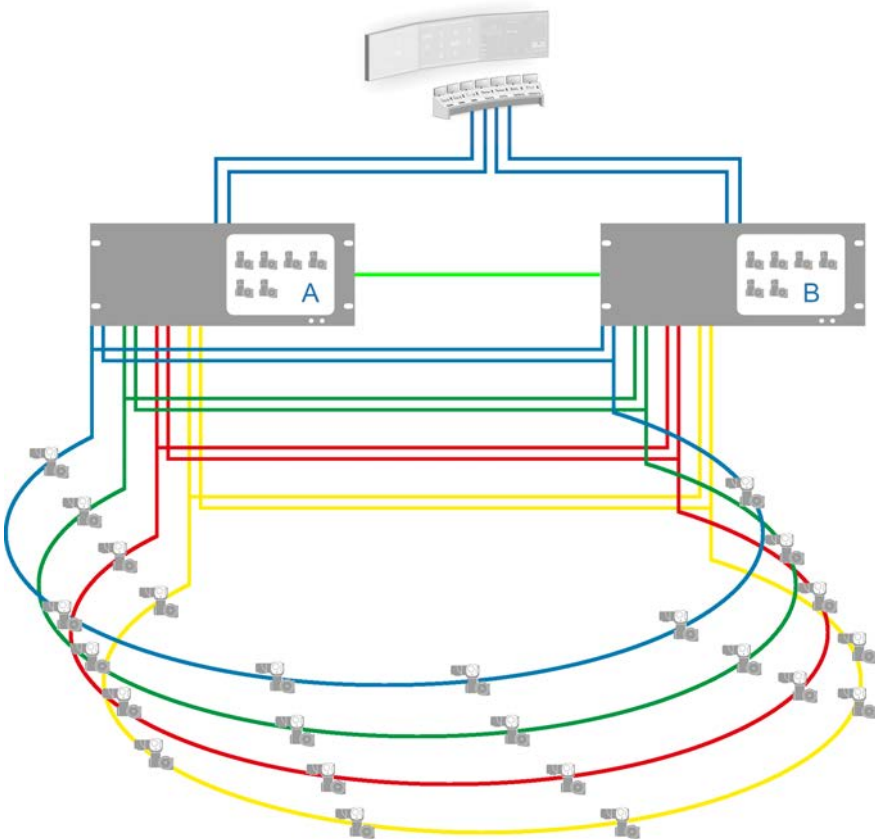
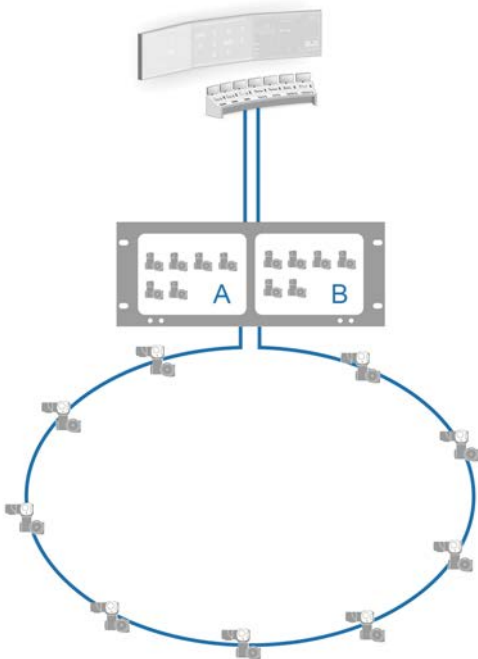


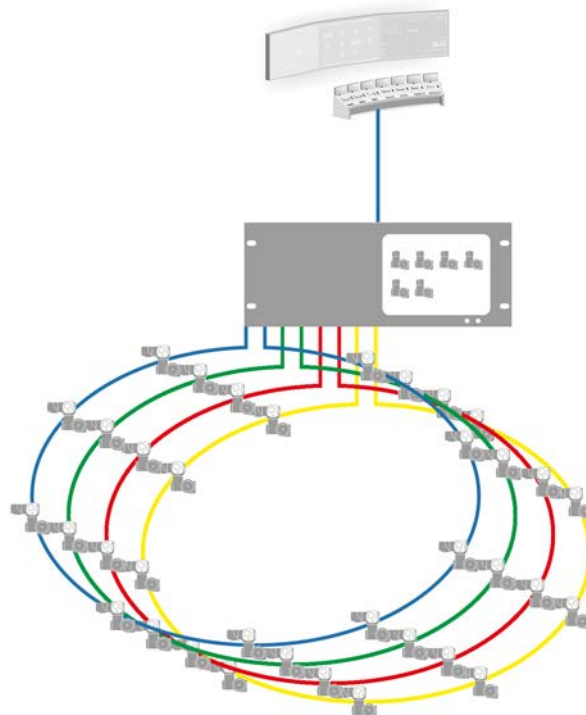
Figure 2: Hot standby system redundancy in a joint housing (example)



Live list The live list contains the slave addresses of all field devices available on the Modbus network.

Network	Physical arrangement of actuators connected to SIMA ² (line topology or loop topology). Combined with Modbus RTU, up to 247 actuators are supported for each SIMA ² network.
Loop redundancy	A fieldbus is routed from the SIMA ² to the first actuator and then to the next actuator until reaching the last actuator and back to SIMA ² , thus arranged in loop configuration. In case of interruption or short-circuit within the loop system, communication to the actuators is maintained.
SIMA² Master Station	The SIMA² Master Station communicates to the field actuators using a standardised fieldbus protocol. This protocol is used by SIMA² to transmit the respective operation commands to the connected actuators. In turn, they send their respective status signals to the SIMA² at cyclic intervals. Both actuator signals and diagnostic information of SIMA² and the used communication interfaces are visualised by means of an integrated web server and the multi-touchscreen at SIMA². Generally, SIMA² via a standardised communication protocol with a host receiving all essential status signals and issuing the operation commands to SIMA² for transmission to the individual actuators. Both, communication to actuators and communication to the host can be arranged in redundant topology. In addition, the SIMA² Master Station as such can be arranged in redundant topology. SIMA² Master Station offers easy, fast and detailed diagnostics of all connected actuators, the interfaces as well as self-diagnostics. SIMA² further allows data concentration of actuator feedback signals to relieve the host, a stand-alone mode as well as protocol conversion and manages all redundancy properties. Depending on the configuration, SIMA² Master Station is composed of one or two SIMA² subsystems. Up to 4 networks are possible for each SIMA².

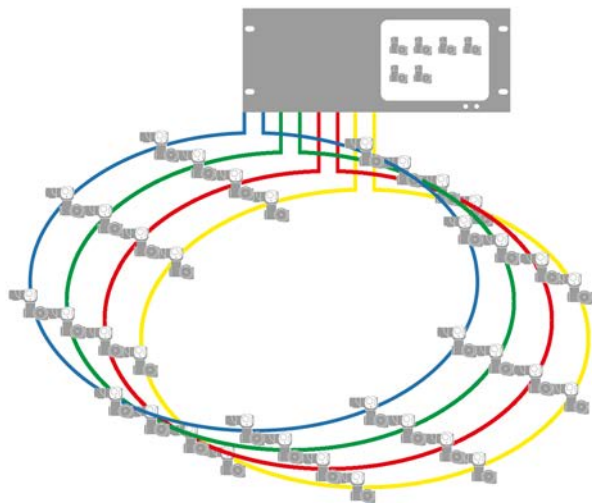
Figure 3: Single Master Station



SIMA² subsystem	Typically, a SIMA ² subsystem consists of a power supply unit, a multi-touchscreen, CPU sub-assembly and the interfaces required for communication to the actuators and to the host. For hot standby system redundancy, two separate SIMA ² subsystems are used. The version without hot standby system redundancy only consists of one SIMA ² subsystem and is also named single master station.
SIMA A / SIMA B	SIMA A or SIMA B is a clear designation of both physical SIMA ² subsystems when SIMA ² is arranged in hot standby system redundancy.

Single Master Station	SIMA ² in non-redundant version with only one SIMA ² subsystem for fieldbus communication. For a Single Master Station, the multi-touchscreen is always located on the right housing side.
Stand-alone mode	In sites without superordinate automation system (host), SIMA ² is deployed in the so-called stand-alone mode. Operation commands for the actuators are specified manually by the user either via the multi-touchscreen or via the integral web server. Status or diagnostic signals of actuators are visually monitored by the user.

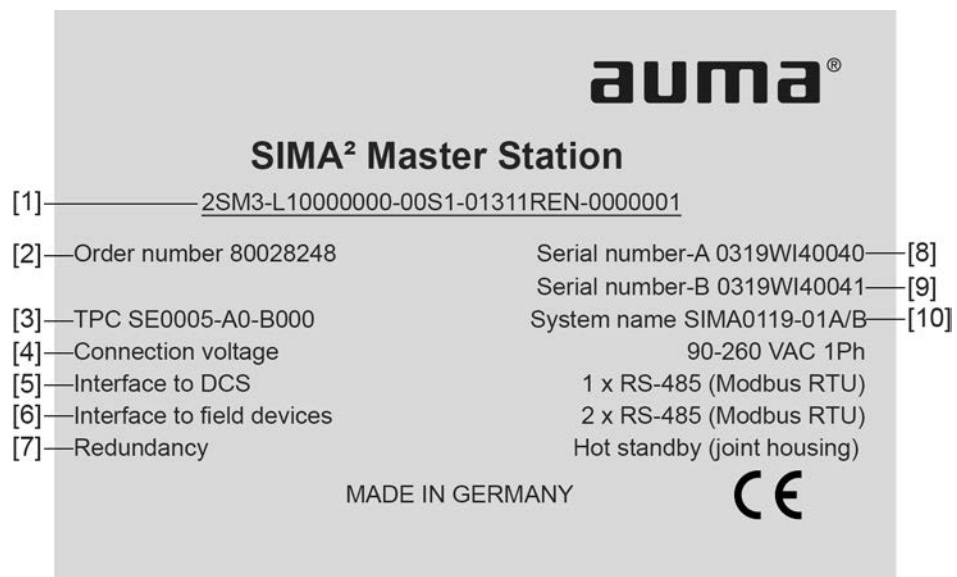
Figure 4: Stand-alone mode (example)



Cycle time	Time required for requesting feedback signals from all actuators connected via Modbus RTU.
-------------------	--

2.2. Name plate	
Data for identification	Each SIMA² is equipped with a name plate. The name plate is located at different positions: for rack mounting or as bench device on the rear of SIMA², for devices in wall mounting version at the left side of the device. For unambiguous assignment of SIMA², the following data is required:

Figure 5: Data for identification



- [1] SIMA² PO number
- [2] Order number
- [3] Wiring diagram number
- [4] Power supply
- [5] Equipment of fieldbus interface to the DCS
- [6] Equipment of fieldbus interface to the field devices
- [7] Redundancy
- [8] Serial number of SIMA A
- [9] Serial number of SIMA B
- [10] Identification number (system name)

Information The numbers can be directly read on the display via the SIMA² menu and sub-menu **Info**.

- [1] SIMA² PO number** SIMA² PO number encodes the device's hardware configuration.
- [2] Order number** This number is used to request any order-related information.
- [3] Wiring diagram number** Assignment of SIMA² wiring diagram is specified by the configuration of the fieldbus interfaces and can be identified from the PO number on the name plate.
- [5] [6] Equipment (interfaces)** Name plate print indicates the equipment (configuration) of the interfaces.
Configuration of interfaces is also encoded by the SIMA² PO number [1] on the name plate.
- [7] Redundancy** The redundancy indicates whether the current system is a Single Master Station or a hot standby system redundancy setup and whether the system is arranged in one joint housing or in two separate housings.
- [8] [9] Serial number** Each SIMA² can be unambiguously identified by this number.

Table 1:

Serial number example: 0319WI40040		
0319WI40040	Week	KW 03
0319WI40040	Year of production	2019
0319WI40040	Location of production	Wenden / Germany
0319WI40040	Product series	SIMA
0319WI40040	Consecutive number	40040

- [10] Identification number** The identification number informs on the production week and comprises information on the version.

Table 2:

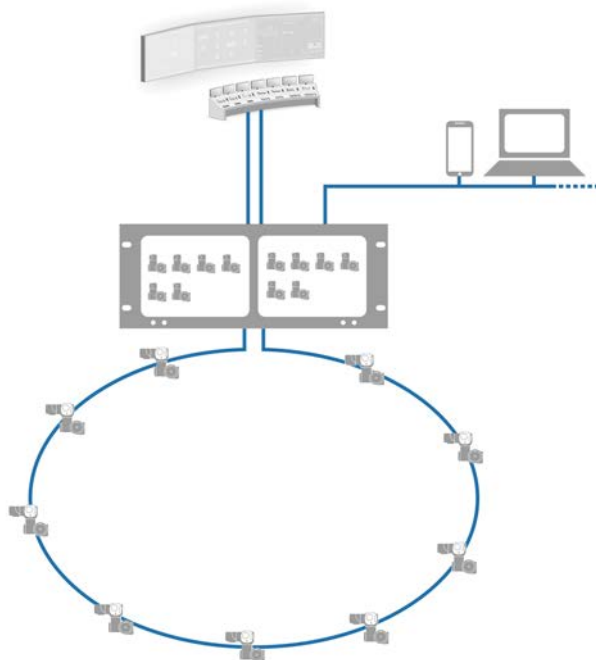
Identification number example: SIMA0119-01A/B		
SIMA0119-01A/B	Months of production	January
SIMA0119-01A/B	Year of delivery	2019
SIMA0119-01A/B	consecutive number in the current month for each SIMA ²	01
SIMA0119-01A/B	A	Single Master Station or SIMA A for hot standby system redundancy (in separate housings)
	B	For redundancy only: SIMA B (in separate housings)
	A/B	Hot standby system redundancy in a joint housing

2.3. Short description

Communication with other actuators

SIMA² controls electric actuators and offers the possibility to operate the overall fieldbus system. With the standardised connection to the host or easy external operation via web server or direct on-site operation, SIMA² is the ideal solution to connect actuators with the host fieldbus interfaces. SIMA² allows integration of AUMA actuators in different distributes control systems. The complete communication between host and actuators are controlled by SIMA².

Figure 6: SIMA² system overview (example)



Hardware

Hot standby System redundancy

Generally, actuators are controlled by SIMA² via a redundant fieldbus connection. To increase communication availability to the actuators, different redundancy options are available. A special configuration is the hot standby system redundancy. SIMA B operates as backup in hot standby operation to SIMA A. In case of SIMA A failure, SIMA B immediately takes over control of actuators.

Fieldbus interfaces

Into the field: Modbus RTU (single-channel or redundant), Modbus loop redundancy

- Supporting up to 247 actuators per network. Up to 4 networks are possible for each SIMA².

To the host: Modbus RTU and TCP/IP (respectively single-channel or redundant)

- Operation variants: By means of integrated touchscreen and remote operation via web browser (computer/laptop/smartphone/tablet)
- Access to all control and interface components as well as operation elements from the front panel.

Software

- Intuitive, graphic user interface.
- Complete operation of field devices via operation window.
- Monitoring host signals, control commands, status and warning signals
- Supports several languages

3. Transport, storage and packaging

3.1. Transport

For transport to place of installation, use sturdy packaging. Preferably use packaging of delivery.

3.2. Storage

NOTICE

Danger of corrosion due to inappropriate storage!

- Store in a well-ventilated, dry room.
- Protect against floor dampness by storage on a shelf or on a wooden pallet.
- Do not store below –20 °C since this could damage the display.
- Cover to protect against dust and dirt.
- Appropriate storage of all accessories supplied.

3.3. Packaging

Our products are protected by special packaging for transport when leaving the factory. The packaging consists of environmentally friendly materials which can easily be separated and recycled. We use the following packaging materials: wood, cardboard, paper, and PE foil. For the disposal of the packaging material, we recommend recycling and collection centres.

4. Assembly

4.1. Notes for installation

SIMA² is available in the following variants: Standard housing for 19" rack mounting, as bench device, for wall mounting or top-hat rail mounting (on request).

When used as bench device, the standard housing can be equipped with stands elevating the SIMA² housing.

Information When installing or setting up, the following must be heeded:

- Housing, components and mains connector require sufficient space.
- Housing and components require sufficient ventilation.
- Doors of standard housing require space for swinging open.
- Optional handles increase space requirements at the front.

4.2. Dimensions

The following drawings indicate the dimensions of the various SIMA² variants.

Information The illustrations show an example of SIMA² in version “hot standby system redundancy in one joint housing”.

Standard housing

Figure 7: SIMA² standard housing, top view with open doors

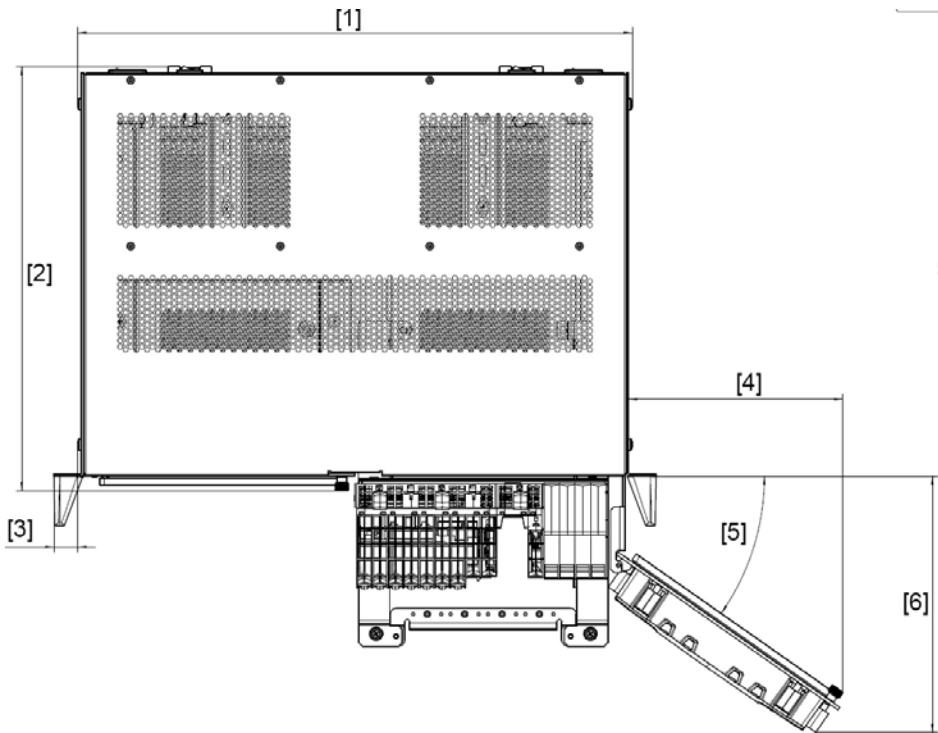
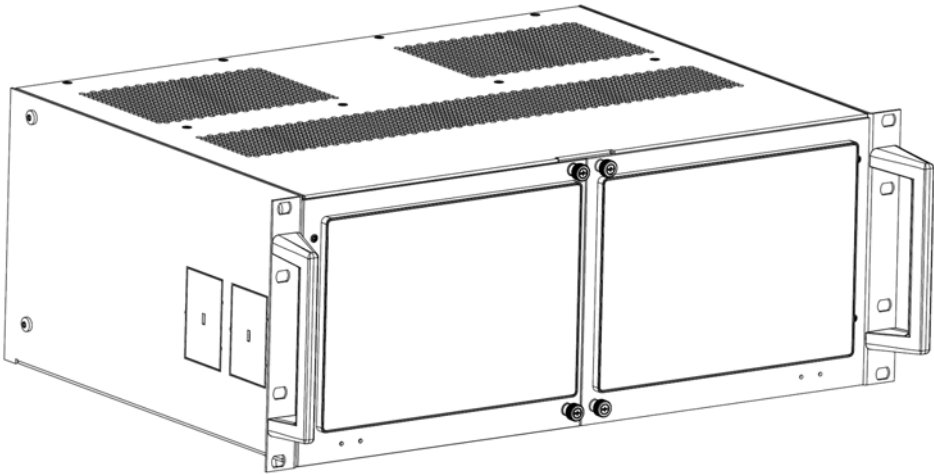


Table 3:

Legend	
[1]	444.8 mm
[2]	340 mm
[3]	19.1 mm
[4]	172 mm
[5]	35°
[6]	205 mm

Figure 8: SIMA² standard housing with handles (option)



Bench device

Figure 9: SIMA² bench device (standard housing with stands and handles), front view

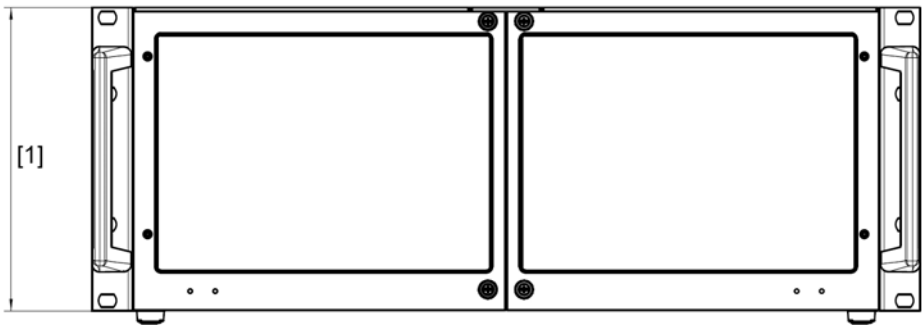


Table 4:

Legend

[1]	177 mm
-----	--------

Figure 10: SIMA² bench device (standard housing with stands), rear view

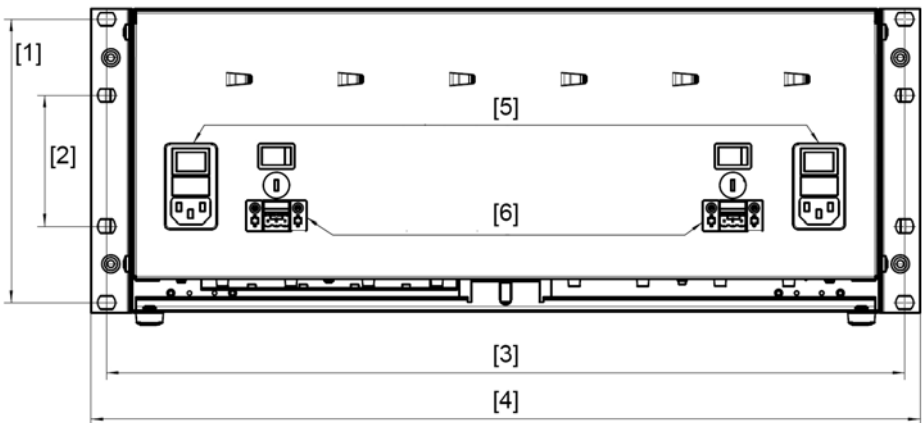


Table 5:

Legend	
[1]	165.1 mm
[2]	76.2 mm
[3]	465 mm
[4]	483 mm
[5]	Connection for 110 – 240 V AC +/-10 %, 50/60 Hz +/-10 %
[6]	Connection for 24 V DC (option)

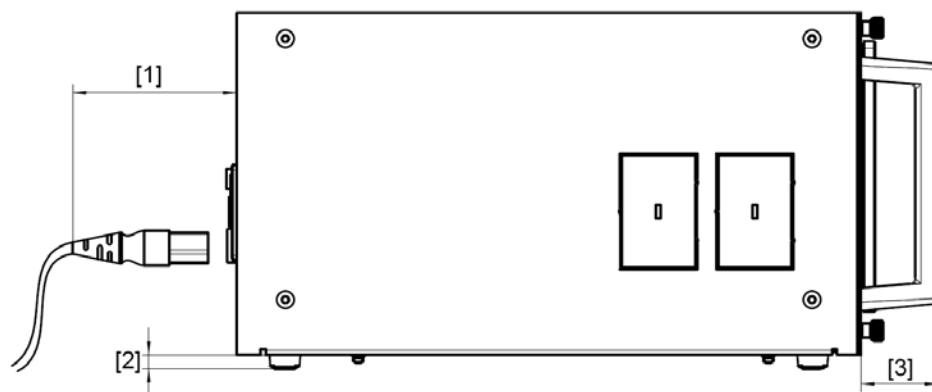
Figure 11: SIMA² bench device (standard housing with stands and handles), side view

Table 6:

Legend	
[1]	85 mm
[2]	7.2 mm
[3]	40 mm

Wall mounting

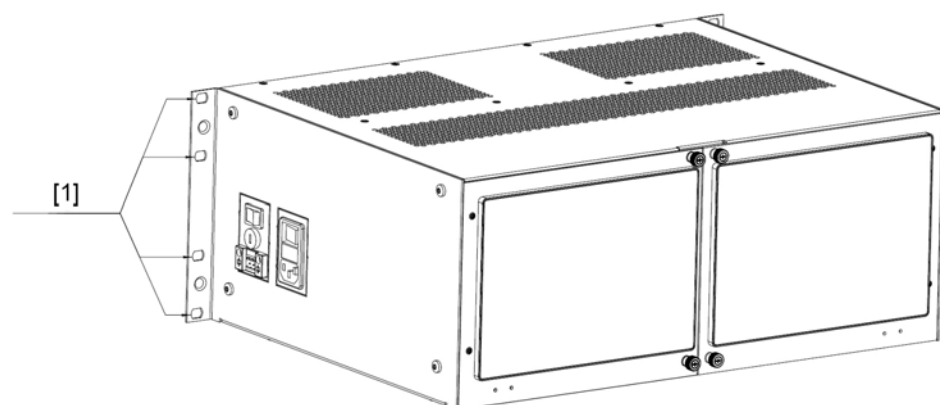
Figure 12: SIMA² wall mounting

Table 7:

Legend	
[1]	Mounting bores

Figure 13: SIMA² wall mounting side view

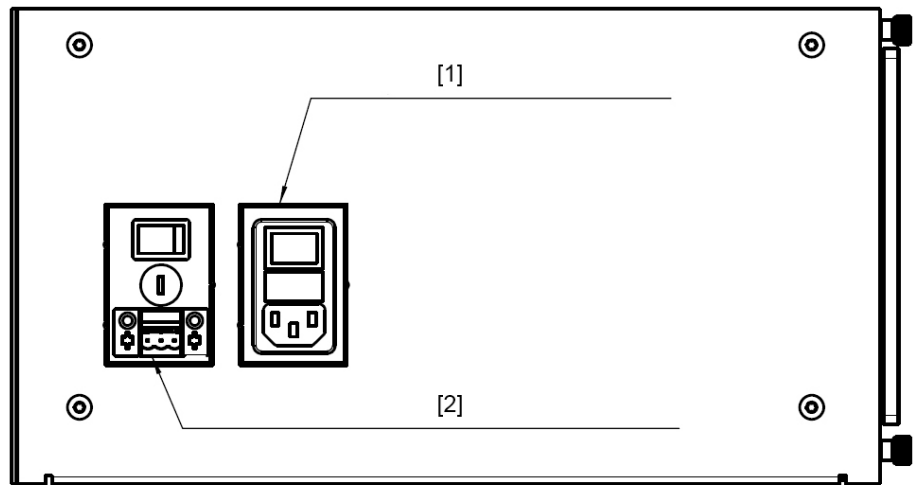


Table 8:

Legend

[1]	Connection for 110 – 240 V AC +/-10 %, 50/60 Hz +/-10 %
[2]	Connection for 24 V DC (option)

4.3. SIMA² system components

Figure 14: Overview system components (example)

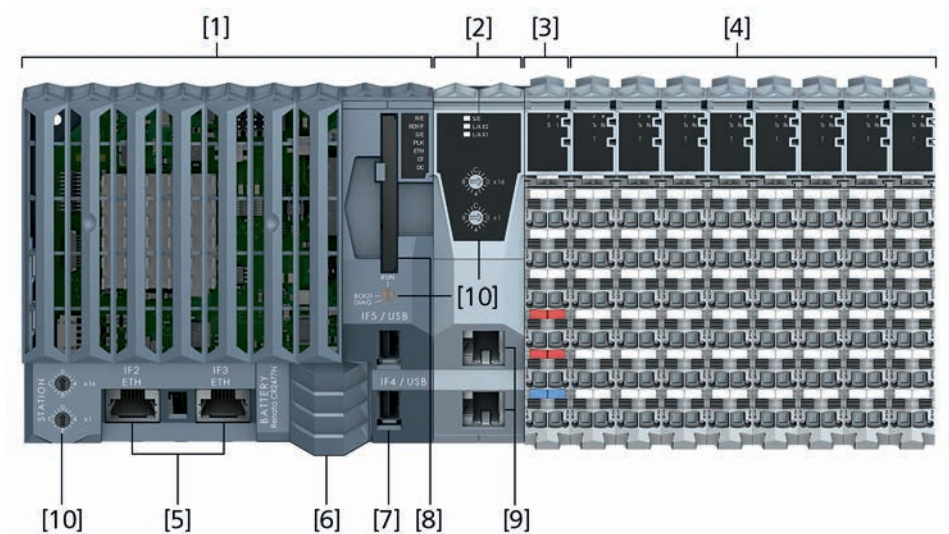


Table 9:

No.	Description
1	CPU
2	Additional IEEE 802.3 module (depending on the configuration)
3	Power supply
4	Further interfaces like communication interfaces or I/O interfaces
5	2x IEEE 802.3 ports
6	Battery housing
7	2 x USB ports (not appropriate for mouse and keyboard)
8	CF card with SIMA ² software
9	2x IEEE 802.3 ports
10	Operation mode switch Factory set, must not be modified!

5. Electrical connection and fieldbus connection

5.1. Electrical connection



Live parts are opened. Risk of direct contact!

Failure to observe this warning result in death, serious injury, or property damage.

- The electrical connection must be carried out exclusively by suitably qualified personnel.
- Prior to connection, observe basic information contained in this chapter.

The connecting cables must comply with the requirements in terms of electrical connection data and load (mechanical, thermal and chemical). It is recommended to use shields for all connecting cables with the exception of the main power supply and to use the provided terminals for the shield.

Wiring diagram/terminal plan

The pertaining wiring diagram/terminal plan for SIMA² is supplied in a separate cover and may also be requested when indicating the order number (refer to name plate).

Power supply

SIMA² Master Station can be provided for different supply voltages. Prior to connection, check whether the supply voltage matches the specified voltage.

For further details, please refer to technical data.

Mains connection

Ensure that the device's power switch is set to OFF prior to connecting the power supply.

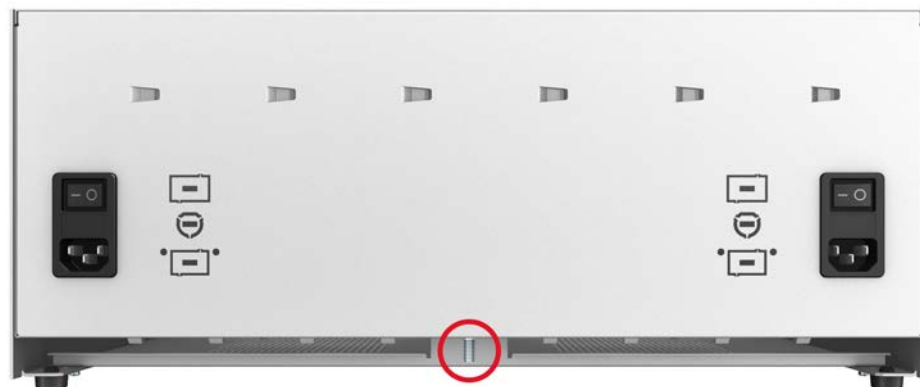
The voltage values for the device supplied are available on the name plate.

Depending on the mounting position, lateral mounting of the mains cable is possible. However, this modification may only be performed by the AUMA Service.

5.2. Earth connection

The SIMA² housing must be earthed using the earth wire available with the connecting cable or via the earth connection via a separate cable.

Figure 15: Earth connection



5.3. Shield connection

The fieldbus cable shield must be connected at both ends. The shield brackets within SIMA² or appropriate EMC cable glands at the control cabinet input can be used for connection.

5.4. Lightning protection

EIA-485 interfaces are galvanically isolated from the remaining electronic components of SIMA². Additional lightning protection measures are not available with the standard SIMA² version. If stronger lightning protection is required, further protective measures

must be introduced at the cable entry to the control cabinet housing the SIMA².
Overvoltage protection modules for fieldbus cables are available on request.

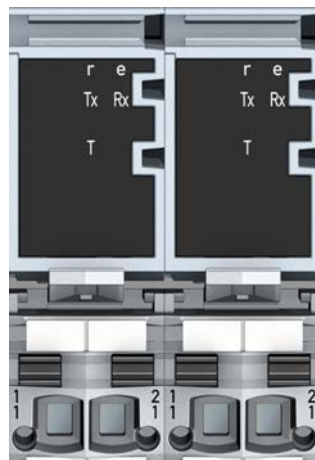
5.5. Interface and communication to the actuators via Modbus RTU

The interface between SIMA² and the actuators of the AUMA Group is the open and internationally standardised Modbus protocol. The physical Modbus RTU connection between SIMA² and the actuators complies with the EIA-485 standard.

Information Heed the installation instructions for EIA-485 based fieldbus systems and the correct implementation of the communication connections for all fieldbus devices.

All connections to the actuators are made via cables without connectors. The EIA-485 interface module utilised a proven system of spring clamp terminals. To this end, the stripped cable ends are directly inserted into the corresponding spring clamp terminal. Each interface module corresponds to one Modbus interface.

Figure 16: EIA-485 interface module (extract)



Information Verify addressing of fieldbus devices!

- Refrain from assigning twice the Modbus addresses within one network!
- Setting of baud rates and parity bits must be identical for all actuators.

EIA-485 termination resistor

The EIA-485 interface module is equipped with an integral fieldbus termination resistor. The fieldbus termination resistor can be activated and deactivated using a switch at the lower interface side. The letter **T** is illuminated at the LED display once the fieldbus termination resistor is activated. Fieldbus termination resistors are set in the factory and may not be modified.

Typical cycle time

The cycle for reading any required information depends on the baud rate, the data volume to be read and the number of connected actuators.

Typical cycle times for searching the actuator position and reading of the most important status information:

Table 10: Typical cycle times

Typical cycle times (approx.) [ms]			
Baud rate [kbit/s]	Number of actuators		
	20	40	60
115.2	300	600	900
57.6	400	800	1,200
38.4	500	1,000	1,500
19.2	700	1,400	2,000
9.6	1,100	2,200	3,300

Typical transmission time for an operation command to an actuator:

Table 11: Transmission time

Baud rate [kbit/s]	Transmission time for one actuator [ms]
115.2	15
57.6	20
38.4	25
19.2	35
9.6	55

The communication parameters to the actuators are set in the factory as follows:

Baud rate: 115.2 kbit/s

Format: 8 data bits, even parity with 1 stop bit

5.6. Interface to the distributed control system

Connection between the DCS and SIMA² can be made either via a Modbus RTU line, Modbus TCP/IP or a combination of both protocols. These connections can also be provided in redundant topology. In this case, the host can exchange data independently via both cables (by using channels A or B).

For redundant connection to the DCS, SIMA² is equipped with respectively two RJ45 slots or EIA-485 interface boards.

Figure 17: RJ45 ports of SIMA²



Information Check configuration! The DCS settings must be performed according to the available SIMA² configuration.

5.7. Fieldbus cable specifications

Fieldbus cables characteristics must be as follows. Stranded in pairs and shielded copper cables must be used.

Table 12:

Cable recommendation	
Only cables complying with the recommendations of EIA-485 specifications should be used for Modbus wiring.	
Impedance	135 to 165 Ohm, at a measurement frequency between 3 and 20 MHz
Cable capacity	< 30 pF per metre
Wire diameter	> 0.64 mm
Cross section	> 0.34 mm ² , corresponds to AWG 22
Loop resistance	< 110 Ohm per km
Screening	CU shielding braid or shielding braid and shielding foil

5.8. Redundancy change-over

If an active SIMA² in hot standby version fails, the passive SIMA² automatically takes over communication. The active SIMA² answers all requests of the DCS and controls fieldbus communication to the actuators. The passive SIMA² receives simultaneously all DCS requests without responding. It monitors the active SIMA² by means of a redundancy link (synchronisation cable). If the active SIMA² fails, the passive SIMA² completely takes over all functions and changes into active mode without change-over delay.

6. System configuration

6.1. Settings

SIMA² can be preconfigured based on the order information. This information must be subject to prior consent with the plant operator as well as the DCS supplier.

The information includes:

- Number and type of actuators (or other field devices)
- Baud rate and IP address/Modbus address of SIMA² for communication to host.
- Baud rate for communication to actuators
- Highest Station Address (HSA)
- Timeout values for communication to actuators and host
- Limits for repeated attempts for establishing communication to the actuators.

7. Indications

7.1. Indications on the housing

SIMA² housing is equipped with a Power LED and an Info LED for each SIMA² subsystem to visually signal different states. These LEDs are located respectively in the right and left lower edge of the SIMA² face plate.

Figure 18: SIMA² LEDs of face plate



[1] Power LED

[2] Info LED

If two SIMA² subsystems are located in one housing, the LEDs on the left side of the housing are active for the subsystem installed at the left. The LEDs on the right side of the housing are active for the subsystem installed at the right. This is the case of the hot standby system redundancy for example. When dealing with a single Master Station and thus only one SIMA² subsystem is installed within one housing, the LEDs on the left housing side apply for the screen located on the right.

The following LEDs may either be illuminated permanently or flash at a rate of either 200 ms or 500 ms (slow). The following table explains the states signalled by the LEDs.

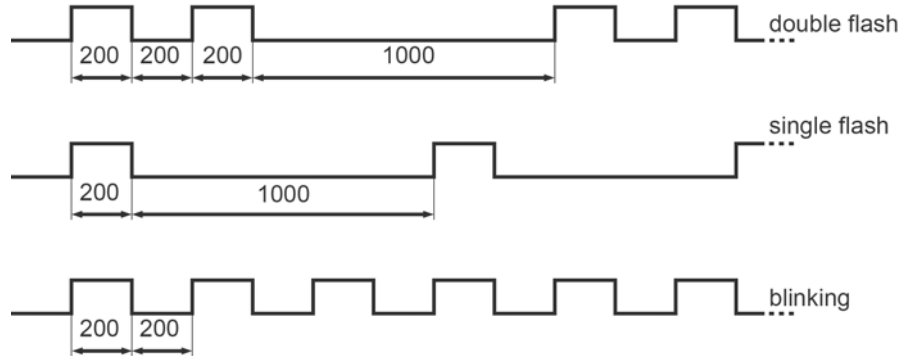
Table 13: Description of the LEDs on the face plate.

Power LED	Info LED	Description
Illuminated in green	Illuminated in green	Power supply is available and all actuators can be addressed.
Illuminated in green	Slowly blinking in green	Power supply is available and SIMA ² is in operation mode.
Illuminated in green	Blinking alternatively in green and red	SIMA ² is booting and in initialisation phase.
Illuminated in green	Illuminated in red	Live list fault, at least one actuator cannot be addressed.
Blinking in green	Blinking in red	• CPU is without power supply • CPU is defective • Software does not boot • Snapshot transfer executed via USB • Loop interrupted (for loop redundancy only)

7.2. Indications on the system components

Blinking patterns

Figure 19: Blinking patterns in [ms]



CPU

Figure 20: CPU LEDs

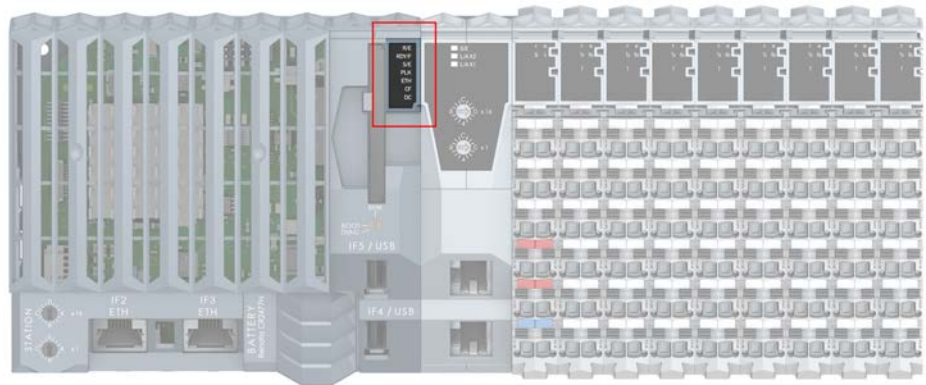


Table 14: Description of CPU LEDs

LED	Status	Description
R/E	Illuminated in green	Application is running
	Blinking in green	Boot mode at system start
	Green double flash	Boot mode during firmware update
	Illuminated in red	Fatal error (AUMA service required)
RDY/F	Illuminated in yellow	Boot mode
S/E	Illuminated in green	Interface is operated as Ethernet interface
	Blinking in green	Connection from IF3 to remote station was established and Ethernet activity present
PLK	Illuminated in green	Connection from IF3 to remote station was established
	Blinking in green	Connection from IF3 to remote station was established and Ethernet activity present
ETH	Illuminated in green	Connection from IF2 to remote station was established
	Blinking in green	Connection from IF2 to remote station was established and Ethernet activity present

LED	Status	Description
CF	Illuminated in green	CompactFlash card integrated and identified
	Illuminated in yellow	Read and write access for CompactFlash card
DC	Illuminated in green	CPU power supply unit OK
	Illuminated in red	Backup battery empty

IEEE 802.3 module

Figure 21: LEDs for IEEE 802.3 module

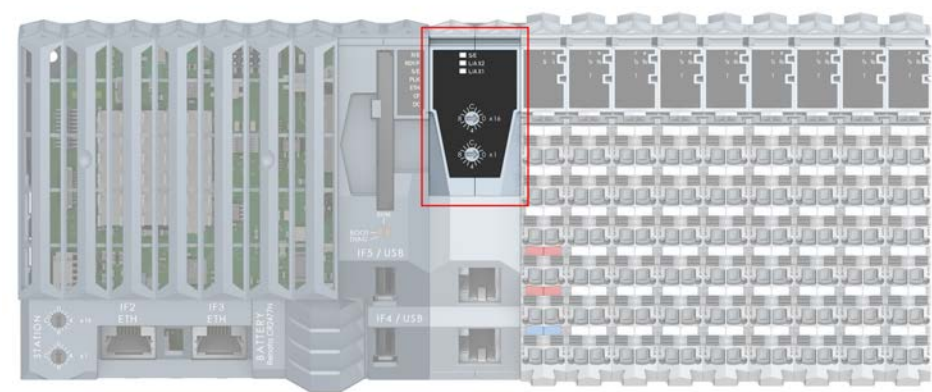


Table 15: Description of LEDs for IEEE 802.3 module

LED	Status	Description
S/E	Illuminated in green	Interface is operated as Ethernet interface
L/A X2 L/A X1	Illuminated in green	Connection to remote station is established
	Blinking in green	Connection to remote station is established and Ethernet activity present

I/O interface

Figure 22: LEDs for I/O interface

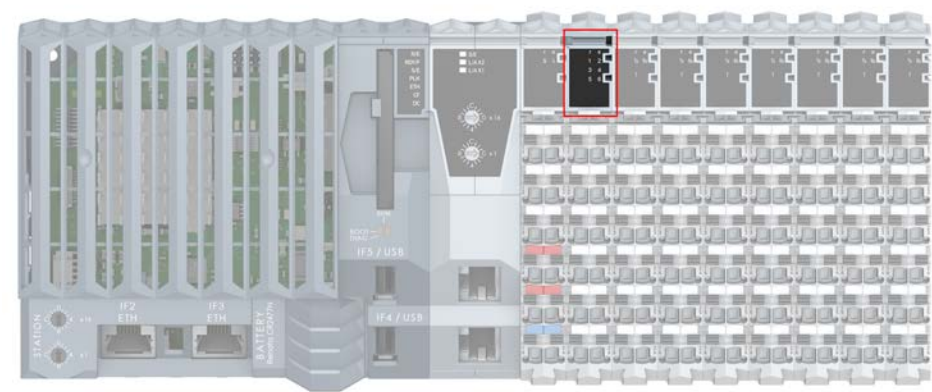


Table 16: Description of LEDs for I/O interface

LED	Status	Description
r	Off	Module not powered
	single flash in green	RESET mode If LED e is simultaneously illuminated in red: invalid firmware version
	Blinking in green	PREOPERATIONAL mode
	Illuminated in green	RUN mode
e	Off	- Module not powered - If module is powered: everything ok
	Illuminated in red	- Error - Status Reset If LED r and simultaneously single flash in green: invalid firmware version
1-6	Illuminated in green	Initial state of corresponding digital input

Communication interface

Figure 23: LEDs for communication interface

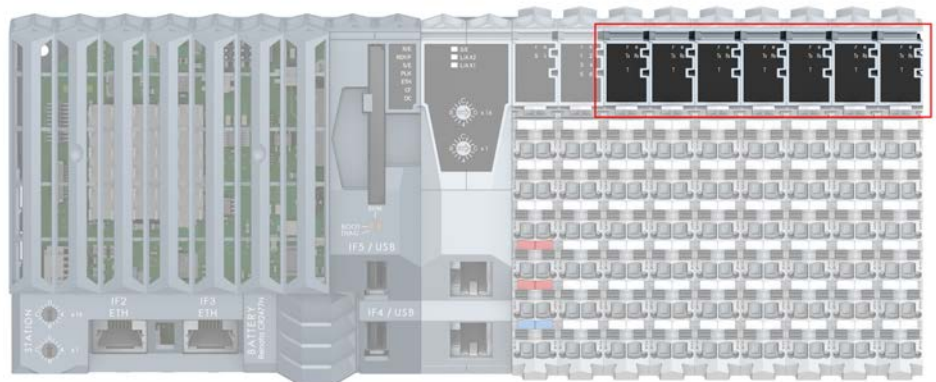


Table 17: Description of LEDs for communication interface

LED	Status	Description
r	Off	Module not powered
	single flash in green	RESET mode If LED e is simultaneously illuminated in red: invalid firmware version
	Green double flash	BOOT mode
	Blinking in green	PREOPERATIONAL mode
	Illuminated in green	RUN mode
e	Off	- Module not powered - If module is powered: everything ok
	single flash in red	I/O error
	Illuminated in red	- Error - Status Reset If LED r and simultaneously single flash in green: invalid firmware version

LED	Status	Description
Tx	Illuminated in yellow	The module sends data via the RS-485 interface
Rx	Illuminated in yellow	The module receives data via the RS-485 interface
T	Illuminated in yellow	The fieldbus termination resistor within the module is activated

8. Commissioning

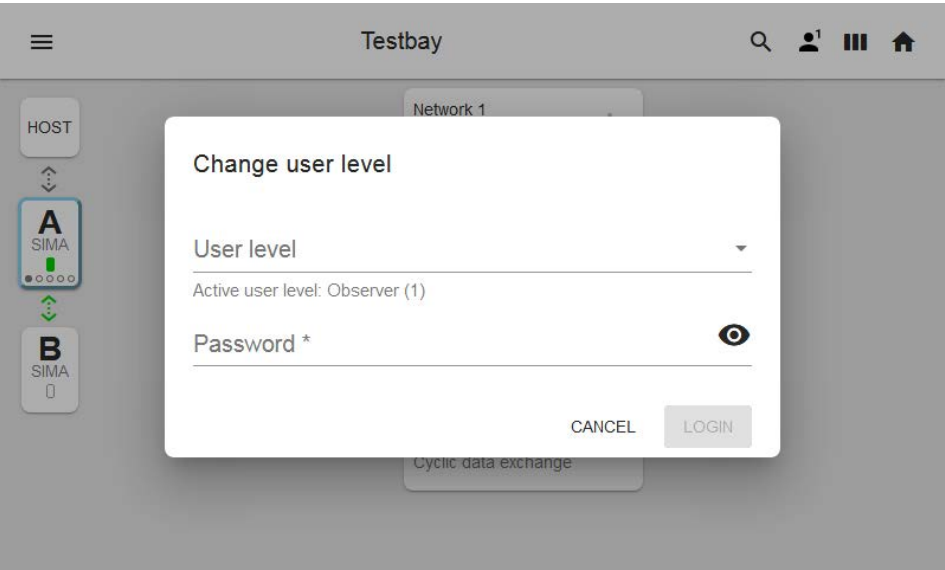
Display text Software tests of SIMA².

8.1. User level

Depending on the user level, different functions of SIMA² can be modified. For some functions, a minimum user level is provided. The minimum possible user level of SIMA² is Observer (1). Altogether, 6 user levels are available whereby level 5 and level 6 are reserved for AUMA Service as well for administration. The preset password for user levels 1 – 4 is: **Sima12345!**. Higher level users can change or reset lower level passwords.

The symbol  is used to select a higher level when entering the respective password:

Figure 24: Change user level



8.2. Actuator status

Table 18: Possible status for actuators

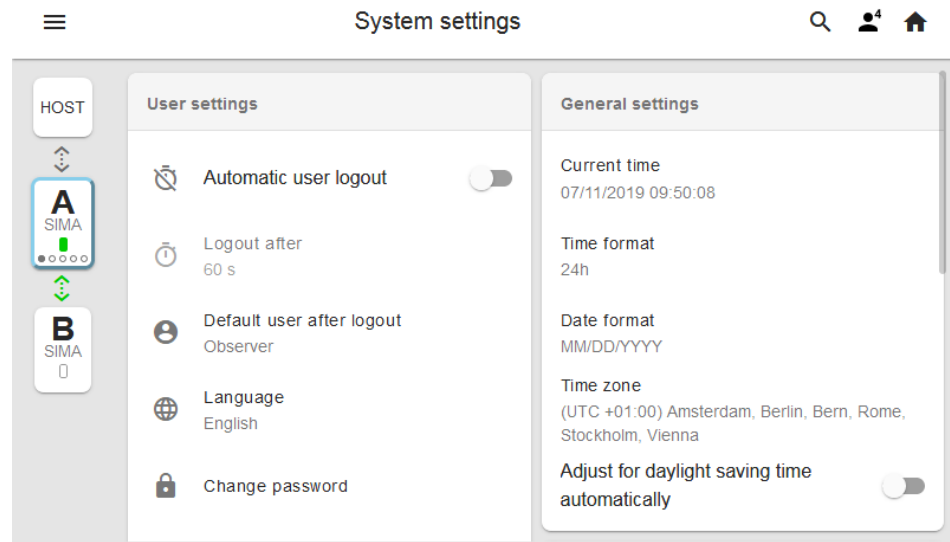
Indication	Status
	OK Actuator is failure-free and ready for operation
	WARNING Actuators indicates a warning.
	FAULT Actuators indicates a fault.
	NOT READY REMOTE The actuator can only be operated locally.

Indication	Status
	OUT OF SERVICE
	ACTUATOR CANNOT BE REACHED The actuator cannot be reached.
	ESD The actuator is in ESD state.
	MAINTENANCE REQUIRED Actuator maintenance is required.

8.3. Time synchronisation

Time synchronisation can be made manually in **System settings** or via NTP (Network Time Protocol) function. For this purpose, at least one NTP server is required. Up to 4 NTP servers can be used

Figure 25: System settings



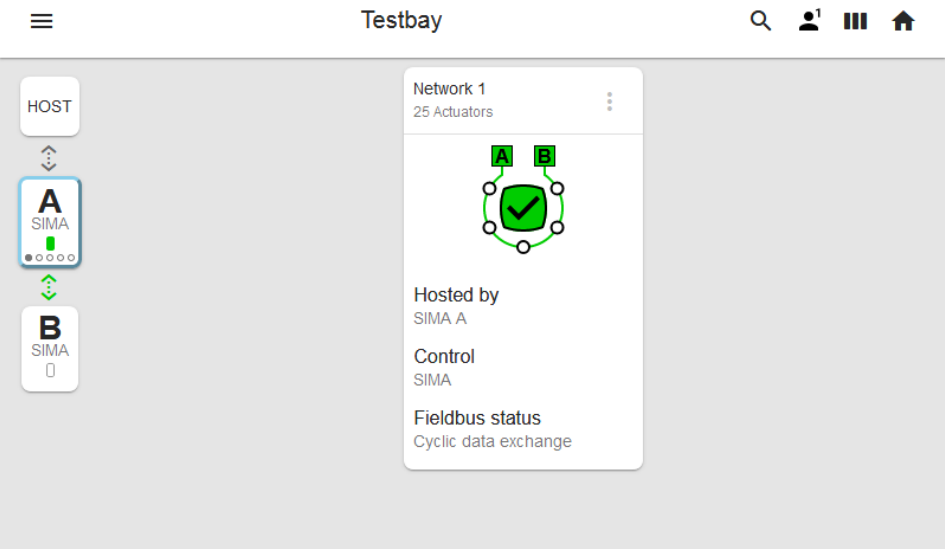
8.4. Configuration

The following illustrations show how to configure SIMA² networks via a browser. For this, user lever 4 (specialist) is at least required.

Information Responsive web design: The SIMA² user interface adapts to both the browser and the terminal used and may vary. The best results can be achieved using Google Chrome since SIMA² has been optimised for this browser.

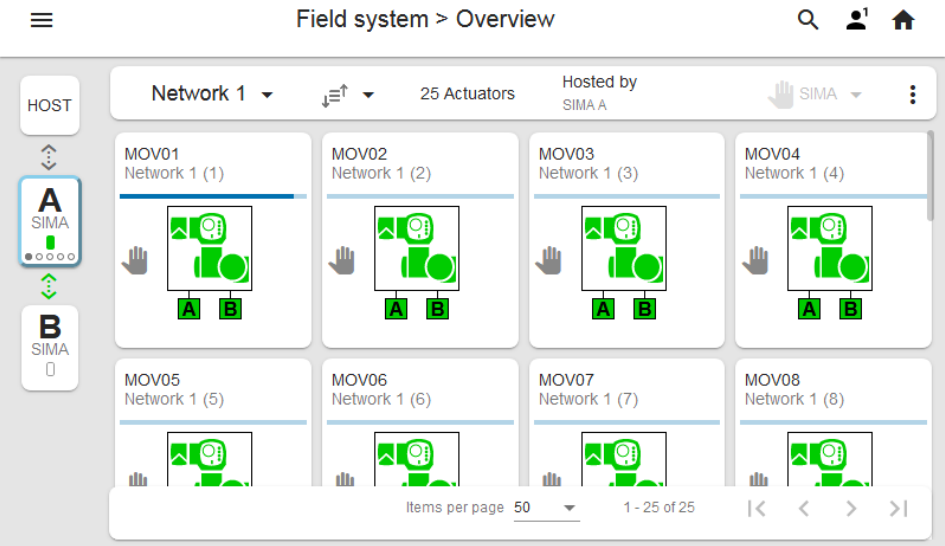
After having established connection to SIMA², the main screen is displayed:

Figure 26: SIMA² main screen



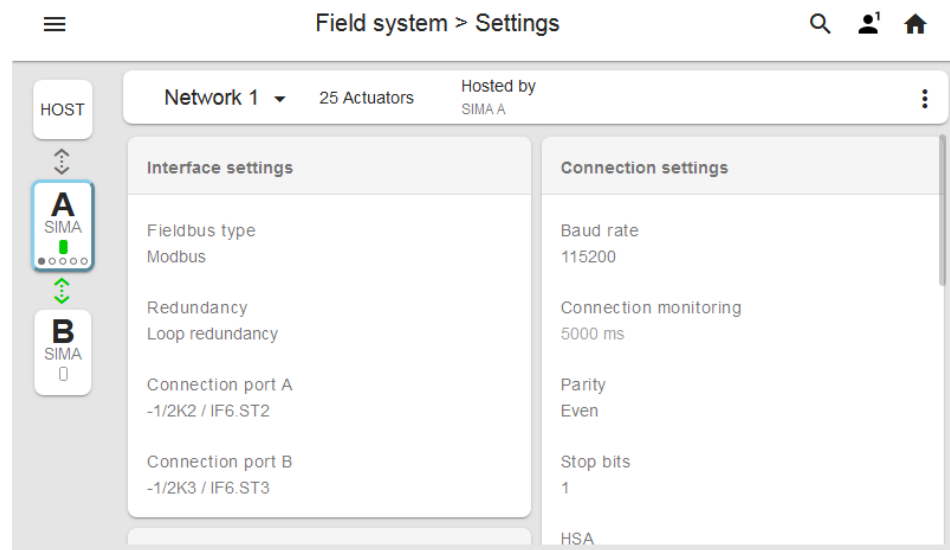
When clicking a SIMA² network, **Field system > Overview** is opened:

Figure 27: Field system overview



You may configure the network while navigating through the main menu  or by clicking the three-dot More Options icon in the right upper corner and selecting **Settings**.

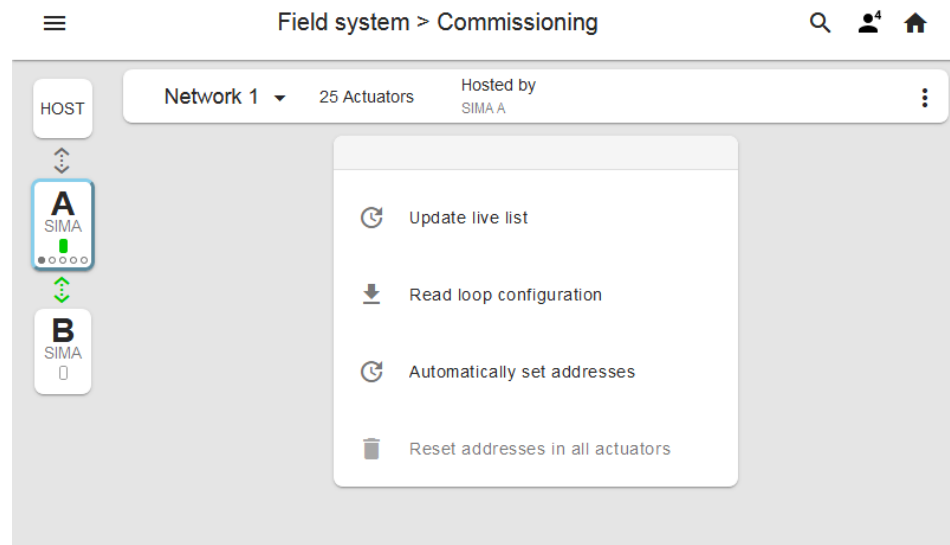
Figure 28: Field system settings



This menu is used to adapt the parameters of the selected SIMA² network. It is possible to configure, for example, the network topology, the redundancy settings or the HSA. The **Network “number”** button in the left top corner is used to switch between networks.

After configuration, selection via the three-dot More Options icon in the top right corner and the **Commissioning** entry or via the main menu is used to navigate to the desired menu item:

Figure 29: Field system commissioning



Information For hot standby system redundancy, commissioning must be made via SIMA A.

In this menu, there are two buttons for commissioning. In case of a line topology, first use the **Update live list** button. Once the live list has completely been updated and displays 100 %, the **Read loop configuration** button must be clicked next. The 100 % display indicates that the procedure has been successfully completed. The **Network “number”** button is used to perform this procedure for all networks. As soon as all networks have been correctly configured and all actuators found, the settings must be saved.

For this, use the disc symbol  in the top right corner.

Information For SIMA² in hot standby configuration, all settings must then be transferred in a next step to SIMA B. The transfer can only be initiated from SIMA B using the following menu path: Main menu  > SIMA > Services > Copy redundancy configuration

9. Servicing and maintenance



Damage caused by inappropriate maintenance or cleaning!

- Servicing, maintenance and cleaning interventions must be carried out exclusively by suitably qualified personnel having been authorised by the end user or the contractor of the plant. We recommend contacting our service for any interventions.
- Only perform servicing, maintenance and cleaning tasks when the device is switched off.
- Do not use chemical cleaning agents.
- Do not use wet cloth.

Service & Support

AUMA offers extensive service such as servicing and maintenance as well as customer product training. For the relevant contact addresses, please refer to Addresses in this document or to the Internet (www.auma.com).

9.1. Lithium battery

Monitoring the battery voltage

SIMA² monitors the battery voltage at cyclic intervals, thus detecting any potentially weak buffer capacity at an early stage.

Interval of replacement

SIMA² batteries must be replaced at the earliest once every four years. This time interval depends on the frequency of use. When used more often, the lifetime might be significantly higher.

Battery data

The lithium battery of SIMA² is located in a separate compartment and protected by a cover.

Table 19:

Technical data of battery	
Short description	Lithium battery, 3 V / 950 mAh, button cell type CR2477N
Storage temperature	−20 °C to +60 °C
Storage interval	Max. 3 years at +30 °C
Humidity	0 % to 95 % (non-condensing)

Battery replacement



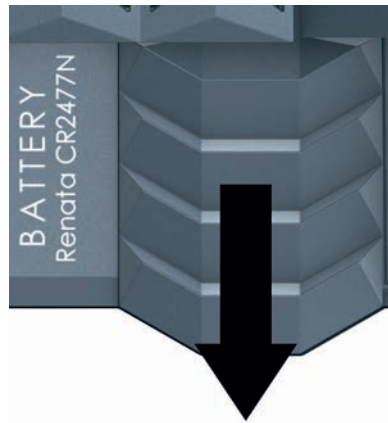
Risk of damage due to improper handling!

- Only use batteries of type CR2477N.
- Do not recharge or dismantle battery, do not dispose of in fire.

Procedure for battery replacement:

1. Perform electrostatic discharge.
2. Remove battery housing cover. For this, push cover in direction of the arrow.

Figure 30: Open battery compartment



3. Remove battery with insulated tweezers from holder.
4. Insert new battery.
5. Re-place cover.

10. Technical data

Information The following tables include standard and optional features. For detailed information on the customer-specific version, refer to the order-related data sheet. The technical data sheet can be downloaded from the Internet in both German and English at <http://www.auma.com> (please state the order number).

10.1. Technical data SIMA² Master Station

General information

SIMA² Master Station for controlling and supervising AUMA actuators and for easier integration into host systems.

Features and functions

Housing	Standard:	Housing for installation in 19" systems Dimensions: 4 HE / 84 TE Integral 7" multi-touchscreen as user interface
	Options:	Housing for installation on control cabinet mounting plate Dimensions (W x H x D): 483 x 177 x 340 mm Desktop housing with front handle and knuckle feet
Power supply Mains frequency	Standard:	1-phase AC current: 110 – 240 V AC +/-10 %, 50/60 Hz +/-10 %
	Option:	DC current: 24 V DC, approx. 1 A
Type of connection (customer connections)	Standard:	Connection via IEC device plug (type C14) at the housing rear
	Option:	Lateral arrangement of IEC device plug (type C14) ¹⁾
Power consumption	Approx. 20 W per SIMA ² subsystem ²⁾	
Supported field devices	The following AUMA actuators can be connected to SIMA²: - Multi-turn actuators (SA .2, SAR .2, SAV .2, SARV .2) or part-turn actuators (SQ .2, SQR .2) in combination with AC 01.2 or ACV 01.2 actuator controls - Multi-turn actuators (SAEx .2, SAREx .2, SAVEx .2, SARVEx .2) or part-turn actuators (SQEx .2, SQREx .2) in combination with ACExC 01.2 bzw. ACVExC 01.2 actuator controls - Multi-turn actuators of the iMatic (DiM(Ex), DiMR(Ex)) type range as well as part-turn actuators of the DPiM(Ex) type range - Multi-turn actuators of type range SEVEN - Valve actuators of type ranges SVC and SVM - Part-turn actuators of type ranges SGC and SGM Other field devices with Modbus RTU on request	
Communication to field devices	Communication to the actuators is established via RS-485 with Modbus RTU - Use of twisted, screened RS-485 copper cable in compliance with IEC 61158 - RS-485 ports accessible from the front side (hidden by hinged fold-out front doors) Modbus RTU: - Fieldbus termination can be activated at the RS-485 communication interfaces - Connection of the RS-485 communication cables via spring clamp terminals: Cross section of spring clamp terminals: - Single strand: 0.08 – 2.5 mm² - Fine stranded: 0.25 – 2.5 mm², with wire end sleeves up to 1.5 mm² - Modbus RTU communication parameters: - Supported baud rate: 0.3 – 115.2 kbit/s - Supported transmission formats: 8 data bits, 1 or 2 stop bits; parity: even, odd or none.	
	Options:	Each SIMA² supports up to four different, galvanically and logically separated fieldbus networks to the actuators with the following characteristics: - Single-channel or redundant line topology (available with Modbus RTU) - Cable length without repeater max. 1.2 km, with repeater approx. 10 km - Number of actuators: without repeater max. 32, with repeater max. 247 - Redundant loop topology: - Automatic and interference-free changing of the communication path in case of a fault within the RS-485 loop system. - Repeater function within the actuator controls, thus, no external repeaters are required for cable lengths of max. 1.2 km between actuators³⁾ - Cable length: Max. 296 km (without external repeaters) - Number of actuators: Max. 247

Features and functions		
Communication between SIMA ² and host	Standard:	Without integration into a superordinate automation system (stand-alone mode) SIMA ² is operated in stand-alone mode; the operation commands for the AUMA actuators are entered manually by the operator via the user interface.
	Options:	Modbus RTU in single-channel or redundant version • Communication to the host is established via RS-485 with Modbus RTU • Fieldbus termination can be activated at the RS-485 communication interfaces • Use of twisted, screened RS-485 copper cable in compliance with IEC 61158 • Connection of the RS-485 communication cables via spring clamp terminals accessible from the front side (hidden by hinged fold-out front doors) Cross section of spring clamp terminals: - Single strand: 0.08 – 2.5 mm² - Fine stranded: 0.25 – 2.5 mm², with wire end sleeves up to 1.5 mm² Configuration of the Modbus RTU communication parameters (baud rate, transmission format, slave address) is made via the HMI user interface. Supported baud rates: 0.3 – 115.2 kbit/s Supported transmission formats: 8 data bits, 1 or 2 stop bits; parity: Even, Odd or None. Supported Modbus function codes: • 01 Read Coil Status • 02 Read Input Status • 03 Read Holding Registers • 04 Read Input Registers • 05 Force Single Coils • 06 Preset Single Registers • 15 (0x0F) Force Multiple Coils • 16 (0x10) Preset Multiple Registers • 08 Diagnostics - 00 00 Loopback - 00 10 (0AHex) Clear Counters and Diagnostic Register - 00 11 (0BHex) Return Bus Message Count - 00 12 (0CHex) Return Bus Communication Error Count - 00 13 (0DHex) Return Bus Exception Error Count - 00 14 (0EHex) Return Slave Message Count - 00 15 (0FHex) Return Slave No Response Count - 00 16 (10Hex) Return Slave NAK Count - 00 17 (11Hex) Return Slave Busy Count - 00 18 (12Hex) Return Character Overrun Count Modbus TCP/IP in single-channel or redundant version • Communication via host is established via Ethernet, 10 Base-T or 100 Base-T (IEEE 802.3) using Modbus TCP/IP • Up to four simultaneous Modbus TCP/IP connections • 10/100 Mbit/s Configuration of the Modbus TCP/IP communication parameters (IP address and subnet mask, port as well as Unit ID) is made via the HMI user interface. Communication in Modbus data format via TCP/IP protocols For redundant version: Connection to identical or to different subnets possible (option). Supported Modbus function codes: • 01 Read Coil Status • 02 Read Input Status • 03 Read Holding Registers • 04 Read Input Registers • 05 Force Single Coils • 06 Preset Single Registers • 15 (0x0F) Force Multiple Coils • 16 (0x10) Preset Multiple Registers

Features and functions	
Hot standby system redundancy (option)	For redundant applications, SIMA² can be implemented as redundant configuration. Two separate SIMA² subsystems permanently monitor each other. In case of failure of one SIMA² subsystem, the redundant subsystem takes over control (only available in combination with Modbus RTU as communication protocol between SIMA² and the actuators). Versions: Hot standby system redundancy of SIMA² within a single housing • Compact design (requires mounting space for just one SIMA² housing) • Two complete SIMA² subsystems, each with a 7" multi-touchscreen are located within the housing • Redundant power supply, separately for each SIMA² subsystem • Supports up to two RS-485 Modbus RTU communication interfaces to the actuators, e.g. appropriate for two single-channel line topologies or one redundant line or loop topology. Hot standby system redundancy of SIMA² in two separate housings • Requires mounting space for two SIMA² housings • Each of the two housings is equipped with a complete SIMA² subsystem including 7" multi-touchscreen and power supply • Continuous mutual monitoring of the two SIMA² subsystems is established via an Ethernet synchronisation cable • Supports up to eight RS-485 Modbus RTU communication interfaces to the actuators which can be used in up to four different communication networks, e.g. suitable for up to four single-channel line topologies or up to four redundant line or ring.
Dual operation (option)	For applications with space constraints inside the control cabinet, two galvanically and logically isolated SIMA² subsystems can be located within a joint housing. Version: • Compact design (requires mounting space for just one SIMA² housing) • Two complete SIMA² subsystems, each with a 7" multi-touchscreen are located within the housing • Redundant power supply, separately for each SIMA² subsystem • Supports respectively up to two RS-485 Modbus RTU communication interfaces to the actuators, e.g. appropriate for two single-channel line topologies or one redundant line or loop topology.
System interface	The number of available RS-485 and Ethernet interfaces depends on the number of fieldbus networks, the type of communication to the host and the selected redundancy model. At least one Ethernet port (RJ45) is available for diagnostics or for integrating the optional OPC UA server within an automation network, two further USB ports are used for transmitting configuration and diagnostic data.
Operating and monitoring (HMI user interface)	Display and operation functions of the HMI user interface: • Control and status indication of the connected AUMA actuators • Status indication of the communication to the actuators and to the host • Operation, configuration and diagnostics of SIMA² and the respective interfaces Standard: User interface languages: English and German (can be changed during operation) SIMA² offers various access facilities to the HMI. Standard: Operation via the integral 7" multi touchscreen Features: • Resolution: WVGA, 800 x 480 Pixel • Colours: 16.7 million • Brightness: usually 500 cd / m² • Contrast: typically 600:1 • Observation angle: usually 60 – 70° Option: Access to the web based HMI user interface using remote stations via Ethernet (network connection: RJ45 port), enabling the connection of the following components: • External work stations, PCs, laptops via LAN connection • External tablets, smartphones via WLAN connection The responsive web design of the HMI user interface is optimised for use in combination with Google Chrome and Mozilla Firefox browser.
Cooling	Passive cooling without fan (maintenance-free)

- 1) Required for assembly on control cabinet mounting plate
- 2) For redundant version (hot standby system redundancy) approx. 2 x 20 W
- 3) In case of power failure of an actuator, the two RS-485 segments connected to the actuator controls will be automatically linked to close the redundant loop. For this reason, the total cable length of two neighbouring RS-485 segments should not exceed 1,200 m.

Functions of the SIMA ² software	
Web based user interface for operating and monitoring SIMA ²	Automatic display of the most important status information of SIMA ² , as well as the connected actuators immediately after switching on (once commissioning and definition of the system configuration is complete).
	Password-protected access to settings and entry of manual operation commands for the actuators.
	Control of connected actuators.
	Visualisation of feedback from connected actuators.
Actuator identification via the user interface	Optional specification of the individual designation for each actuator.
Adapting the communication characteristics via the HMI user interface	Setting the communication between SIMA ² and actuators (e.g. redundancy, baud rate, parity, number of actuators, highest field device address).
	Setting the communication between SIMA ² and DCS (baud rate, parity, number of stop bits, address, monitoring time, IP address, subnet mask, port, unit ID).
Communication monitoring	Monitoring and visualising the communication status with the host
	For redundant communication to the host: Two communication channels with equal access rights.
Redundancy functions	Support, monitoring and management of redundant communication to the host (option), the hot standby system redundancy (option) and the redundant communication to the actuators (option). Upon occurrence of a fault, the function is immediately adopted by the redundant communication channel or the redundant system without any interference.
Gateway function	Administration of different communication protocols of the host and the actuators, e.g.: Modbus TCP/IP <> Modbus RTU or Modbus TCP/IP or Modbus RTU)
	Implementation of various solutions for communication to the host and communication to the actuators (e.g. single-channel communication for host <> redundant ring topology or redundant line topology to the actuators)

Data interface to host	
Output data from the DCS to the SIMA ²	Output data (operation commands) to the actuators connected to SIMA ²
Input data from the SIMA ² to the DCS	Input data (feedback signals) from the connected actuators as well as additional status information of SIMA ² : • Communication status to the actuators • Communication status to the host • Number of currently available actuators • Deviation from the planned number of actuators • In case of a fault of the Modbus ring topology: Fault location within the ring

Service conditions	
Enclosure protection according to EN 60529	IP20 (higher enclosure protection on request)
Ambient temperature	–20 °C to +50 °C (higher ambient temperatures on request)
Humidity	5 % to 90 % (non-condensing)

Options and accessories	
RS-485 overvoltage protection	Protection of RS-485 communication interface against overvoltages
Digital inputs	Nominal voltage 24 V DC, type 1 input characteristics (according to EN 61131-2), current consumption approx. 3.75 mA. Suitable for e.g. Discrete control signals for activating the ESD function, for control cabinet monitoring functions or enabling the HMI user interface, etc.)
Digital outputs	2 change-over contacts, 240 V AC/5 A, 24 V DC/5 A Suitable for e.g. configurable alarm output
Front handle and knuckle feet	Appropriate for 19" pull out systems and bench housing
Project-specific control cabinet	Customised basic Rittal IT, 19" rack (800 x 800 x 2,200 mm)
Project-specific software programming	On request
Project design	On request

Further information	
Weight	Single-channel version: approx. 9 kg Redundant version in one joint housing: approx. 11 kg Redundant version in two housings (weight per housing) approx. 9 kg Dual version in one joint housing: approx. 10.5 kg
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU)

11. Certificates

Information Certificates are valid as from the indicated date of issue. Subject to changes without notice. The latest versions are attached to the device upon delivery and also available for download at <http://www.auma.com>.

11.1. EU Declaration of Conformity

AUMA Riester GmbH & Co. KG
Aumastr. 1
79379 Muellheim, Germany
www.auma.com

Tel +49 7631 809-0
Fax +49 7631 809-1250
info@uma.com



EU Declaration of Conformity

For the following device types:

SIMA² Master Station

The manufacturer AUMA Riester GmbH & Co. KG declares herewith in sole responsibility, that the before mentioned devices meet the essential requirements of the following directives. The following harmonised directives were applied:

EMC Directive 2014/30/EU

EN 61000-6-4:2007 / A1:2011
EN 61000-6-2:2005 / AC:2005
EN 61131-2:2007
EN 61204-3:2011

Low Voltage Directive 2014/35/EU

EN 61010-1:2010

RoHS Directive 2011/65/EU

EN 50581:2012

Muellheim, 2020-02-01



Dr. J. Hoffmann, CEO

This declaration is a translation of the German original and valid with electronic signature.
This declaration does not contain any guarantees and shall become void in the event of unauthorised modification of the devices.

Y009.090/003/en/1.20

Index**A**

Actuator status	27
Assembly	14
AUMA redundancy	6
Auto configuration	6

B

Baud rate	19
-----------	----

C

Certificates	39
Cleaning	32
Commissioning	4, 27, 28
Communication via Modbus RTU	19
Configuration	21, 28
Configuration (fieldbus interfaces)	10
Corrosion protection	13
Cross section (fieldbus cable)	20
Cycle time	9, 19

D

Data interface to host	37
DCS	6
Dimensions	14
Directives	4

E

Earth connection	18
EIA-485	19, 19
Enclosure protection	37
Equipment (fieldbus interfaces)	10
EU Declaration of Conformity	39

F

Features and functions	36
Fieldbus cable specifications	20
Fieldbus interface (equipment)	10

H

Hardware	11
Host	6
Hot standby	6

I

Identification	6
Identification number	10
Indications	22
Installation	14
Interface to the distributed control system	20

L

Lightning protection	18
Live list	7
Loop redundancy	8

M

Mains connection	18
Maintenance	4, 32, 32
Master Station	8
Modbus RTU interface	19

N

Name plate	9
Network	8

O

Operation	4
Order number	10, 10

P

Packaging	13
Password	27
PLC	6
Power supply	18
Protective measures	4

Q

Qualification of staff	4
------------------------	---

R

Range of application	4
Redundancy	10
Redundancy change-over	20
RS-485	19, 19

S

Safety instructions	4
Safety instructions/warnings	4
Serial number	10
Service	32
Shield connection	18
SIMA A	8
SIMA A / SIMA B	8
SIMA B	8
SIMA ² Master Station	8
SIMA ² subsystem	8
Single Master Station	9
Software	12
Software functions	37
Stand-alone mode	9
Standards	4
Storage	13
Subsystem	8
Support	32
System components	17
System configuration	21
System redundancy	6

T

Technical data	34
Terminal plan	18
Termination resistance	19
Terminology	6
Terms	6
Time synchronisation	28
Transport	13

U

User level	27
------------	----

V

Version	10
---------	----

W

Warnings and notes	5
Wire diameter (fieldbus cable)	20
Wiring diagram	10, 18

Europe

AUMA Riester GmbH & Co. KG

Location Muellheim
DE 79373 Muellheim
 Tel +49 7631 809 - 0
 info@auma.com
 www.auma.com

Location Ostfildern-Nellingen
DE 73747 Ostfildern
 Tel +49 711 34803 - 0
 riester@auma.com

Service-Center Bayern
DE 85386 Echting
 Tel +49 81 65 9017- 0
 Service.SCB@auma.com

Service-Center Köln
DE 50858 Köln
 Tel +49 2234 2037 - 900
 Service@sck.auma.com

Service Center Magdeburg
DE 39167 Niederndodeleben
 Tel +49 39204 759 - 0
 Service@scm.auma.com

AUMA-Armaturen- und Antriebstechnik Ges.m.b.H.
AT 2512 Tribuswinkel
 Tel +43 2252 82540
 office@auma.at
 www.auma.at

AUMA BENELUX B.V.
BE 8800 Roeselare
 Tel +32 51 24 24 80
 office@auma.be
 www.auma.nl

ProStream Group Ltd.
BG 1632 Sofia
 Tel +359 2 9179-337
 valtchev@prostream.bg
 www.prostream.bg

OOO "Dunkan-Privod"
BY 220004 Minsk
 Tel +375 29 6945574
 belarus@auma.ru
 www.zatvor.by

AUMA (Schweiz) AG
CH 8965 Berikon
 Tel +41 566 400945
 RettichP.ch@auma.com

AUMA Servopohony spol. s.r.o.
CZ 250 01 Brandýs n.L.-St.Boleslav
 Tel +420 326 396 993
 auma-s@auma.cz
 www.auma.cz

IBEROPLAN S.A.
ES 28027 Madrid
 Tel +34 91 3717130
 iberoplan@iberoplan.com

AUMA Finland Oy
FI 02230 Espoo
 Tel +358 9 5840 22
 auma@auma.fi
 www.auma.fi

AUMA France S.A.R.L.
FR 95157 Taverny Cedex
 Tel +33 1 39327272
 info@auma.fr
 www.auma.fr

AUMA ACTUATORS Ltd.
GB Clevedon, North Somerset BS21 6TH
 Tel +44 1275 871141
 mail@auma.co.uk
 www.auma.co.uk

D. G. Bellos & Co. O.E.
GR 13673 Acharnai, Athens
 Tel +30 210 2409485
 info@dgbellos.gr

APIS CENTAR d. o. o.
HR 10437 Bestovje
 Tel +385 1 6531 485
 auma@apis-centar.com
 www.apis-centar.com

Fabo Kereskedelmi és Szolgáltató Kft.
HU 8800 Nagykanizsa
 Tel +36 93/324-666
 auma@fabo.hu
 www.fabo.hu

Falkinn HF
IS 108 Reykjavik
 Tel +00354 540 7000
 os@falkinn.is
 www.falkinn.is

AUMA ITALIANA S.r.l. a socio unico
IT 20023 Cerro Maggiore (MI)
 Tel +39 0331 51351
 info@auma.it
 www.auma.it

NB Engineering Services
MT ZBR 08 Zabbar
 Tel + 356 2169 2647
 nikibel@onvol.net

AUMA BENELUX B.V.
NL 2314 XT Leiden
 Tel +31 71 581 40 40
 office@auma.nl
 www.auma.nl

AUMA Scandinavia
NO 21377 Malmö
 Tel +46 40 311550
 info.scandinavia@auma.com
 www.aumascandinavia.com

AUMA Polska Sp. z o.o.
PL 41-219 Sosnowiec
 Tel +48 32 783 52 00
 biuro@auma.com.pl
 www.auma.com.pl

AUMA-LUSA Representative Office, Lda.
PT 2730-033 Barcarena
 Tel +351 211 307 100
 geral@aumalusa.pt

SAUTECH
RO 011783 Bucuresti
 Tel +40 372 303982
 office@sautech.ro

OOO PRIWODY AUMA
RU 141402 Khimki, Moscow region
 Tel +7 495 221 64 28
 aumarussia@auma.ru
 www.auma.ru

OOO PRIWODY AUMA
RU 125362 Moscow
 Tel +7 495 787 78 21
 aumarussia@auma.ru
 www.auma.ru

AUMA Scandinavia
SE 21377 Malmö
 Tel +46 40 311550
 info.scandinavia@auma.com
 www.aumascandinavia.com

ELSO-b, s.r.o.
SK 94901 Nitra
 Tel +421 905/336-926
 office@elsob.sk
 www.elsob.sk

Auma Endüstri Kontrol Sistemleri Limited
 Sirketi
TR 06810 Ankara
 Tel +90 312 217 32 88
 info@auma.com.tr

AUMA Technology Automations Ltd
UA 02099 Kiev
 Tel +38 044 586-53-03
 auma-tech@amatech.com.ua

Africa

Solution Technique Contrôle Commande
DZ Bir Mourad Rais, Algiers
 Tel +213 21 56 42 09/18
 stcco@wissal.dz

A.T.E.C.
EG Cairo
 Tel +20 2 23599680 - 23590861
 contactus@atec-eg.com

SAMIREG
MA 203000 Casablanca
 Tel +212 5 22 40 09 65
 samireg@menara.ma

MANZ INCORPORATED LTD.
NG Port Harcourt
 Tel +234-84-462741
 mail@manzincorporated.com
 www.manzincorporated.com

AUMA South Africa (Pty) Ltd.
ZA 1560 Springs
 Tel +27 11 3632880
 aumasa@mweb.co.za

America

AUMA Argentina Rep.Office
AR Buenos Aires
 Tel +54 11 4737 9026
 contacto@aumaargentina.com.ar

AUMA Automação do Brazil Ltda.
BR Sao Paulo
 Tel +55 11 4612-3477
 contato@auma-br.com

TROY-ONTOR Inc.
CA L4N 8X1 Barrie, Ontario
 Tel +1 705 721-8246
 troy-ontor@troy-ontor.ca

AUMA Chile Representative Office
CL 7870163 Santiago
 Tel +56 2 2821 4108
 claudio.bizama@auma.com

B & C Biosciences Ltda.
CO Bogotá D.C.
 Tel +57 1 349 0475
 proyectos@bycenlinea.com
 www.bycenlinea.com

AUMA Región Andina & Centroamérica
EC Quito
 Tel +593 2 245 4614
 auma@auma-ac.com
 www.auma.com

Corsusa International S.A.C.
PE Miraflores - Lima
 Tel +511444-1200 / 0044 / 2321
 corsusa@corsusa.com
 www.corsusa.com

Control Technologies Limited
TT Marabella, Trinidad, W.I.
 Tel + 1 868 658 1744/5011
 www.ctltech.com

AUMA ACTUATORS INC.
US PA 15317 Canonsburg
 Tel +1 724-743-2862
 mailbox@auma-usa.com
 www.auma-usa.com

Suplibarca
VE Maracaibo, Estado, Zulia
 Tel +58 261 7 555 667
 suplibarca@intercable.net.ve

Asia

AUMA Actuators UAE Support Office
AE 287 Abu Dhabi
 Tel +971 26338688
 Nagaraj.Shetty@auma.com

AUMA Actuators Middle East
BH 152 68 Salmabad
 Tel +97 3 17896585
 salesme@auma.com

Mikuni (B) Sdn. Bhd.
BN KA1189 Kuala Belait
 Tel + 673 3331269 / 3331272
 mikuni@brunet.bn

AUMA Actuators (China) Co., Ltd.
CN 215499 Taicang
 Tel +86 512 3302 6900
 mailbox@auma-china.com
 www.auma-china.com

PERFECT CONTROLS Ltd.
HK Tsuen Wan, Kowloon
 Tel +852 2493 7726
 joeip@perfectcontrols.com.hk

PT. Carakamas Inti Alam
ID 11460 Jakarta
 Tel +62 215607952-55
 auma-jkt@indo.net.id

AUMA INDIA PRIVATE LIMITED.
IN 560 058 Bangalore
 Tel +91 80 2839 4656
 info@auma.co.in
 www.auma.co.in

ITG - Iranians Torque Generator
IR 13998-34411 Teheran
 +982144545654
 info@itg-co.ir

Trans-Jordan Electro Mechanical Supplies
JO 11133 Amman
 Tel +962 - 6 - 5332020
 Info@transjordan.net

AUMA JAPAN Co., Ltd.
JP 211-0016 Kawasaki-shi, Kanagawa
 Tel +81-(0)44-863-8371
 mailbox@auma.co.jp
 www.auma.co.jp

DW Controls Co., Ltd.
KR 153-702 Gasan-dong, GeumChun-Gu,, Seoul
 Tel +82 2 2624 3400
 import@actuatorbank.com
 www.actuatorbank.com

Al-Arfaj Engineering Co WLL
KW 22004 Salmiyah
 Tel +965-24817448
 info@arfajengg.com
 www.arfajengg.com

TOO "Armaturny Center"
KZ 060005 Atyrau
 Tel +7 7122 454 602
 armacentre@bk.ru

Network Engineering
LB 4501 7401 JBEIL, Beirut
 Tel +961 9 944080
 nabil.ibrahim@networkenglb.com
 www.networkenglb.com

AUMA Malaysia Office
MY 70300 Seremban, Negeri Sembilan
 Tel +606 633 1988
 sales@auma.com.my

Mustafa Sultan Science & Industry Co LLC
OM Ruwi
 Tel +968 24 636036
 r-negi@mustafasultan.com

FLOWTORK TECHNOLOGIES CORPORATION
PH 1550 Mandaluyong City
 Tel +63 2 532 4058
 flowtork@pltdsl.net

M & C Group of Companies
PK 54000 Cavalry Ground, Lahore Cantt
 Tel +92 42 3665 0542, +92 42 3668 0118
 sales@mcass.com.pk
 www.mcass.com.pk

Petrogulf W.L.L.
QA Doha
 Tel +974 44350151
 pgulf@qatar.net.qa

AUMA Saudi Arabia Support Office
SA 31952 Al Khobar
 Tel + 966 5 5359 6025
 Vinod.Fernandes@auma.com

AUMA ACTUATORS (Singapore) Pte Ltd.
SG 569551 Singapore
 Tel +65 6 4818750
 sales@auma.com.sg
 www.auma.com.sg

NETWORK ENGINEERING
SY Homs
 +963 31 231 571
 eyad3@scs-net.org

Sunny Valves and Intertrade Corp. Ltd.
TH 10120 Yannawa, Bangkok
 Tel +66 2 2400656
 mainbox@sunnyvalves.co.th
 www.sunnyvalves.co.th

Top Advance Enterprises Ltd.
TW Jhonghe City, Taipei Hsien (235)
 Tel +886 2 2225 1718
 support@auma-taiwan.com.tw
 www.auma-taiwan.com.tw

AUMA Vietnam Hanoi RO
VN Hanoi
 +84 4 37822115
 chiennguyen@auma.com.vn

Australia

BARRON GJM Pty. Ltd.
AU NSW 1570 Artarmon
 Tel +61 2 8437 4300
 info@barron.com.au
 www.barron.com.au

AUMA Riester GmbH & Co. KG

P.O. Box 1362

DE 79373 Muellheim

Tel +49 7631 809 - 0

Fax +49 7631 809 - 1250

info@auma.com

www.auma.com