


Technical data SIMA Master Station	SIMA 2SM20
SIMA Master Station for controlling AUMA actuators via Profibus DP or Modbus RTU	
Features and functions	
Power supply, mains frequency, and current consumption	Standard: AC current 90 – 260 V AC, 48 – 63 Hz, approx. 0.3 – 1.0 A Option: DC current 24 V DC –25 %/+50 %, approx. 3.5 A Power consumption: maximum 85 W
Electrical connection	Standard: IEC connector C14 on the rear of the SIMA Options: Plug-in terminal connection at the SIMA front panel Lateral position of the IEC connector C14 (left or right) ¹⁾
Housing design	Standard: Housing for installation in 19" racks Dimensions: 3 HE/30 TE Options: Housing with integrated touch screen for installation in 19" racks Dimensions: 3 HE/84 TE Housing for wall mounting in control cabinet Dimensions (W x H x D): 209 x 132 x 291 Housing with integrated touch screen for wall mounting in control cabinet Dimensions (W x H x D): 482 x 132 x 291
Actuators	The following AUMA actuators are suitable for connection to the SIMA Master Station AUMA SA/SAR multi-turn actuators or SG/SGR part-turn actuators with actuator controls AUMATIC AC 01.1 and Profibus DP or Modbus RTU AUMA SAExC/SARExC multi-turn actuators or SGExC/ SGRExC part-turn actuators with actuator controls AUMATIC ACExC 01.1 and Profibus DP or Modbus RTU AUMA SA/SAR multi-turn actuators or SG/SGR part-turn actuators with actuator controls AUMA MATIC AM 01.1 and Profibus DP or Modbus RTU AUMA SAExC/SARExC multi-turn actuators or SGExC/SGRExC part-turn actuators with actuator controls AUMA MATIC AMExC 01.1 and Profibus DP or Modbus RTU Further field devices with Profibus DP or Modbus RTU interface ¹⁾
Communication between SIMA Master Station and the actuators	General information: Data transfer via RS-485 Active bus termination at the ends of the RS-485 cable segments Twisted, screened copper cable according to IEC 61158 Coupling and uncoupling of actuators during operation is possible Use of internationally standardised fieldbus protocols Setting the communication parameters via the SIMA user interface. Standard: Profibus DP in line topology Connection via Sub D-9 socket with Profibus DP standard assignment at the SIMA front panel Bus connection via Profibus DP plug with switchable bus termination ²⁾ Available baud rates: 9.6 kbit/s – 1.5 Mbit/s Cable length: Without repeater max. 1.2 km, with repeater approx. 10 km Number of actuators: Without repeater max. 32, with repeater max. 125 Typical cycle times at 93.75 kbit/s: Number of actuators/cycle time: 20/100 ms, 40/200 ms, 60/300 ms, 80/400 ms Supported actuator controls: AUMATIC and AUMA MATIC with Profibus DP Modbus RTU line topology Connection via Sub D-9 socket at the SIMA front panel Bus termination via external bus termination modules ³⁾ Available baud rate: 0.3 kbit/s – 38.4 kbit/s
<p>1) Please contact AUMA.</p> <p>2) Included in scope of delivery</p> <p>3) Included in scope of delivery, available with 24 V DC or 115 – 230 V AC supply</p>	
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Communication between SIMA Master Station and the actuators

Cable length: Without repeater max. 1.2 km, with repeater approx. 10 km
 Number of actuators: Without repeater max. 32, with repeater max. 247
 Typical cycle times at 38.4 kbit/s:
 Number of actuators/cycle time:
 20/1,000 ms, 49/2,000 ms, 60/3,000 ms, 80/4,000 ms
 Supported actuator controls: AUMATIC and AUMA MATIC with Modbus RTU

Options:

Profibus DP with redundancy
 Redundant line topology to actuators by installation of an additional, redundant Profibus DP master interface within the SIMA Master Station
 Automatic and reactionless switching to the redundant communication channel in case of a fault
 Supported actuator controls: AUMATIC with Profibus DP component redundancy

Modbus RTU with redundancy
 Redundant line topology to the actuators by an additional, redundant Modbus RTU master interface within the SIMA Master Station
 Automatic and reactionless switching to the redundant communication channel in case of a fault
 Supported actuator controls: AUMATIC with Modbus RTU interface

Modbus RTU with loop redundancy
 Redundant loop topology to the actuators by an additional, redundant Modbus RTU master interface within the SIMA Master Station
 Automatic and reactionless switching of the communication path in case of a fault
 Repeater function within the actuator controls, thus, no external repeaters are required for cable lengths of max. 1,200 m between the devices⁴⁾
 Cable length: max. 296 km (without external repeaters)
 Number of actuators: max. 247
 Supported actuator controls: AUMATIC with Modbus RTU for loop redundancy

Communication between SIMA Master Station and the DCS

Standard:

No communication to the DCS, the SIMA Master station receives the operation commands for the actuators exclusively via the SIMA user interface

Options:

Modbus RTU
 Data transfer via RS-485
 Active bus termination at both ends of the RS-485 cable segments
 Twisted, screened copper cable according to IEC 61158
 Setting of the communication parameters and the data interface via the SIMA user interface.
 Connection via Sub D-9 socket at the SIMA front panel
 Bus termination via external bus termination modules³⁾
 Available baud rates: 9.6 kbit/s – 115.2 kbit/s
 Supported Modbus functions:
 - 01 Read Coil Status
 - 02 Read Input Status
 - 03 Read Holding Registers
 - 04 Read Input Registers
 - 05 Force Single Registers
 - 06 Preset Single Registers
 - 15 (0F_{Hex}) Force Multiple Coils
 - 16 (10_{Hex}) Preset Multiple Registers


Modbus RTU (redundant)
 Equipment of the SIMA with an additional, redundant Modbus RTU interface for redundant communication with a redundant DCS


Modbus TCP/IP
 Data transfer via Ethernet, 10 Base-T, or 100 Base-T (IEEE 802.3), Max. 4 simultaneous connections
 Connection via RJ-45 plug at the SIMA front panel
 Communication in Modbus data format via TCP/IP protocols

3) Included in scope of delivery, available with 24 V DC or 115 – 230 V AC supply

4) In case of a power failure of an actuator, both RS-485 segments which are connected to the AUMATIC are automatically connected with each other in order to close the redundant loop again. Therefore, the sum of the cable lengths of neighbouring RS-485 segments should not exceed 1,200 m.

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Communication between SIMA Master Station and the DCS	<p>Modbus TCP/IP (redundant) Equipment of the SIMA with an additional, redundant Modbus TCP/IP interface</p> <p>RS-232 Data transfer via RS-232 Available baud rates: 9.6 kbit/s to 115.2 kbit/s Connection via RS-232 plug with standard assignment at the SIMA front panel Setting of the communication via the SIMA user interface. Serial data protocol¹⁾</p>
SIMA master station redundancy (Hot-Standby)	For redundant applications, two identical SIMA Master Stations can be implemented in redundant configuration. The SIMA systems monitor each other; in the event of failure of one SIMA Master Station, the redundant SIMA Master Station automatically takes over.
Operating and monitoring (SIMA user interface)	<p>The SIMA user interface is used for:</p> <ul style="list-style-type: none"> - Operation and setting of the SIMA Master station and the actuators connected - Status feedback of the SIMA Master Station as well as of the actuators connected <p>Standard: User interface language is English Option: User interface language is German or Spanish</p> <p>The SIMA Master Station offers different user interfaces, depending on the requirements</p> <p>Standard: Without a user interface; Operation and monitoring via Ethernet using an external computer⁵⁾ and the Windows function "Remote Desktop Connection", connection via RJ-45 plug</p> <p>Options: Operation and monitoring using the integrated SIMA Touch Screen. Touch screen features:</p> <ul style="list-style-type: none"> - Brightness: 400 cd/m² - 262 k colours possible - Visible screen: 130 mm x 100 mm - Resolution: 640 x 480 pixels <p>Operating and monitoring using standard input/output devices (mouse, monitor, keyboard), connection via VGA, USB, RS-232 or PS-2 to the SIMA front panel</p>
Cooling	Maintenance-free, passive cooling without fan
Data memory	Maintenance-free flash memories
Operating system	<p>Standard: Windows XP Embedded, English Option: Windows XP Embedded, German or Spanish</p>
Functions of the SIMA software	<p>Graphic user interface for operating and monitoring the SIMA Master Station</p> <p>Automatic display, immediately after switch-on, of the most important status information of the SIMA Master Station as well as of the actuators connected</p> <p>Password-protected access to the settings and to the actuator operation commands</p> <p>Operation commands and feedback signals of actuators (for additional diagnostic level, independent of the DCS)</p> <p>Control of the actuators connected</p> <p>Visualising of the operation commands for each actuator received by the DCS</p> <p>Visualising of the feedback signal display of each actuator connected</p> <p>Actuator identification via the user interface</p> <p>Optional definition of an individual designation for each actuator via the user interface</p> <p>Adapting of the communication characteristics via the user interface</p> <p>Setting of the communication between the SIMA Master Station and the actuators (redundancy, baud rate, parity, port number, number of actuators, highest field device address)</p> <p>Setting of the communication between the SIMA Master Station and the DCS (baud rate, parity, number of stop bits, address, monitoring time)</p> <p>Communication with actuators</p> <p>Automatic communication setup to the actuators</p> <p>Monitoring of the communication to the actuators connected, including an automatic switch-over in case of a fault (for redundant communication with the actuators)</p> <p>Visualising of the communication status for each actuator</p> <p>Automatic change-over to the redundant SIMA for SIMA Master Station redundancy (Hot-Standby)</p>
<p>1) Please contact AUMA.</p> <p>5) Not included in scope of delivery</p>	
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SIMA 2SM20		Technical data SIMA Master Station	
Functions of the SIMA software	Communication with the DCS Visualising of the communication status with the DCS For redundant communication to the DCS: two communication channels with equal rights Gateway function Administration of different communication protocols of the DCS and the actuators Administration of different redundancy solutions of communication with the DCS and communication with the actuators		
Available contents of the data interface			
Data interface to the actuators	Output data (operation commands) from the SIMA Master Station to the actuators OPEN, STOP, CLOSE, position setpoint, RESET ⁷⁾ Input data (feedback signals) from the actuators to the SIMA Master Station End position OPEN, CLOSED Actual position value Selector switch in position LOCAL/REMOTE Running indication (directional) Torque switch OPEN, CLOSED Limit switch OPEN, CLOSED Motor protection tripped Torque fault tripped before reaching the end position Failure of one phase		
Data interface to the process control system	Output data from the DCS to the SIMA Master Station Output data (operation commands) to the actuators as well as configuration data of the SIMA: - Number of field devices connected - Highest field device address Input data from the SIMA Master Station to the DCS Input data (feedback signals) from the actuators as well as SIMA status information: - Communication status to the actuators - Communication status to the DCS - Number of actuators found - Live list of actuators found		
Service conditions			
Enclosure protection according to EN 60 529	Standard:	IP 20	
	Options:	IP 55 (when installing the SIMA Master Station within an IP 55 housing)	
Ambient temperature	Standard:	0 °C to +50 °C	
	Options:	0 °C to +40 °C (when installing the SIMA Master Station within an IP 55 housing)	
Humidity	10 % to 90 % (non-condensing)		
Weight	Standard:	2.8 kg	
	Option:	6.0 kg (with integrated touch screen)	
Accessories			
RS-485 bus termination module	External bus termination module for active termination of RS-485 segments, available with 24 V DC or 115 – 230 V AC supply		
RS-485 repeater	External repeaters for RS-485 fieldbus systems, required when available cable length exceeds the max. permissible segment length (depending on the baud rate, max. 1,200 m or when more than 32 actuators are to be connected within a segment.) ¹⁾		
RS-485/FO converter	RS-485 FO converters for data transmission via FO, suitable for: - Long distances - Challenging EMC environmental conditions - Considerable demands regarding galvanic isolation, potential equalisation or overvoltage protection FO converters are available for different FO fibre type plug/socket connectors ¹⁾		
Remote I/O module	Remote I/O module for connecting conventional input and output signals issued by sensors or similar devices at the fieldbus to the actuators ¹⁾		
Further information			
EU Directives	Electromagnetic Compatibility (EMC): (2004/108/EC) Low Voltage Directive: (2006/95/EC)		
Reference documents	Product description "SIMA Master Station" Dimensions "SIMA Master Station"		
1) Please contact AUMA. 7) Only available in combination with the AUMATIC			
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