DATA SHEET

PM572, PM573, PM582, PM583, PM585, PM590, PM591, PM592

Processor Module

1 Ordering Data

Processor Modules for AC500 (Standard) V2 Products

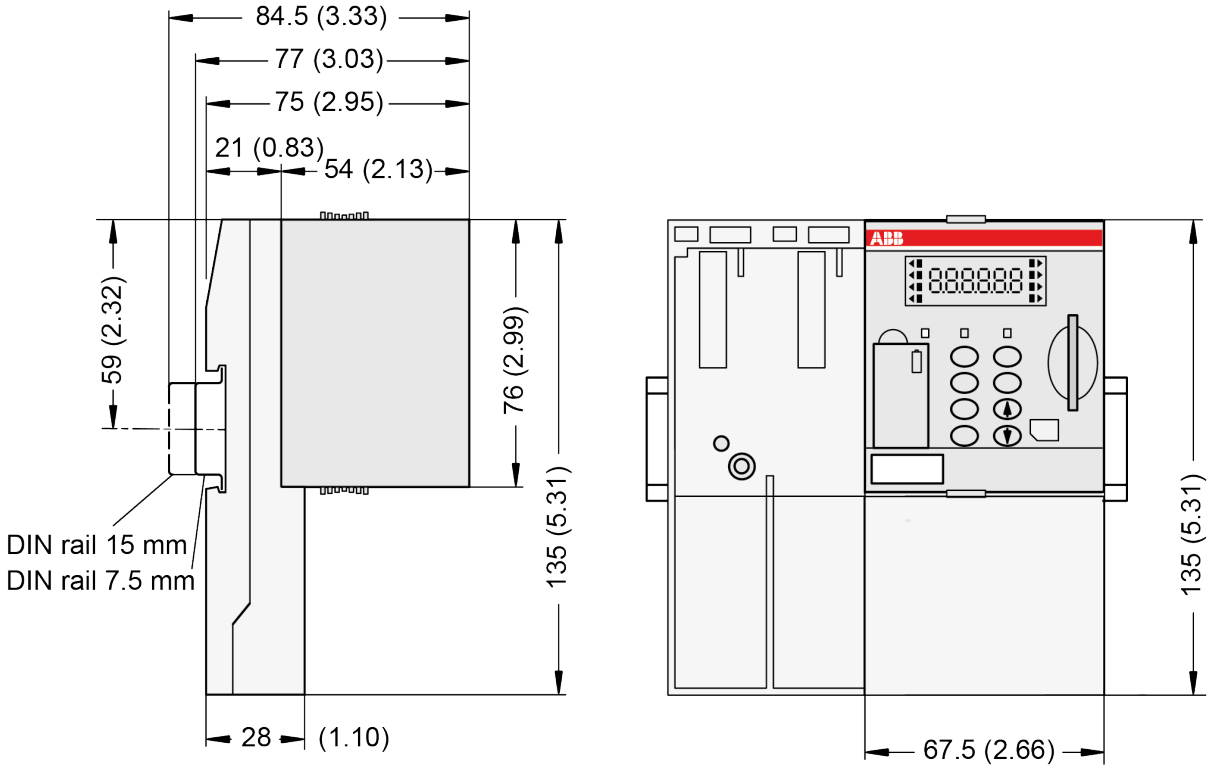
Part no.	Description	Product Life Cycle Phase *)
1SAP 130 200 R0200	PM572, processor module, memory 128 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display	Active
1SAP 130 300 R0271	PM573-ETH, processor module, memory 512 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active
1SAP 330 300 R0271	PM573-ETH-XC, processor module, memory 512 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols, XC version	Active

Part no.	Description	Product Life Cycle Phase *)
1SAP 140 200 R0201	PM582, processor module, memory 512 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display	Active
1SAP 340 200 R0201	PM582-XC, processor module, memory 512 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, XC version	Active
1SAP 140 300 R0271	PM583-ETH, processor module, memory 1024 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active
1SAP 340 300 R0271	PM583-ETH-XC, processor module, memory 1024 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols, XC version	Active
1SAP 140 500 R0271	PM585-ETH, processor module, memory 1024 kB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active
1SAP 150 000 R0261	PM590-ARCNET, processor module, memory 2 MB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, integrated communication module ARCNET	Active
1SAP 150 000 R0271	PM590-ETH, processor module, memory 2 MB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active
1SAP 150 100 R0271	PM591-ETH, processor module, memory 4 MB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active
1SAP 150 100 R0277	PM591-2ETH, processor module, memory 4 MB, 24 VDC, memory card slot, interfaces 1x RS-232/485 (programming, Modbus/CS31), display, 2x onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active

Part no.	Description	Product Life Cycle Phase *)
1SAP 350 100 R0271	PM591-ETH-XC, processor module, memory 4 MB, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols, XC version	Active
1SAP 150 200 R0271	PM592-ETH, processor module, memory 4 MB / 4 GB flash disk, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols	Active
1SAP 350 200 R0271	PM592-ETH-XC, processor module, memory 4 MB / 4 GB flash disk, 24 VDC, memory card slot, interfaces 2x RS-232/485 (programming, Modbus/CS31), 1x FBP, display, onboard Ethernet TCP/IP with web server, SNTP, IEC60870-5-104 protocols, XC version	Active

*) *For planning and commissioning of new installations use modules in Active status only.*

2 Dimensions



The dimensions are in mm and in brackets in inch.

3 Technical Data

The System Data of AC500 and S500 *Chapter 4 “System Data AC500” on page 11* are valid for standard version.

The System Data of AC500-XC *Chapter 5 “System Data AC500-XC” on page 15* are valid for the XC version.

Only additional details are therefore documented below.

The technical data are also valid for the XC version.

Processor Module and Terminal Base

Parameter	Value
Connection of the supply voltage 24 VDC at the terminal base of the processor module	Removable 5-pin terminal block with spring connection
Current consumption from 24 VDC	PM57x: 50 mA PM57x-ETH: 110 mA
	PM58x: 50 mA PM58x-ETH: 110 mA PM58x-ARCNET: 110 mA
	PM59x: 90 mA PM59x-ETH: 150 mA PM59x-2ETH: 150 mA PM59x-ARCNET: 150 mA
Slots on the terminal bases	TB511: 1 processor module, 1 communication module
	TB521: 1 processor module, 2 communication modules
	TB523: 1 processor module, 2 communication modules
	TB541: 1 processor module, 4 communication modules
Processor module interfaces at the terminal bases TB5x1	I/O bus, COM1, COM2, FBP
Processor module interfaces at the terminal bases TB5x3	I/O bus, COM1
Processor module network interfaces at the terminal bases	TB5x1-ETH / PM5xx-ETH: Ethernet
	TB5x3-ETH / PM5xx-ETH: 2x Ethernet
	TB5x1-ARCNET / PM5xx-ARCNET: ARCNET
Connection system	see System Assembly, Construction and Connection
Weight (processor module without terminal base)	PM582: 135 g PM58x-ETH: 150 g

Parameter	Value
	PM59x: 135 g PM59x-ETH: 150 g PM59x-2ETH: 150 g PM59x-ARCNET: 160 g
Mounting position	Horizontal or vertical

Detailed Data

Table 1: PM57x

Processor Module		PM572	PM573-ETH
Program memory flash EPROM and RAM		128 kB	512 kB
Data memory, integrated		128 kB, incl. 12 kB buffered	512 kB, incl. 288 kB buffered
Expandable memory		None	None
Integrated mass storage memory		None	None
Pluggable memory card for:			
	User data storage	x	x
	Program storage	x	x
	Firmware update	x	x
Cycle time for 1 instruction:			
	Binary	Min. 0.06 µs	Min. 0.06 µs
	Word	Min. 0.09 µs	Min. 0.09 µs
	Floating point	Min. 0.70 µs	Min. 0.70 µs
Max. number of central inputs and outputs (up to 7 exp. modules): ([1])			
	Digital inputs	224	224
	Digital outputs	224	224
	Analog inputs	112	112
	Analog outputs	112	112
Max. number of central inputs and outputs (10 exp. modules):			
	Digital inputs	320	320
	Digital outputs	320	320
	Analog inputs	160	160
	Analog outputs	160	160
Number of decentralized inputs and outputs		Depends on the fieldbus used (as an info on the CS31 bus: up to 31 stations with up to 120 DI / 120 DO each)	
Data backup		Battery	
Data buffering time at 25 °C		Typ. 3 years without power supply	
Battery low indication		Warning issued about 2 weeks before the state of charge becomes critical	
Real-time clock:			
	With battery back-up	x	x

Processor Module		PM572	PM573-ETH
	Accuracy	Typ. ± 2 s / day at 25 °C	
Program execution:			
	Cyclic	x	x
	Time-controlled	x	x
	Multitasking	x	x
Protection of the user program by a password		x	x
Serial interface COM1:			
	Physical link	Configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) pluggable terminal block, spring connection for programming, as Modbus (master/slave), as serial ASCI communication, as CS31 Master	
	Connection		
	Usage		
Serial interface COM2 (not for PM5xy-2ETH models):			
	Physical link	Configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) D-sub for programming, as Modbus (master/slave), as serial ASCII communication	
	Connection		
	Usage		
Integrated communication module:			
	ETH = Ethernet	-	ETH onboard with web server, SNTP and IEC60870-5-104 protocol
	RJ45	-	
	ARCNET = ARCNET BNC	-	
Number of external communication modules		Up to 4 communication modules like PROFIBUS DP, Ethernet, CANopen. There are no restrictions concerning the communication module types and communication module combinations (e.g. up to 4 PROFIBUS DP communication modules are possible)	
Ethernet		-	10/100 base-TX, 1x RJ45 socket, provided on TB5x1-ETH
LEDs, LCD display, 8 function keys		For RUN/STOP switchover, status displays and diagnosis	
Number of timers		Unlimited	
Number of counters		Unlimited	
Programming languages:			
	Structured Text ST	x	x
	Instruction List IL	x	x
	Function Block Diagram FBD	x	x
	Ladder Diagram LD	x	x
	Sequential Function Chart SFC	x	x
	Continuous Function Chart CFC	x	x
[1]): up to 7 I/O terminal units before PS501 V1.2 and processor module firmware before V1.2.0.			

Table 2: PM58x

Processor Module		**PM582**	**PM583-ETH**	**PM585-ETH**
Program memory flash EPROM and RAM		512 kB	1024 kB	1024 kB
Data memory, integrated		416 kB, incl. 288 kB buffered	1024 kB, incl. 288 kB buffered	1536 kB, incl. 512 kB buffered
Expandable memory		None	None	None
Integrated mass storage memory		None	None	None
Pluggable memory card for:				
	User data storage	x	x	x
	Program storage	x	x	x
	Firmware update	x	x	x
Cycle time for 1 instruction:				
	Binary	Min. 0.05 µs		Min. 0.004 µs
	Word	Min. 0.06 µs		Min. 0.008 µs
	Floating point	Min. 0.50 µs		Min. 0.008 µs
Max. number of central inputs and outputs (up to 7 exp. modules): [1])				
	Digital inputs	224		
	Digital outputs	224		
	Analog inputs	112		
	Analog outputs	112		
Max. number of central inputs and outputs (10 exp. modules):				
	Digital inputs	320		
	Digital outputs	320		
	Analog inputs	160		
	Analog outputs	160		
Number of decentralized inputs and outputs		Depends on the fieldbus used (as an info on the CS31 bus: up to 31 stations with up to 120 DI / 120 DO each)		
Data backup		Battery		
Data buffering time at 25 °C		Typ. 3 years without power supply		
Battery low indication		Warning issued about 2 weeks before the state of charge becomes critical		
Real-time clock:				
	With battery back-up	x		
	Accuracy	Typ. ±2 s / day at 25 °C		
Program execution:				
	Cyclic	x		
	Time-controlled	x		
	Multitasking	x		
Protection of the user program by a password		x		
Serial interface COM1:				
	Physical link	Configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) pluggable terminal block, spring con-		

Processor Module		PM582	PM583-ETH	PM585-ETH
	Connection	nection for programming, as Modbus (master/ slave), as serial ASCI communication, as CS31 master		
	Usage			
Serial interface COM2 (not for PM5xy-2ETH models):				
	Physical link	Configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) D-sub for programming, as Modbus (master/slave), as serial ASCII communication		
	Connection			
	Usage			
Integrated communication module:				
	ETH = Ethernet	-	ETH onboard with web server, SNTP and IEC60870-5-104 protocol	
	RJ45	-		
	ARCNET = ARCNET BNC	-		
Number of external communication modules		Up to 4 communication modules like PROFIBUS DP, Ethernet, CANopen. There are no restrictions concerning the communication module types and communication module combinations (e.g. up to 4 PROFIBUS DP communication modules are possible)		
Ethernet		-	10/100 base-TX, 1x RJ45 socket, provided on TB5x1-ETH	
LEDs, LCD display, 8 Function Keys		For RUN/STOP switchover, status displays and diagnosis		
Number of timers		Unlimited		
Number of counters		Unlimited		
Programming languages:				
	Structured Text ST	x		
	Instruction List IL	x		
	Function Block Diagram FBD	x		
	Ladder Diagram LD	x		
	Sequential Function Chart SFC	x		
	Continuous Function Chart (CFC)	x		
[1]): up to 7 I/O terminal units before PS501 V1.2 and processor module firmware before V1.2.0.				

Table 3: PM59x [2])

Processor Module	PM59x-ETH	PM59x-ARCNET	PM59x-ETH PM59x-2ETH
Program memory flash EPROM and RAM	PM590: 2048 kB PM591/PM592: 4096 kB		
Data memory, integrated	PM590: 2560 kB, PM591: 3584 kB, incl. 1536 kB buffered		PM590: 3072 kB, PM591/592: 5632 kB, incl. 1536 kB buffered
Expandable memory	None	None	None

Processor Module		PM59x-ETH	PM59x-ARCNET	PM59x-ETH PM59x-2ETH
Integrated mass storage memory		None	None	PM592-ETH: 4 GB flash disk
Pluggable memory card for:				
	User data storage	x	x	x
	Program storage	x	x	x
	Firmware update	x	x	x
Cycle time for 1 instruction:				
	Binary	Min. 0.002 µs	Min. 0.002 µs	Min. 0.002 µs
	Word	Min. 0.004 µs	Min. 0.004 µs	Min. 0.004 µs
	Floating point	Min. 0.004 µs	Min. 0.004 µs	Min. 0.004 µs
Max. number of central inputs and outputs (up to 7 exp. modules): [1])				
	Digital inputs	224	224	224
	Digital outputs	224	224	224
	Analog inputs	112	112	112
	Analog outputs	112	112	112
Max. number of central inputs and outputs (10 exp. modules):				
	Digital inputs	320	320	320
	Digital outputs	320	320	320
	Analog inputs	160	160	160
	Analog outputs	160	160	160
Number of decentralized inputs and outputs		Depends on the fieldbus used (as an info on the CS31 bus: up to 31 stations with up to 120 DI / 120 DO each)		
Data backup		Battery		
Data buffering time at 25 °C		Typ. 3 years without power supply		
Battery low indication		Warning issued about 2 weeks before the state of charge becomes critical		
Real-time clock:				
	With battery back-up	x	x	x
	Accuracy	Typ. ±2 s / day at 25 °C	Typ. ±2 s / day at 25 °C	Typ. ±2 s / day at 25 °C
Program execution:				
	Cyclic	x	x	x
	Time-controlled	x	x	x
	Multitasking	x	x	x
Password protection of user program		x	x	x
Serial interface COM1:				
	Physical link	Configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) pluggable terminal block, spring connection for programming, as Modbus (master/slave), as serial ASCII communication, as CS31 master		
	Connection			
	Usage			
Serial interface COM2 (not for PM5xy-2ETH models):				

Processor Module		PM59x-ETH	PM59x-ARCNET	PM59x-ETH PM59x-2ETH
	Physical link	Configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) D-sub for programming, as Modbus (master/ slave), as serial ASCII communication		
	Connection			
	Usage			
Integrated communication module:				
	ETH = Ethernet	ETH	ARCNET	ETH onboard with Webserver, SNTP and IEC60870-5-104 protocol
	RJ45	ETH	ARCNET	
	ARCNET = ARCNET BNC	ETH	ARCNET	
Number of external communication modules		Up to 4 communication modules like PROFIBUS DP, Ethernet, CANopen. There are no restrictions concerning the communication module types and communication module combinations (e.g. up to 4 PROFIBUS DP communication modules are possible)		
Ethernet		10/100 base-TX, 1x RJ45 socket	-	PM59x-ETH: 10/100 base-TX, 1x RJ45 socket, provided on TB5x1-ETH PM591-2ETH: 10/100 base-TX, independent interfaces, 2x RJ45 socket, provided on TB521-2ETH
LEDs, LCD display, 8 Function Keys		For RUN/STOP switchover, status displays and diagnosis		
Number of timers		Unlimited	Unlimited	Unlimited
Number of counters		Unlimited	Unlimited	Unlimited
Programming languages:				
	Structured Text ST	x	x	x
	Instruction List IL	x	x	x
	Function Block Diagram FBD	x	x	x
	Ladder Diagram LD	x	x	x
	Sequential Function Chart SFC	x	x	x
	Continuous Function Chart (CFC)	x	x	x
[1]): up to 7 I/O terminal units before PS501 V1.2 and processor module firmware before V1.2.0.				
[2]): For PM595 see device description for PM595 .				

4 System Data AC500

4.1 Environmental Conditions

Table 4: Process and supply voltages

Parameter		Value
24 VDC		
	Voltage	24 V (-15 %, +20 %)
	Protection against reverse polarity	Yes
120 VAC		
	Voltage	120 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
230 VAC		
	Voltage	230 VAC (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
120 VAC...240 VAC wide range supply		
	Voltage	120 V...240 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
Allowed interruptions of power supply, according to EN 61131-2		
	DC supply	Interruption < 10 ms, time between 2 interruptions > 1 s, PS2
	AC supply	Interruption < 0.5 periods, time between 2 interruptions > 1 s

NOTICE!
Exceeding the maximum power supply voltage for process or supply voltages could lead to unrecoverable damage of the system. The system could be destroyed.

NOTICE!
Improper voltage level or frequency range which cause damage of AC inputs:

– AC voltage above 264 V
– Frenquency below 47 Hz or above 62.4 Hz

NOTICE!
Improper connection leads cause overtemperature on terminals.

PLC modules may be destroyed by using wrong cable type, wire size and cable temperature classification.

Parameter		Value
Temperature		
	Operating	0 °C...+60 °C: Horizontal mounting of modules. 0 °C...+40 °C: Vertical mounting of modules. Output load reduced to 50 % per group.
	Storage	-40 °C...+70 °C

Parameter		Value
	Transport	-40 °C...+70 °C
Humidity		Max. 95 %, without condensation
Air pressure		
	Operating	> 800 hPa / < 2000 m
	Storage	> 660 hPa / < 3500 m
Ingress protection		IP20

4.2 Creepage Distances and Clearances

The creepage distances and clearances meet the requirements of the overvoltage category II, pollution degree 2.

4.3 Insulation Test Voltages, Routine Test

According to EN 61131-2

Parameter	Value	
230 V circuits against other circuitry	2500 V	1.2/50 µs
120 V circuits against other circuitry	1500 V	1.2/50 µs
120 V...240 V circuits against other circuitry	2500 V	1.2/50 µs
24 V circuits (supply, 24 V inputs/outputs, analogue inputs/outputs), if they are electrically isolated against other circuitry	500 V	1.2/50 µs
COM interfaces, electrically isolated	500 V	1.2/50 µs
COM interfaces, electrically not isolated	Not applicable	Not applicable
FBP interface	500 V	1.2/50 µs
Ethernet	500 V	1.2/50 µs
ARCNET	500 V	1.2/50 µs
230 V circuits against other circuitry	1350 V	AC 2 s
120 V circuits against other circuitry	820 V	AC 2 s
120 V...240 V circuits against other circuitry	1350 V	AC 2 s
24 V circuits (supply, 24 V inputs/outputs, analogue inputs/outputs), if they are electrically isolated against other circuitry	350 V	AC 2 s

Parameter	Value	
COM interfaces, electrically isolated	350 V	AC 2 s
COM interfaces, electrically not isolated	Not applicable	Not applicable
FBP interface	350 V	AC 2 s
Ethernet	350 V	AC 2 s
ARCNET	350 V	AC 2 s

4.4 Power Supply Units

For the supply of the modules, power supply units according to PELV specifications must be used.

4.5 Electromagnetic Compatibility

Electromagnetic Compatibility		
Device suitable for:		
	Industrial applications	Yes
	Domestic applications	No
Immunity against electrostatic discharge (ESD):		According to IEC 61000-4-2, zone B, criterion B
	Electrostatic voltage in case of air discharge	8 kV
	Electrostatic voltage in case of contact discharge	4 kV, in a closed switch-gear cabinet 6 kV [1])
	ESD with communication connectors	In order to prevent operating malfunctions, it is recommended, that the operating personnel discharge themselves prior to touching communication connectors or perform other suitable measures to reduce effects of electrostatic discharges.
	ESD with connectors of Terminal Bases	The connectors between the Terminal Bases and Processor Modules or Communication Modules must not be touched during operation. The same is valid for the I/O-Bus with all modules involved.
Immunity against the influence of radiated (CW radiated):		According to IEC 61000-4-3, zone B, criterion A
	Test field strength	10 V/m
Immunity against fast transient interference voltages (burst):		According to IEC 61000-4-4, zone B, criterion B
	Supply voltage units (DC)	2 kV
	Supply voltage units (AC)	2 kV
	Digital inputs/outputs (24 VDC)	1 kV
	Digital inputs/outputs (120 VAC...240 VAC)	2 kV
	Analog inputs/outputs	1 kV
	CS31 system bus	1 kV

Electromagnetic Compatibility		
	Serial RS-485 interfaces (COM)	1 kV
	Serial RS-232 interfaces (COM, not for PM55x and PM56x)	1 kV
	ARCNET	1 kV
	FBP	1 kV
	Ethernet	1 kV
	I/O supply (DC-out)	1 kV
Immunity against the influence of line-conducted interferences (CW conducted):		According to IEC 61000-4-6, zone B, criterion A
	Test voltage	3V zone B, 10 V is also met.
High energy surges		According to IEC 61000-4-5, zone B, criterion B
	Power supply DC	1 kV CM / 0.5 kV DM [2])
	DC I/O supply	0.5 kV CM / 0.5 kV DM [2])
	Communication Lines, shielded	1 kV CM [2])
	AC I/O unshielded	2 kV CM / 1 kV DM [2])
	I/O analog, I/O DC unshielded	1 kV CM / 0.5 kV DM [2])
Radiation (radio disturbance)		According to IEC 55011, group 1, class A

[1]) High requirement for shipping classes are achieved with additional specific measures (see specific documentation).

[2]) CM = Common Mode, DM = Differential Mode

4.6 Mechanical Data

Parameter	Value
Mounting	Horizontal
Degree of protection	IP 20
Housing	Classification V-2 according to UL 94
Vibration resistance acc. to EN 61131-2	all three axes 2 Hz...8.4 Hz, continuous 3.5 mm 8.4 Hz...150 Hz, continuous 1 g (higher values on request)
Shock test	All three axes 15 g, 11 ms, half-sinusoidal
Mounting of the modules:	
DIN rail according to DIN EN 50022	35 mm, depth 7.5 mm or 15 mm
Mounting with screws	Screws with a diameter of 4 mm
Fastening torque	1.2 Nm

4.7 Approvals and certifications

Information on approvals and certificates can be found in the corresponding chapter of the *Main catalog, PLC Automation*.

5 System Data AC500-XC

Assembly, construction and connection of devices of the variant AC500-XC is identical to AC500 (standard). The following description provides information on general technical data of AC500-XC system.

5.1 Environmental Conditions

Table 5: Process and Supply Voltages

Parameter		Value
24 VDC		
	Voltage	24 V (-15 %, +20 %)
	Protection against reverse polarity	Yes
120 VAC...240 VAC wide range supply		
	Voltage	120...240 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
Allowed interruptions of power supply		
	DC supply	Interruption < 10 ms, time between 2 interruptions > 1 s, PS2

NOTICE!
Exceeding the maximum power supply voltage for process or supply voltages could lead to unrecoverable damage of the system. The system could be destroyed.

NOTICE!
For the supply of the modules, power supply units according to PELV or SELV specifications must be used.

The creepage distances and clearances meet the requirements of the overvoltage category II, pollution degree 2.

Parameter		Value
Temperature		
	Operating	-40 °C...+70 °C -40 °C...-30 °C: Proper start-up of system; technical data not guaranteed -40 °C...0 °C: Due to the LCD technology, the display might respond very slowly. -40 °C...+40 °C: Vertical mounting of modules possible, output load limited to 50 % per group +60 °C...+70 °C with the following deratings: ● System is limited to max. 2 communication modules per terminal base ● Applications certified for cULus up to +60 °C ● Digital inputs: maximum number of simultaneously switched on input channels limited to 75 % per group (e.g. 8 channels => 6 channels) ● Digital outputs: output current maximum value (all channels together) limited to 75 % per group (e.g. 8 A => 6 A) ● Analog outputs only if configured as voltage output: maximum total output current per group is limited to 75 % (e.g. 40 mA => 30 mA) ● Analog outputs only if configured as current output: maximum number of simultaneously used output channels limited to 75 % per group (e.g. 4 channels => 3 channels)
	Storage / Transport	-40 °C...+85 °C
Humidity		Operating / Storage: 100 % r. H. with condensation
Air pressure		Operating: -1000 m....4000 m (1080 hPa...620 hPa) > 2000 m (< 795 hPa): ● max. operating temperature must be reduced by 10 K (e.g. 70 °C to 60°C) ● I/O module relay contacts must be operated with 24 V nominal only
Immunity to corrosive gases		Operating: Yes, according to: ISA S71.04.1985 Harsh group A, G3/GX IEC 60721-3-3 3C2 / 3C3
Immunity to salt mist		Operating: Yes, horizontal mounting only, according to IEC 60068-2-52 severity level: 1

NOTICE!

Risk of corrosion!

Unused connectors and slots may corrode if XC devices are used in salt-mist environments.

Protect unused connectors and slots with TA535 protective caps for XC devices *TA535*.

Table 6: Electromagnetic Compatibility

Parameter		Value
Device suitable for:		
	Industrial applications	Yes
	Domestic applications	No
Radiated emission (radio disturbances)		Yes, according to: CISPR 16-2-3
Conducted emission (radio disturbances)		Yes, according to: CISPR 16-2-1, CISPR 16-1-2
Electrostatic discharge (ESD)		Yes, according to: IEC 61000-4-2, zone B, criterion B
Fast transient interference voltages (burst)		Yes, according to: IEC 61000-4-4, zone B, criterion B
High energy transient interference voltages (surge)		Yes, according to: IEC 61000-4-5, zone B, criterion B
Influence of radiated disturbances		Yes, according to: IEC 61000-4-3, zone B, criterion A
Influence of line-conducted interferences		Yes, according to: IEC 61000-4-6, zone B, criterion A
Influence of power frequency magnetic fields		Yes, according to: IEC 61000-4-8, zone B, criterion A

In order to prevent malfunctions, it is recommended, that the operating personnel discharge themselves prior to touching communication connectors or perform other suitable measures to reduce effects of electrostatic discharges.

NOTICE!

Risk of malfunctions!

Unused slots for communication modules are not protected against accidental physical contact.

- Unused slots for communication modules must be covered with dummy communication modules (TA524) to achieve IP20 rating.
- I/O bus connectors must not be touched during operation.

5.2 Mechanical Data

Parameter	Value
Wiring method	Spring terminals
Degree of protection	IP 20
Vibration resistance	Yes, according to: IEC 61131-2 IEC 60068-2-6 IEC 60068-2-64
Shock resistance	Yes, according to: IEC 60068-2-27
Assembly position	Horizontal Vertical (no application in salt mist environment)
Assembly on DIN rail	
DIN rail type	According to IEC 60715 35 mm, depth 7.5 mm or 15 mm
Assembly with screws	
Screw diameter	4 mm
Fastening torque	1.2 Nm

5.3 Environmental Tests

Parameter	Value
Storage	IEC 60068-2-1 Test Ab: cold withstand test -40 °C / 16 h IEC 60068-2-2 Test Bb: dry heat withstand test +85 °C / 16 h
Humidity	IEC 60068-2-30 Test Db: Cyclic (12 h / 12 h) damp-heat test 55 °C, 93 % r. H. / 25 °C, 95 % r. H., 6 cycles IEC 60068-2-78, stationary humidity test: 40 °C, 93 % r. H., 240 h
Insulation Test	IEC 61131-2
Vibration resistance	IEC 61131-2 / IEC 60068-26: 5 Hz...500 Hz, 2 g (with SD memory card inserted) IEC 60068-2-64: 5 Hz...500 Hz, 4 g rms
Shock resistance	IEC 60068-2-27: all 3 axes 15 g, 11 ms, half-sinusoidal

Table 7: EMC Immunity

Parameter	Value
Electrostatic discharge (ESD)	Electrostatic voltage in case of air discharge: 8 kV Electrostatic voltage in case of contact discharge: 6 kV
Fast transient interference voltages (burst)	Supply voltage units (DC): 4 kV Digital inputs/outputs (24 VDC): 2 kV Analog inputs/outputs: 2 kV Communication lines shielded: 2 kV I/O supply (DC-out): 2 kV

Parameter	Value
High energy transient interference voltages (surge)	Supply voltage units (DC): 1 kV CM *) / 0.5 kV DM *) Digital inputs/outputs (24 VDC): 1 kV CM *) / 0.5 kV DM *) Digital inputs/outputs (AC): 4 kV Analog inputs/outputs: 1 kV CM *) / 0.5 kV DM *) Communication lines shielded: 1 kV CM)* I/O supply (DC-out): 0,5 kV CM *) / 0.5 kV DM *)
Influence of radiated disturbances	Test field strength: 10 V/m
Influence of line-conducted interferences	Test voltage: 10 V
Power frequency magnetic fields	30 A/m 50 Hz 30 A/m 60 Hz

*) CM = Common Mode, * DM = Differential Mode

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