DATA SHEET

PM554, PM556, PM564, PM566

Processor Module



1 Ordering data

Table 1: Processor modules for AC500-eCo

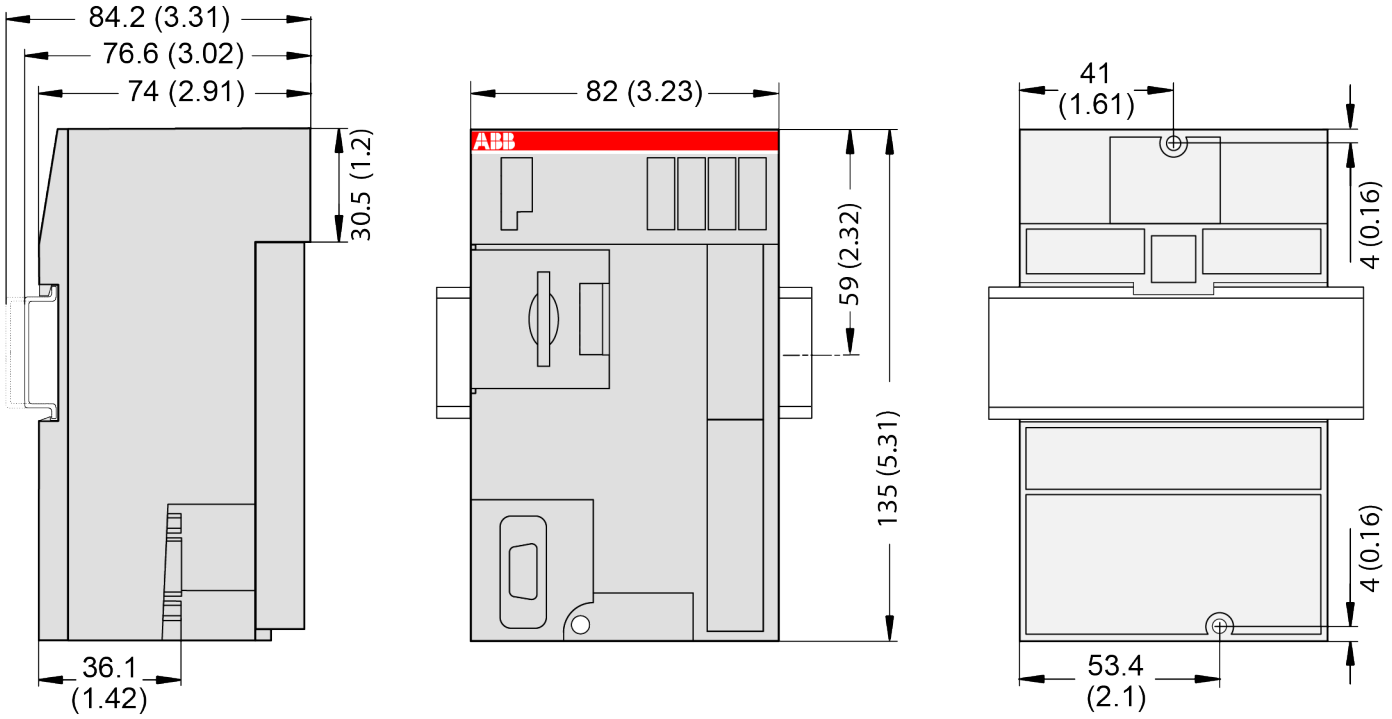
Part no.	Description	Product life cycle phase *)
1SAP 120 600 R0001	PM554-TP, processor module, 128 kB memory, 8 DI, 6 DO-T, 24 V DC, with pluggable I/O terminal blocks	Active
1SAP 120 600 R0071	PM554-TP-ETH, processor module, 128 kB memory, 8 DI, 6 DO-T, 24 V DC, onboard Ethernet, with pluggable I/O terminal blocks	Active
1SAP 120 700 R0001	PM554-RP, processor module, 128 kB memory, 8 DI, 6 DO-R, 24 V DC, with pluggable I/O terminal blocks	Active
1SAP 120 800 R0001	PM554-RP-AC, processor module, 128 kB memory, 8 DI, 6 DO-R, 100 V AC...240 V AC, with pluggable I/O terminal blocks	Active
1SAP 121 200 R0071	PM556-TP-ETH, processor module, 512 kB memory, 8 DI, 6 DO-T, 24 V DC, onboard Ethernet, with pluggable I/O terminal blocks	Active
1SAP 120 900 R0001	PM564-TP, processor module, 128 kB memory, 6 DI, 6 DO-T, 2 AI and 1 AO, 24 V DC	Active

Part no.	Description	Product life cycle phase *)
1SAP 120 900 R0071	PM564-TP-ETH, processor module, 128 kB memory, 6 DI, 6 DO-T 2 AI and 1 AO, 24 V DC, Ethernet interface	Active
1SAP 121 000 R0001	PM564-RP, processor module, 128 kB memory, 6 DI, 6 DO-R, 2 AI and 1 AO, 24 V DC	Active
1SAP 121 100 R0001	PM564-RP-AC, processor module, 128 kB memory, 6 DI, 6 DO-R, 2 AI and 1 AO, 100 V AC...240 V AC	Active
1SAP 121 000 R0071	PM564-RP-ETH, processor module, 128 kB memory, 6 DI, 6 DO-R, 2 AI and 1 AO, 24 V DC, Ethernet interface	Active
1SAP 121 100 R0071	PM564-RP-ETH-AC, processor module, 128 kB memory, 6 DI, 6 DO-R, 2 AI and 1 AO, 100 V AC...240 V AC, Ethernet interface	Active
1SAP 121 500 R0071	PM566-TP-ETH, processor module, 512 kB memory, 6 DI, 6 DO-T, 2 AI and 1 AO, 24 V DC, Ethernet interface	Active



**) Modules in lifecycle Classic are available from stock but not recommended for planning and commissioning of new installations.*

1.1 Dimensions



The dimensions are in mm and in brackets in inch.

2 Technical data

The System Data of AC500-eCo apply *Chapter 3 “System data AC500-eCo” on page 7*

Only additional details are therefore documented below.

General data

Power supply	**24 V DC**	**100 - 240 V AC**
Connection of power supply	Via removable 5-pin screw terminal	
Current consumption from power supply (max.)	PM554-TP: 180 mA PM554-TP-ETH: 190 mA PM554-RP: 220 mA PM556-TP-ETH: 190 mA PM564-TP: 210 mA PM564-TP-ETH: 220 mA PM564-RP: 240 mA PM564-RP-ETH: 250 mA PM566-TP-ETH: 220 mA	PM554-RP-AC: 200 mA at 100 V AC, 110 mA at 240 V AC *) PM564-RP-AC: 210 mA at 100 V AC, 125 mA at 240 V AC *) PM564-RP-ETH-AC: 220 mA at 100 V AC, 130 mA at 240 V AC *)

Power supply	24 V DC	100 - 240 V AC
Current consumption from power supply (typ.)	PM554-TP: 60 mA PM554-TP-ETH: 70 mA PM554-RP: 80 mA PM556-TP-ETH: 70 mA PM564-TP: 95 mA PM564-TP-ETH: 100 mA PM564-RP: 110 mA PM564-RP-ETH: 120 mA PM566-TP-ETH: 100 mA	PM554-RP-AC: 20 mA at 100 V AC, 12 mA at 240 V AC *) PM564-RP-AC: 20 mA at 100 V AC, 11 mA at 240 V AC *) PM564-RP-ETH-AC: 23 mA at 100 V AC, 14 mA at 240 V AC *)
Inrush current at nominal voltage	Typ. 3.9 A^2s	Typ. 0.3 A^2s
Required fuse	3 A fast	Max. 10 A
Max. power dissipation within the processor module	PM554-TP: 3.0 W PM554-TP-ETH: 3.3 W PM554-RP: 3.5 W PM556-TP-ETH: 3.3 W PM564-TP: 3.9 W PM564-TP-ETH: 4.4 W PM564-RP: 4.5 W PM564-RP-ETH: 4.9 W PM566-TP-ETH: 4.4 W	PM554-RP-AC: 4.8 W PM564-RP-AC: 4.8 W PM564-RP-ETH-AC: 5.3 W
Processor module interfaces	I/O bus, COM1, COM2 (optional), Ethernet (depending on model)	
Connection system	see System Assembly, Construction and Connection	
Weight	PM554-TP: 300 g PM554-TP-ETH: 300 g PM554-RP: 350 g PM556-TP-ETH: 300 g PM564-TP: 300 g PM564-TP-ETH: 300 g PM564-RP: 350 g PM564-RP-ETH: 350 g PM566-TP-ETH: 300 g	PM554-RP-AC: 400 g PM564-RP-AC: 400 g PM564-RP-ETH-AC: 400 g
Mounting position	horizontal or vertical	

*) These values show the value of the apparent current (sum of active and reactive current)

Detailed data

Program memory	128 kB Flash EPROM (PM554-xP and PM564-xP types) 512 kB Flash EPROM (PM556-xP and PM566-xP types)
Data memory	
- VAR data	10 kB

- VAR_RETAIN data	1 kB, always buffered in flash
- %RB data (persistent)	1 kB, can be buffered in flash (depending on configuration)
- %MB data	2 kB (PM554 and PM564 types) 64 kB (PM556 and PM566 types)
Data buffering	In flash memory
Real-time clock (RTC)	Optional
Battery low indication	Warning
Programming languages	- Instruction List (IL) - Function Block Diagram (FBD) - Ladder Diagram (LD) - Sequential Function Chart (SFC) - Structured Text (ST) - Continuous Function Chart (CFC)
Cycle time for 1000 instructions	
Binary	0.08 ms
Word	0.1 ms
Floating point	1.2 ms
Program execution	
Cyclic	Yes
Time-controlled	Yes
Multitasking	Yes
Interruption	1 interrupted with up or down edge detection
LEDs	Power, Run, Error, Status of I/Os
RUN/STOP switch	Yes
Protection of the user program by password	Possible
Usable accessories	MC503: Memory card TA561-RTC: Real-time clock TA562-RS: Serial RS-485 TA569-RS-ISO: Serial RS-485 isolated TA562-RS-RTC: Real-time clock and serial RS-485

Detailed data of the interfaces

Serial interface COM1	
Physical link	RS-485
Galvanic isolation	none
Transmission rate	Configurable from 1.2 to 187.5 kBit/s
Connection	9-pin D-sub female connector

Serial interface COM1	
Common mode range	Typ. -8 V / +12 V (CAUTION: The interface can be damaged if the signal exceeds the common mode range.)
Usage	- Programming port - Modbus (master and slave) - Serial ASCII communication - CS31 (master only)

Serial interface COM2 (optional)	
Physical link	RS-485
Galvanic isolation	none (TA562-RS or TA562-RS-RTC) 500 V DC (TA569-RS-ISO)
Baudrate	Configurable from 1.2 to 115.2 kBit/s
Connection	Removable 5-pin terminal block
Common mode range	Typ. -8 V / +12 V (CAUTION: The interface can be damaged if the signal exceeds the common mode range.)
Usage	- Programming port - Modbus (master and slave) - Serial ASCII communication

Data of I/Os

	PM55x-xP	**PM56x-xP**
Max. number of I/O modules	10	10
Digital inputs	320 + 8	320 + 8
Digital outputs	240 + 6	240 + 6
Type of digital outputs	PM554-TP PM554-TP-ETH PM554-RP PM554-RP-AC PM556-TP-ETH PM564-TP PM564-TP-ETH PM564-RP PM564-RP-AC PM564-RP-ETH PM564-RP-ETH-AC PM566-TP-ETH	Transistor Transistor Relays Relays Transistor Transistor Transistor Relays Relays Relays Relays Transistor
Analog inputs	160	160 + 2
Analog outputs	160	160 + 1

	PM55x-xP	PM56x-xP
Number of decentralized inputs and outputs	On CS31 Bus: up to 31 stations with up to 120 digital inputs / 120 digital outputs each	
Detailed data of the onboard I/O	Onboard I/Os in PM55x and Onboard I/Os in PM56x	

No effects of multiple overloads

No effects of multiple overloads on isolated multi-channel modules occur, as every channel is protected individually by an external fuse.

3 System data AC500-eCo

3.1 Environmental conditions

Table 2: Process and supply voltages

Parameter		Value
24 V DC		
	Voltage	24 V (-15 %, +20 %)
	Protection against reverse polarity	Yes
24 V AC		
	Voltage	24 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
100 V AC		
	Voltage	100 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
230 VAC		
	Voltage	230 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
100...240 V AC wide-range supply		
	Voltage	100 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 (> 30 V DC) for process or supply voltages could lead to unrecoverable damage of the system. The system might be destroyed.

Parameter		Value
Temperature		
	Operating	0 °C...+60 °C (horizontal mounting of modules) 0 °C...+40 °C (vertical mounting of modules and output load reduced to 50 % per group)
	Storage	-40 °C...+70 °C
	Transport	-40 °C...+70 °C
Humidity		Max. 95 %, without condensation
Air pressure		
	Operating	> 800 hPa / < 2000 m
	Storage	> 660 hPa / < 3500 m

3.2 Creepage distances and clearances

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

3.3 Insulation test voltages, routine test

According to EN 61131-2

Parameter	Value	
200 V...240 V circuits against other circuitry	2500 V	1.2/50 µs
100 V...127 V circuits against other circuitry	1500 V	1.2/50 µs
100 V...240 V circuits against other circuitry	2500 V	1.2/50 µs
24 V circuits (supply, 24 V inputs/outputs, analog inputs/ outputs), if they are galvanically isolated against other circuitry	500 V	1.2/50 µs
COM interfaces, galvanically 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
200 V... 240 V circuits against other circuitry	1350 V	AC 2 s
100 V circuits against other circuitry	820 V	AC 2 s
100 V...240 V circuits against other circuitry	1350 V	AC 2 s

Parameter	Value	
24 V circuits (supply, 24 V inputs/outputs, analog inputs/ outputs), if they are galvanically isolated against other circuitry	350 V	AC 2 s
COM interfaces, galvanically 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

3.4 Power supply units

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



Safety Extra Low Voltage (SELV) and Protective Extra Low Voltage (PELV)

To ensure electrical safety of AC500/AC500-eCo extra low voltage circuits, 24 V DC supply, communication interfaces, I/O circuits, and all connected devices must be powered from sources meeting requirements of SELV, PELV, class 2, limited voltage or limited power according to applicable standards.



WARNING!

Improper installation can lead to death by touching hazardous voltages!

To avoid personal injury, safe separation, double or reinforced insulation and separation of the primary and secondary circuit must be observed and implemented during installation.

- Only use power converters for safety extra-low voltages (SELV) with safe galvanic separation of the primary and secondary circuit.
- Safe separation means that the primary circuit of mains transformers must be separated from the secondary circuit by double or reinforced insulation. The protective extra-low voltage (PELV) offers protection against electric shock.

3.5 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 switchgear cabinet 6 kV [1])

Electromagnetic Compatibility		
	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.
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 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 V DC / 24 VAC)	1 kV
	Digital inputs/outputs (100 V AC...240 V AC)	2 kV
	Analog inputs/outputs	1 kV
	Serial RS-485 interfaces (COM)	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	10 V
High energy surges		According to IEC 61000-4-5, zone B, criterion B
	Power supply AC	2 kV CM / 1 kV DM [2])
	Power supply DC	1 kV CM / 0.5 kV DM [2])
	DC I/O supply, add. DC-supply-out	1 kV CM / 0.5 kV DM [2])
	Communication lines, shielded	1 kV CM [2])
	AC I/O unshielded [3])	2 kV CM / 1 kV DM [2])
	I/O analog, I/O DC unshielded [3])	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

[3]) When DC I/O inputs are used with AC voltage, external filters limiting high energy surges to 1 kV CM / 0.5 DM are required to meet requirements according IEC 61131-2.

3.6 Mechanical data

Parameter	Value
Mounting	Horizontal
Degree of protection	IP 20 (if all terminal screws are tightened)
Housing	Classification V-2 according to UL 94

Parameter	Value
Vibration resistance acc. to EN 61131-2	all three axes (DIN rail mounting) 5 Hz...8.4 Hz, continuous 3.5 mm 8.4 Hz...150 Hz, continuous 1 g
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

3.7 Approvals and certifications

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

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