

DATA SHEET

PM5012, PM5032, PM5052, PM5072

Processor Module



1 Ordering data

Table 1: Processor modules for AC500-eCo V3

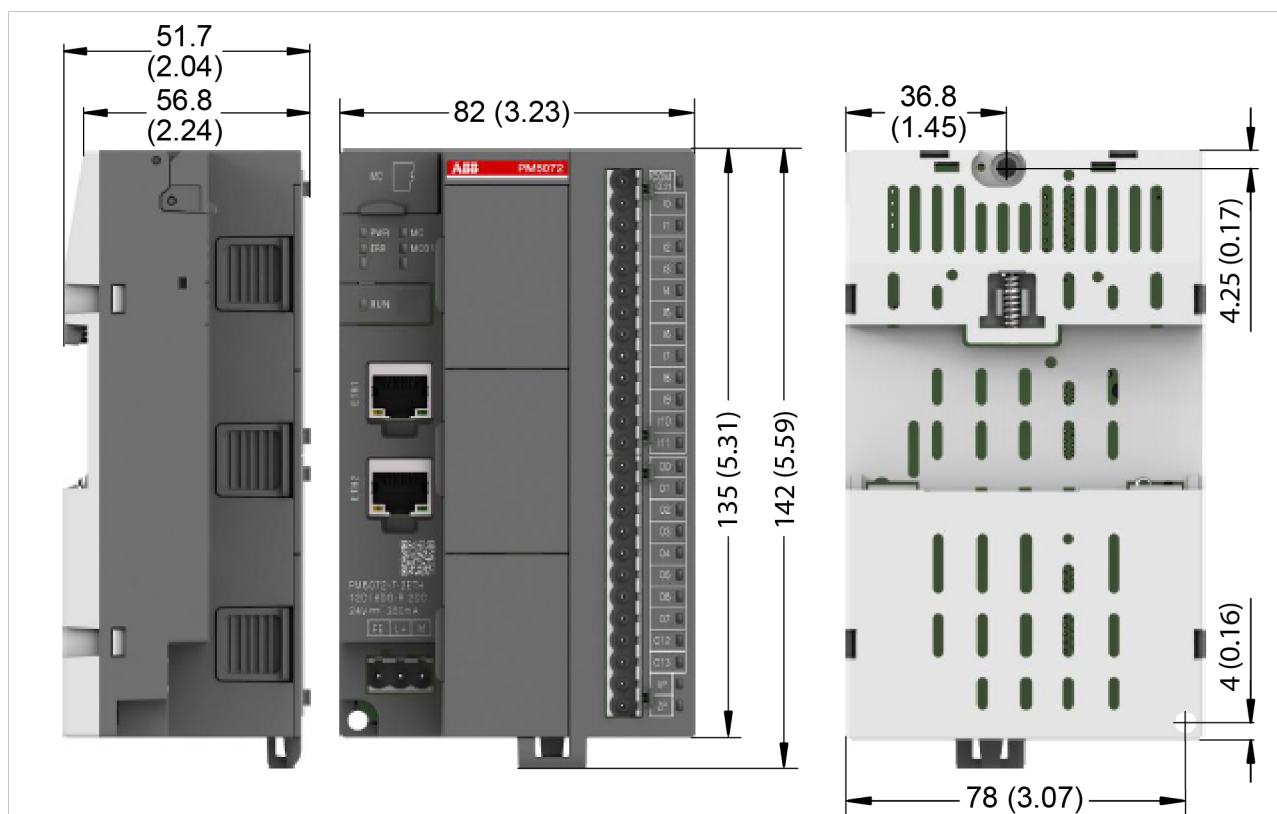
Part no.	Description	Product life cycle phase *)
1SAP 122 600 R0072	Basic CPU PM5012-T-ETH, AC500-eCo V3 processor module, programmable logic controller 1 MB, 6DI/4DO-Transistor, Ethernet, 24 V DC, 1 option board slot	Active
1SAP 122 700 R0072	Basic CPU PM5012-R-ETH, AC500-eCo V3 processor module, programmable logic controller 1 MB, 6DI/4DO-Relay, Ethernet, 24 V DC, 1 option board slot	Active
1SAP 123 400 R0072	Standard CPU PM5032-T-ETH, AC500-eCo V3 processor module, programmable logic controller 2 MB, 12DI/8DO-Transistor/2DC, Ethernet, 24 V DC, 2 option board slots	Active
1SAP 123 500 R0072	Standard CPU PM5032-R-ETH, AC500-eCo V3 processor module, programmable logic controller 2 MB, 12DI/6DO-Relay/2DC, Ethernet, 24 V DC, 2 option board slots	Active

Part no.	Description	Product life cycle phase *)
1SAP 124 000 R0072	Standard CPU PM5052-T-ETH, AC500-eCo V3 processor module, programmable logic controller 4 MB, 12DI/8DO-Transistor/2DC, Ethernet, 24 V DC, 3 option board slots	Active
1SAP 124 100 R0072	Standard CPU PM5052-R-ETH, AC500-eCo V3 processor module, programmable logic controller 4 MB, 12DI/6DO-Relay/2DC, Ethernet, 24 V DC, 3 option board slots	Active
1SAP 124 500 R0073	Pro CPU PM5072-T-2ETH, AC500-eCo V3 processor module, programmable logic controller 8 MB, 12DI/8DO-Transistor/2DC, 2 Ethernet, 24 V DC, 3 option board slots	Active
1SAP 124 400 R0073	Pro CPU PM5072-T-2ETHW, AC500-eCo V3 processor module, programmable logic controller 8 MB, 12DI/8DO-Transistor/2DC, 2 Ethernet, 24 V DC, 3 option board slots, wide temperature	Active



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

2 Dimensions



The dimensions are in mm and in brackets in inch.

3 Technical data

The system data of AC500-eCo V3 apply [Chapter 4 “System data AC500-eCo V3” on page 7](#)
 Only additional details are therefore documented below.

General data

Parameter	Value			
	PM5012	PM5032	PM5052	PM5072
Power supply	24 V DC			
Connection of power supply	Via removable 3-pin terminal			
Current consumption from power supply (max.)				
Transistor version	200 mA	340 mA	400 mA	420 mA
Relay version	200 mA	340 mA	400 mA	-
Inrush current at nominal voltage	On request			
Required fuse	On request			
Max. power dissipation within the processor module				
Transistor version	On request	On request	On request	On request

Parameter		Value			
		PM5012	PM5032	PM5052	PM5072
	Relay version	On request	On request	On request	-
Processor module interfaces		RS485/RS232 (optional), Ethernet			
		-	I/O bus		
Weight					
	Transistor version	300 g	400 g	400 g	400 g
	Relay version	400 g	400 g	400 g	400 g
Mounting position		Horizontal or vertical			

Detailed data

Parameter		Value			
		PM5012	PM5032	PM5052	PM5072
Total maximum downloadable application size ¹⁾		1 MB	5 MB	7 MB	9 MB
	Thereof user program code / data memory dynamically allocated	256 kB	512 kB	768 kB	1 MB
	Thereof user web server memory for web visualization max.	no web	1.5 MB	3.2 MB	7 MB
	User data memory saved in FLASH	8 kB	32 kB	100 kB	
	VAR_RETAIN persistent	4 kB	16 kB	36 kB	
	%MB data	4 kB	16 kB	64 kB	
Data buffering		FRAM			
Real-time clock (RTC)		Optional with TA5131-RTC	Built in		
Min. retention time for RTC / accuracy in s/day		On request	On request	On request	On request
Programming languages		<ul style="list-style-type: none"> ● Instruction List (IL) ● Function Block Diagram (FBD) ● Ladder Diagram (LD) ● Sequential Function Chart (SFC) ● Structured Text (ST) ● Continuous Function Chart (CFC) 			
Cycle time per instructions (minimum)		PM5012	PM5032	PM5052	PM5072
	Binary	20 ns			
	Word	50 ns			
	Floating point	600 ns			
Program execution		PM5012	PM5032	PM5052	PM5072
	Cyclic min. configurable	10 ms	5 ms	2 ms	1 ms
	Time-controlled	Yes			
	Multitasking	Yes			
	Interruption	Yes			
LEDs		Power, Error, Run, MC, MOD1, States of I/Os			

Parameter	Value			
	PM5012	PM5032	PM5052	PM5072
RUN/STOP button	Yes			
Protection of the user program by password	On request			
Usable accessories	On request			
Remarks:				
1): The values are for information only and cannot be fulfilled altogether. The available resources are limited at the end by the maximal downloadable application size for each CPU.				

Data of I/Os	PM5012-x-ETH	PM5032-x-ETH	PM5052-x-ETH	PM5072-T-2ETH
Onboard digital inputs				
Channels	6 (incl. 2 counter inputs 5 kHz and 4 interrupts)	12 (incl. 4 fast counter/encoder inputs (100 kHz/200 kHz), 4 counter inputs (5 kHz), 4 standard inputs)		
Signal voltage	24 V DC type 1			
Onboard digital outputs				
Type of digital outputs	PM5012-T-ETH: Transistor	PM5032-T-ETH: Transistor	PM5052-T-ETH: Transistor	PM5072-T-2ETH: Transistor
	PM5012-R-ETH: Relay	PM5032-R-ETH: Relay	PM5052-R-ETH: Relay	-
Channels for transistor version	4 (5 kHz standard and PWM)	8 (incl. 4 fast outputs for standard or 4 PWM/2 PTO (100 kHz/200 kHz), 4 standard outputs (5 kHz))		
Channels digital input/output configurable (valid for both PLC version relais or transistor)	-	2 Relay version: The DC channels can be used as 1 PTO/2 PWM (100 kHz) or standard digital inputs/outputs Transistor version: The DC channels can only be used as standard digital inputs/outputs		2 Transistor version: The DC channels can only be used as standard digital inputs/outputs
Rated voltage transistor	24 V DC			
Nominal current per transistor channel	0.5 A resistive			
Channels for relay version	4	6		-
Rated voltage relay	100 V AC...240 V AC or 24 V DC			-
Nominal current per relay channel	2 A resistive			-
Analog inputs	Optional			

Data of I/Os	PM5012-x-ETH	PM5032-x-ETH	PM5052-x-ETH	PM5072-T-2ETH
Analog outputs	Optional			
Number of option board slots	1	2	3	3
Usage of option board	Each slot can be used for all type of existing option boards, same option board for serial interface or digital/analog I/O extension can be used on several slot per CPU. Note: RTC option board is only for PM5012 possible.			
KNX address switch	No			TA5130-KNXPB only on 1 slot
Real-time clock (RTC)	TA5131-RTC	No		
Serial interface	TA5141-RS232I, TA5142-RS485/TA5142-RS485I			
Digital in/out channels	TA5101-4DI, TA5105-4DOT, TA5110-2DI2DOT			
Analog in/out channels	TA5120-2AI-UI, TA5122-2AI-TC, TA5123-2AI-RTD, TA5126-2AO-UI			
Max. number of I/O modules on I/O bus	0	10		
Digital inputs	Onboard I/O only	128 B	1 kB	
Digital outputs		128 B	1 kB	
Number of decentralized inputs and outputs	Depending on the fieldbus used			
Internal interfaces				
Serial COMx	Optional, use a dedicated serial interface option board (up to 1)	Optional, use a dedicated serial interface option board (up to 2)	Optional, use a dedicated serial interface option board (up to 3)	
	Modbus RTU Master/Slave, ASCII			
Ethernet interface RJ45	1			2 Independent with switch functionality
Ethernet functions	Programming, TCP/IP, UDP/IP, DHCP, PING, network variables, and other listed below			
Modbus TCP/IP client/server	Yes 8 / 3	Yes 13 / 8	Yes 20 / 10	Yes 30 / 15
SNTP client/server	No	Yes		
HTTPs and Web-Visu number of connections	No	Yes 1	Yes 2	Yes 4
FTP number of connections	No	Yes 1	Yes 2	

Data of I/Os	PM5012-x-ETH	PM5032-x-ETH	PM5052-x-ETH	PM5072-T-2ETH
OPC UA server	No	Yes	Yes	Yes
number of free tags		125	250	1000
MQTT and JSON library	No	Yes		
OPC DA server	Yes			
IEC 60870-5-104 telecontrol protocol	No			Yes Substation only, 5 connections max., only 1 Ethernet supported
Licensed protocols (runtime protocol per CPU)				
BACnet IP B-BC	No			Yes (max. 1000 object variables)
KNXIP	No			Yes (max. 1000 object variables)
IEC 61850 MMS server/goose pub/sub	No			Yes (max. 1000 data attributes)
EtherNet/IP adapter/scanner	No	Yes (in preparation)		

4 System data AC500-eCo V3

4.1 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 V AC	
Voltage	230 V (-15 %, +10 %)
Frequency	50/60 Hz (-6 %, +4 %)
100 V AC...240 V AC wide-range supply	
Voltage	100 V...240 V (-15 %, +10 %)
Frequency	50/60 Hz (-6 %, +4 %)

Parameter	Value
Allowed interruptions of power supply, according to EN 61131-2	
DC supply	Interruption < 10 ms, time between 2 interruptions > 1 s, PS2

! 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				
	PM5012-x-ETH	PM5032-x-ETH	PM5052-x-ETH	PM5072-T-2ETH	PM5072-T-2ETHW
Temperature					
Operating					
Horizontal mounting					
	Standard temperature range	0 °C...+55 °C	0 °C...+60 °C		-
	Wide temperature range	-			-20 °C...+70 °C I/O derating in range 60 °C...70 °C: 75 %
Vertical mounting (output load reduced to 50 % per group)					
	Standard temperature range	0 °C...+40 °C			-
	Wide temperature range	-			-20 °C...+40 °C
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			
Ingress protection		PLC System: IP 20 in accordance with IEC 60529 <ul style="list-style-type: none"> with all modules or option boards plugged in with all terminal blocks plugged in with all covers closed 			

Option boards	Temperature range
TA5101-4DI	0 °C... 60 °C
TA5105-4DOT	0 °C... 60 °C
TA5110-2DI2DOT	0 °C... 60 °C
TA530-KNXPB	0 °C... 60 °C
TA5131-RTC	0 °C...+55 °C

Option boards	Temperature range
TA5141-RS232I	0 °C... 60 °C
TA5142-RS485I	0 °C... 60 °C
TA5142-RS485	0 °C... 60 °C

4.2 Creepage distances and clearances

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

4.3 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.

4.4 Electromagnetic compatibility

Electromagnetic Compatibility		
Device suitable for:		
	Industrial applications	Yes
	Domestic applications	Yes
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	6 kV

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
	Digital inputs/outputs (24 V DC)	1 kV
	Digital inputs/outputs (100 V AC...240 V AC)	Relay 2 kV
	Ethernet	1 kV
	Serial interfaces	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 pass A
High energy surges		According to IEC 61000-4-5, zone B, criterion B
	Power supply DC	1 kV CM / 0.5 kV DM ¹⁾
	DC I/O supply	1 kV CM / 0.5 kV DM ¹⁾
	Ethernet	1 kV CM ¹⁾
	Serial interfaces	1 kV CM ¹⁾
	AC I/O unshielded	2 kV CM, 1 kV DM ¹⁾
	I/O analog, I/O DC unshielded	1 kV CM ¹⁾
Radiation (radio disturbance)		According to IEC 55011, group 1, class A

¹⁾ CM = Common Mode, DM = Differential Mode

4.5 Mechanical data

Parameter	Value
Mounting	Horizontal
Degree of protection	EN61131-2: IP20 with all option boards or option board slot covers attached (and all terminal screws are tightened)
Housing	Classification V0 according to UL 94
Vibration resistance acc. to EN 61131-2	all three axes (DIN rail mounting) 5 Hz...8.2 Hz: ±7.5 mm peak 8.2 Hz...150 Hz: 2 g peak
Shock test	All three axes 15 g, 11 ms, half-sinusoidal
Mounting of the modules:	

Parameter	Value
DIN rail according to DIN EN 50022	35 mm, depth 7.5 mm or 15 mm
Mounting with screws	M3
Fastening torque	1.2 Nm

4.6 Approvals and certifications

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