AC500

Ordering data

AC500 V3 CPUs

- 1x internal serial interface, RS232 / RS485 configurable (ACSII or Modbus RTU Master/Slave)
- 2x independent Ethernet interfaces which can also be used as switch and software configurable protocols like Modbus TCP, IEC 60870-5-104, DNP3 (2), Ethernet/IP (2), IEC 61850 (2), BACnet-BC (2) or KNX IP (2) controller
- Web server with Web Visu HTML5 with CP600 with web interface
- 1x internal CAN interface, with CANopen Master, CAN 2A/2B and J1939 protocols
- Display and 8 function keys for diagnosis and status
- Can be centrally extended with up to 10 I/O modules, 320 I/Os (S500 and/or S500-eCo modules allowed)
- Simultaneous operation of several external communication modules in any desired combination
- To be used exclusivelly with new TB56xx-2ETH
- Optional memory card for data storage and program backup
- To be used only with Automation Builder 2.1 and later
- Support of AC500-S safety PLC

Total user program memory MB (4)(5)	Cycle time in µs per instruction min. Bit/Word/Float. point	Integrated communication	Type	Order code	Weight (1 pce) kg
8 (thereof 2 for User Prog. code + Data)	0.020 / 0.020 / 0.120	2 x Ethernet with configurable protocol Ethernet/IP (2), 1 x serial, 1x CAN interface	PM5630-2ETH (1) (3)	1SAP131000R0378	0.133
80 (thereof 8 for User Prog. code + Data)	0.010 / 0.010 / 0.010	2 x Ethernet with configurable protocols Ethernet/IP (2), 1 x serial, 1x CAN interface	PM5650-2ETH (1) (3)	1SAP141000R0378	0.133
160 (thereof 32 for User Prog. code + Data)	0.002 / 0.002 / 0.002	2 x Ethernet with configurable protocol Ethernet/IP (2), 1 x serial, 1x CAN interface	PM5670-2ETH (1) (3)	1SAP151000R0378	0.133
160 (thereof 32 for Prog. code + Data) / 8GB Flash disk	0.002 / 0.002 / 0.002	2 x Ethernet with configurable protocol Ethernet/IP (2), 1 x serial, 1x CAN interface	PM5675-2ETH (1) (3)	1SAP151500R0378	0.135

(1) Ethernet communication provides integrated web server, IEC 60870-5-104 remote control protocol and OPC UA server on each interface independently.
(2) Some communication protocols are licensed see following lines. (3) Only to be used with dedicated terminal base TB56xx-2ETH.
(4) Memory size of V2 versus V3 CPUs is not comparable. Projects have a different and separate User Program code and Data memory calculation in Automation Builder 2.4.0 version or later: System, configuration and web server parts are not counted anymore. This results in typically about 50% lower memory usage compared to V2, and even lower memory usage compared to V3 projects compiled in Automation Builder 2.3.0 or before.
(5) Total user program memory: Defines the CPU type and the size of User part but the most relevant and real information is given by the maximum downloadable application size of each CPU (see technical data).



PM5630-2ETH



PM5650-2ETH



PM5670-2ETH



PM5675-2ETH

AC500

Technical data

AC500 V3 CPUs

Type	PM5630-2ETH	PM5650-2ETH	PM5670-2ETH	PM5675-2ETH	PM5680-2ETH (1)	PM5685-2ETH (1)
Supply voltage	24 V DC					
Current consumption on 24 V DC						
Min. typ. (module alone)	0.110 A	0.120 A	0.140 A	0.140 A	0.170 A	0.170 A
Max. typ. (all couplers and I/Os)	0.400 A	0.600 A	0.800 A	0.800 A	0.800 A	0.800 A
Type of processor	TI ARM Cortex-A9 32-bit-RISC				Dual-core TI ARM Cortex-A53 64-bit-RISC	
Processor clock frequency	300 MHz	600 MHz	1 GHz	1 GHz	1 GHz	1 GHz
Total RAM memory	128 MB	256 MB	512 MB	512 MB	512 MB	1 GB
Total Flash memory	128 MB	512 MB	1024 MB	1024 MB	2048 MB	2048 MB
User program memory (2)	8 MB	80 MB	160 MB	160 MB	160 MB	320 MB
Maximum downloadable application size (5)	9 MB	84 MB	176 MB	176 MB	176 MB	320 MB
Thereof User program code and data (dynamically allocated)	2 MB (3)	8 MB (3)	32 MB (3)	32 MB (3)	32 MB	64 MB
Thereof User web server Data max.	6 MB	72 MB	128 MB	128 MB	128 MB	256 MB
User data memory saved	256 kB	256 kB	1.5 MB	1.5 MB	1.5 MB	1.5 MB
Thereof VAR Retain persistent	128 kB	128 kB	1024 kB	1024 kB	1024 kB	1024 kB
Thereof %M memory (e.g. Modbus register memory)	128 kB	128 kB	512 kB	512 kB	512 kB	512 kB
User flash disk (data-storage, programm access or also external with FTP)	-	-	-	8 GB Flash non removable	-	-
Plug-in memory card	Depending on memory card used: use MC5102 for standard usage or MC5141 for high requirements.					
Data buffering	battery					
Real-time clock (with battery back-up)	●					
Cycle time for 1 instruction (minimum)						
Binary	0.02 µs	0.01 µs	0.002 µs			
Word	0.03 µs	0.01 µs	0.002 µs			
Floating-point	0.12 µs	0.01 µs	0.002 µs			
Program execution						
Cyclical	●					
Minimun cycle time configurable for cyclical task	1 ms	1 ms	0.5 ms	0.5 ms	0.5 ms	0.5 ms
Time controlled	●					
Multi tasking	●					
User program protection by password	●					
Motion control with EtherCAT via CM579-ETHCAT or CAN sync onboard and PLCopen library PS5611-MC (6)						
Min. EtherCAT master cycle time	2 ms	1 ms	0.5 ms (7)	0.5 ms (7)	0.5 ms (7)	0.5 ms (7)
Number of synchronized axis (4) in 1 ms	–	8 (8)	16 (8)	16 (8)	16 (8)	16 (8)
Number of synchronized axis (4) in 2 ms	4	16	32	32	32	32
Number of synchronized axis (4) in 4 ms	8	32	64	64	64	64

(1) In preparation
(2) Total user program memory: Defines the CPU type and the size of User part but the most relevant and real information is given by the maximum downloadable application size of each CPU.
(3) Memory size of V2 versus V3 CPUs is not comparable. Projects have a different and separate User Program code and Data memory calculation in Automation Builder 2.4.0 version or later: System, configuration and web server parts are not counted anymore. This results in typically about 50 % lower memory usage compared to V2, and even lower memory usage compared to V3 projects compiled in Automation Builder 2.3.0 or before.
(4) + 1 e.g. for virtual axis
(5) Maximum downloadable application size: contains user program code, data, web server memory, infrastructure . This is the maximum size of the application which can be downloaded into a CPU with Automation Builder. This value is displayed and splitted into different categories in the resource window of AB SW.
(6) Licensed
(7) 2 axis only with 0.5 ms cycle time.
(8) Includes all axis types: Virtual, simulated, encoder -> lower for EtherCAT axis only.

AC500
Technical data

AC500 V3 CPUs

Type	PM5630-2ETH	PM5650-2ETH	PM5670-2ETH	PM5675-2ETH	PM5680-2ETH (1)	PM5685-2ETH (1)
Communication modules and terminal bases supported						
Max. number of communication modules on terminal base TB						
TB5600-2ETH	0 slot	0 slot	0 slot	0 slot	0 slot	0 slot
TB5610-2ETH	1 slot	1 slot	1 slot	1 slot	1 slot	1 slot
TB5620-2ETH	2 slots	2 slots	2 slots	2 slots	2 slots	2 slots
TB5640-2ETH	–	4 slots	4 slots	4 slots	4 slots	4 slots
TB5660-2ETH	–	–	6 slots	6 slots	–	6 slots
Type of safety module supported						
SM560-S - safety module	●					
SM560-S-FD-1 - safety module with F-Device functionality for 1 PROFIsafe network	●					
SM560-S -FD-4 - safety module with F-Device functionality for 1 PROFIsafe network	●					
Type of communication module supported						
Max. number of variables allowed for each communication module supported						
Input variables	4 kB		5 kB			
Output variables	4 kB		5 kB			
CM5610-2RS - serial interface	●					
CM582-DP - PROFIBUS DP V0/V1 Slave	●					
CM592-DP - PROFIBUS DP V0/V1 Master	●					
CM579-ETHCAT - Master	●					
CM579-PNIO - PROFINET IO RT controller	●					
CM589-PNIO - PROFINET IO RT device	●					
CM589-PNIO-4 - PROFINET IO RT with 4 devices	●					
CM5640-2ETH - 2 Ethernet interfaces (2) (3)	●					
CM598-CN - CAN, CANopen Master	●					

(1) In preparation
(2) Using parallel protocols on the same and/or different port reduces the bandwidth and the CPU performance
(3) The CM5640-2ETH communication module is a port extender providing 2 additional “onboard Ethernet” interfaces to the connected CPU which manages all the communication. Some of the onboard Ethernet features are available, the Ethernet limitations from the CPU will then apply in total for all the connected interfaces. The CM5640-2ETH doesn’t extend the limits which remain those of the connected CPU, e.g. no increase of Ethernet sockets or number of OPC UA tags.

AC500
Technical data

AC500 V3 CPUs

Type	PM5630-2ETH	PM5650-2ETH	PM5670-2ETH	PM5675-2ETH	PM5680-2ETH (1)	PM5685-2ETH (1)
Max. number of centralized inputs/outputs						
Max. number of extension modules on I/O bus	up to max. 10 (S500 and/or S500-eCo I/O modules allowed)					
Digital inputs/outputs	320/320					
Analog inputs/outputs	160/160					
Max. number of decentralized inputs/outputs	depends on the used standard fieldbus (2)					
Internal interfaces for communication						
COM1						
RS232 / RS485 configurable	●					
Connection (on terminal bases or CPU module)	pluggable spring terminal block					
Modbus RTU Master/Slave, ASCII, CS31 Master (5)	●					
CANopen						
Serial interface	CAN serial interface					
Connection (on terminal bases)	Pluggable spring terminal block, 2x 5 poles					
Functions	CANopen® Master communication, CAN 2A/2B, J1939 protocol, CAN sync					
Max. number of variables allowed						
Input variables	2 kB	4 kB	5 kB	5 kB	5 kB	5 kB
Output variables	2 kB	4 kB	5 kB	5 kB	5 kB	5 kB
Ethernet	2x independent Ethernet interfaces for several uses					
Ethernet connection (on terminal bases)	2x RJ45 with 2x separated interfaces and MAC-Address, could be used as 2-port switch with 1x interface					
Ethernet functions (4):						
Ethernet Switch on ETH1 / ETH2	●					
Online Access, ICMP (Ping), DHCP, programming	●					
Nb of parallel connections (6)	6	8	12	12	12	12
IP configuration protocol	●					
UDP data exchange, Network variables	● / ●					
HTTP / HTTPs (integrated web server)	●					
Nb of parallel connections	4	8	12	12	12	12
Web Visu for data visualisation on web server HTML5	●					
NTP (Time synchronization) Server / Client	● / ●					
FTP / FTPs server	●					
Nb of parallel connections	2	4	4	4	4	4
SMTP client	●					
Socket programming	●					
Modbus TCP Client / Server						
CPU as client can communicate with a max. number of servers (e.g. CI52x) in parallel	30	50	120	120	120	300
CPU as Server can simultaneously respond to a max. number of clients (e.g. SCADA) in parallel	15	25	50	50	50	250
IEC 60870-5-104 remote control protocol - Support 2nd connection	●					
Nr of free tags	1000	5000	10000	10000	–	20000
Control Station - Nb connections	5	10	20	20	–	40
Sub-Station - Nb connections	5	10	20	20	–	40

(1) In preparation
(2) e.g. CANopen fieldbus: up to 127 stations with I/O from CI module only per station.
(3) Feature is licensed, runtime license per CPU.
(4) Using parallel protocols on the same and/or different port reduces the bandwidth and the CPU performance.
(5) CS31 Master is in preparation.
(6) Open visualizations from Automation Builder are counted as connections, too.

AC500
Technical data

AC500 V3 CPUs

Type	PM5630-2ETH	PM5650-2ETH	PM5670-2ETH	PM5675-2ETH	PM5680-2ETH (1)	PM5685-2ETH (1)
OPC UA Server (Micro Embedded Device Server) with security	●					
Nr of free tags	3.000	10.000	30.000	30.000	30.000	60.000
Nr of Connections	10	20	50	50	50	100
min sampling rate (limit)	500 ms	100 ms	50 ms	50 ms	50 ms	50 ms
OPC DA Server AE	●					
Nr of Connections	8	8	8	8	8	8
Ethernet-based fieldbus protocols on onboard Ethernet interface (4)	The number of allowed variables is depending on the protocol used					
Downloadable protocols (licensed feature with runtime license per CPU):	available on one Ethernet interface, the other interface can be sometimes used as switch					
Ethernet/IP Scanner communication	● (3)	● (3)	● (3)	● (3)	● (3)	● (3)
Ethernet/IP Adapter communication	● (3)	● (3)	● (3)	● (3)	● (3)	● (3)
Maximum allowed number of input/ output variables for the onboard fieldbus protocol	0.5 kB / 0.5 kB	0.5 kB / 0.5 kB	0.5 kB / 0.5 kB	0.5 kB / 0.5 kB	0.5 kB / 0.5 kB	0.5 kB / 0.5 kB
IEC 61850 - MMS server Edition 1 / GOOSE communication	● / ● (3)	● / ● (3)	● / ● (3)	● / ● (3)	–	● / ● (3)
Indicative number of usable data attributes/objects	1000	2000	5000	5000	–	5000
KNX - Building communication	● (3)	● (3)	● (3)	● (3)	–	● (3)
Maximum number of allowed Objects variables on the interface	1000	1000	1000	1000	–	1000
BACnet-BC - Infrastructure communication	● (3)	● (3)	● (3)	● (3)	–	● (3)
Maximum number of allowed Objects variables on the interface	1000	2000	5000	5000	–	5000
DNP3 outstation with security (3)	●					
Nr of objects	1000	3000	10000	10000	–	15000
Nr of master connections	8					
CPU display	LC display and 8 function keys					
Function	RUN / STOP, status, diagnosis, settings					
LEDs for various status display	●					
Timer/Counter	unlimited/unlimited					
Approvals	See detailed page 262 or new.abb.com/plc					

(1) In preparation
(2) e.g. CANopen fieldbus: up to 127 stations with I/O from CI module only per station.
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(4) Using parallel protocols on the same and/or different port reduces the bandwidth and the CPU performance.
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Symbols and legends:

● Standard product certified: product label wears approval mark when mandatory
⭘ Submitted (roadmap available upon request)
○ Submission planned (roadmap available upon request)
– Submission not planned or not applicable for product

Name	Conformité Européenne	UKCA UK Conformity Assessed	SJ/T 11363-2006 (China RoHS)	Regulatory Compliance Mark (RCM)	Eurasian Conformity	Korea Certification	Underwriter Laboratories		American Bureau of Shipping	Bureau Veritas	DNV	Lloyds Register	RINA	Korean Register of Shipping	China Classification Society
Logo / Certification Mark	CE	UKCA	e	RCM	EAC	KC	cULus	US LISTED	ABS	BV	DNV	LR	RINA	KR	CCS
Certificate	Declaration of Conformity LVD / EMC	Declaration of Conformity	Declaration of Conformity	Declaration of Conformity	Declaration of Conformity	Declaration of Conformity	cULus Ordinary Locations	cULus Hazardous Locations	Design Assessment	Type Approval	Type Approval	Type Approval	Type Approval	Type Approval	Type Approval
PM5012-R-ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5012-T-ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5032-R-ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5032-T-ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5052-R-ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5052-T-ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5072-T-2ETH	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5072-T-2ETHW	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
PM5082-T-ETH	●	●	●	●	–	–	●	●	●	●	●	●	●	–	●
PM5092-T-ETH	●	●	–	–	–	–	–	–	–	–	–	–	–	–	–
PM5630-2ETH	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5630-2ETH-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5650-2ETH	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5650-2ETH-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5670-2ETH	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5670-2ETH-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5675-2ETH	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5675-2ETH-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
PM5680-2ETH	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PM5685-2ETH	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SM560-S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SM560-S-FD-1	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
SM560-S-FD-1-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
SM560-S-FD-4	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
SM560-S-FD-4-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
SM560-S-XC	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
TA5101-4DI	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
TA5101-4DIW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5105-4DOT	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
TA5105-4DOTW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5110-2DI2DOT	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
TA5110-2DI2DOW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5120-2AI-UI	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5120-2AI-UIW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5122-2AI-TC	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5122-2AI-TCW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5123-2AI-RTD	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5123-2AI-RTW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5126-2AO-UI	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5126-2AO-UIW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●
TA5128-2AI1AO	●	●	○	○	–	○	○	○	○	○	●	●	●	●	○
TA5128-2AI1AOW	●	●	–	–	–	–	●	–	–	–	–	–	–	–	–
TA5130-KNXPB	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
TA5130-KNXPBW	●	●	●	●	–	○	●	●	○	○	●	●	●	○	●
TA5131-RTC	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
TA5141-RS232I	●	●	●	●	–	○	●	●	●	●	●	●	●	●	●
TA5141-RS232IW	●	●	●	●	–	○	●	●	●	●	●	●	●	○	●