MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ABB

PM5670-2ETH 1SAP151000R0278

AC500 V3 ETHERNET CPU MODULE

Used with the applicable AC500 V3 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: ABB PLC Automation Main Catalog 3ADR020077C0204 Rev. E; PM5670 ordering and technical tables.

MAIN CATALOG

PLC Automation

PLCs, Control Panels, Engineering Suite
AC500, CP600, ABB Ability™ Automation Builder



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, Ethernet/IP (3), IEC 61850 (3), BACnet-BC (3) or KNX IP (3) 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 ABB Ability™ 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)	1SAP131000R0278	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)	1SAP141000R0278	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)	1SAP151000R0278	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)	1SAP151500R0278	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



PM5650-MC-KIT

AC500 Machine controller kits

- One single order code for a complete product bundle providing all needed devices for a machine controller.

Program memory kB	Cycle time in µs per instruction min. Bit/Word/Float. point	Features	Axis limits EtherCAT axis per ms cycle time	Max. axis at 2 ms EtherCAT cycle time	Type	Order code	Weight (1 pce) kg
8 MB	0.020 / 0.020 / 0.120	PM5630-2ETH, CM579-ETHCAT, TB5610-ETH, PS5611-MC	2	4	PM5630-MC-KIT	1SAP131000R0379	0.363
80 MB	0.010 / 0.010 / 0.010	PM5650-2ETH, CM579-ETHCAT, TB5610-ETH, PS5611-MC	8	16	PM5650-MC-KIT	1SAP141000R0379	0.363
160 MB	0.002 / 0.002 / 0.002	PM5670-2ETH, CM579-ETHCAT, TB5610-ETH, PS5611-MC	16	32	PM5670-MC-KIT	1SAP151000R0379	0.363

AC500
Technical data

AC500 V3 CPUs

Type	PM5630-2ETH	PM5650-2ETH	PM5670-2ETH	PM5675-2ETH
Supply voltage	24 V DC			
Current consumption on 24 V DC				
Min. typ. (module alone)	0.110 A	0.120 A	0.140 A	
Max. typ. (all couplers and I/Os)	0.850 A	0.900 A	0.950 A	
Type of processor	TI ARM Cortex-A9 32-bit-RISC			
Processor clock frequency	300 MHz	600 MHz	1 GHz	1 GHz
Total RAM memory	128 MB	256 MB	512 MB	512 MB
Total Flash memory	128 MB	512 MB	1024 MB	1024 MB
User program memory (1)	8 MB	80 MB	160 MB	160 MB
Maximum downloadable application size (4)	9 MB	84 MB	176 MB	176 MB
Thereof User program code and data (dynamically allocated)	2 MB (2)	8 MB (2)	32 MB (2)	32 MB (2)
Thereof User web server Data max.	6 MB	72 MB	128 MB	128 MB
User data memory saved	256 kB	256 kB	1.5 MB	1.5 MB
Thereof VAR Retain persistent	128 kB	128 kB	1024 kB	1024 kB
Thereof %M memory (e.g. Modbus register memory)	128 kB	128 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	
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 (5)				
Min. EtherCAT master cycle time	2 ms	1 ms	0.5 ms	
Number of synchronized axis (3) in 1 ms	-	8	16	
Number of synchronized axis (3) in 2 ms	4	16	32	
Number of synchronized axis (3) in 4 ms	8	32	64	

(1) 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.
(2) 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.
(3) + 1 e.g. for virtual axis
(4) 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.
(5) Licensed

AC500

Technical data

AC500 V3 CPUs

Type	PM5630-2ETH	PM5650-2ETH	PM5670-2ETH	PM5675-2ETH
Communication modules and terminal bases supported				
Max. number of communication modules on terminal base TB				
TB5600-2ETH	0 slot	0 slot	0 slot	
TB5610-2ETH	1 slot	1 slot	1 slot	
TB5620-2ETH	2 slots	2 slots	2 slots	
TB5640-2ETH	-	4 slots	4 slots	
TB5660-2ETH	-	-	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	
CM574-RS/RCOM - serial interface	-			
CM5610-2RS - serial interface	● (1)			
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	●			
CM597-ETH - Ethernet interface	-			
CM5640-2ETH - 2 Ethernet interfaces (2) (3)	● (1)			
CM588-CN - CAN, CANopen Slave	-			
CM598-CN - CAN, CANopen Master	● only CAN 2A/2B today			

(1) In preparation, availability on demand
(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
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 (1)			
Internal interfaces for communication				
COM1				
RS232 / RS485 configurable	●			
Connection (on terminal bases or CPU module)	pluggable spring terminal block			
Modbus RTU Master/Slave, ASCII	●			
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	
Output variables	2 kB	4 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 (3):				
Ethernet Switch on ETH1 / ETH2	●			
Online Access, ICMP (Ping), DHCP, programming	●			
Nb of parallel connections	6	8	12	
IP configuration protocol	●			
UDP data exchange, Network variables	● / ●			
HTTP / HTTPs (integrated web server)	●			
Nb of parallel connections	4	8	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	
SMTP client	●			
Socket programming	●			
Modbus TCP Client / Server				
Nr of Modbus clients ModMast in parallel on a CPU Master (Server)	30	50	120	
Nr of Modbus server in parallel (for SCADA access e.g.)	15	25	50	
IEC 60870-5-104 remote control protocol - Support 2nd connection	●			
Nr of free tags	1000	5000	10000	
Control Station - Nb connections	5	10	20	
Sub-Station - Nb connections	5	10	20	
OPC UA Server (Micro Embedded Device Server) with security	●			
Nr of free tags	3000	10000	30000	
Nr of Connections	10	20	50	
min sampling rate (limit)	500 ms	100 ms	50 ms	
OPC DA Server AE	●			
Nr of Connections	8	8	8	
Ethernet-based fieldbus protocols on onboard Ethernet interface (3)	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	● (2)	● (2)	● (2)	
Ethernet/IP Adapter communication	● (2)	● (2)	● (2)	
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	
IEC 61850 - MMS server Edition 1 / GOOSE communication	● / ● (2)	● / ● (2)	● / ● (2)	
Maximum number of allowed data attributes in variables list	1000	2000	5000	
KNX - Building communication	● (2)	● (2)	● (2)	
Maximum number of allowed Objects variables on the interface	1000	1000	1000	
BACnet-BC - Infrastructure communication	● (2)	● (2)	● (2)	
Maximum number of allowed Objects variables on the interface	1000	2000	5000	
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 284 or new.abb.com/plc			

(1) e.g. CANopen fieldbus: up to 127 stations with I/O from CI module only per station.
(2) Feature is licensed, runtime license per CPU.
(3) Using parallel protocols on the same and/or different port reduces the bandwidth and the CPU performance