

**CPUs PM57x PM58x and PM59x**

- PM57x-ETH, PM58x-ETH and PM59x-ETH: CPU with network interface Ethernet RJ45
- PM58x-ARCNET and PM59x-ARCNET: CPU with network interface ARCNET BNC
- PM591-2ETH: CPU with 2 network interfaces Ethernet RJ45
- XC version for usage in extreme ambient conditions available (some models versions only)

1	6x 7-segments status displays with background lighting
2	"Triangle" displays for "Item"
3	"Square" displays for "Status"
4	3 Status LEDs
5	6 Pushbuttons
6	Slot for SD Memory Card
7	Label
8	Compartment for Lithium Battery TA521
9	Lithium Battery TA521
10	SD Memory Card MC502
11	I/O-Bus for connection of I/O Modules
12	Slot for CPU (CPU mounted on Terminal Base)
13	Slots for Communication Modules (max 4 depending on Terminal Base; unused slots must be covered with TA524)
14	Interface for FieldBusPlug
15	Terminal block 5-pole for power supply (removable)
16	Terminal block 9-pole for Serial Interface COM1 (removable)
17	<b>PM5xy-ETH and PM5xy-ARCNET:</b> D-SUB jack 9-pole for Serial Interface COM2 <b>PM5xy-2ETH:</b> RJ45 jack for 2nd Ethernet connection
18	RJ45 jack for Ethernet connection / BNC jack for ARCNET connection (depending on Terminal Base)
19	DIN rail
	✱✱✱ Sign for XC version

Figure: CPU PM581-ETH plugged on a Terminal Base TB521-ETH

The CPUs PM57x, PM58x, and PM59x are the central units of the control system Advant Controller 500 (AC500). The types differ in their performance (memory size, speed etc.). Each CPU must be mounted on a suitable Terminal Base. The Terminal Base type depends on the number of communication modules which are used together with the CPU and on the CPU-own network interface type (1x Ethernet, 2x Ethernet or ARCNET). At the right side of the CPU, up to 10 I/O expansion modules can be attached (up to 7 I/O Terminal Units before PS501 V1.2 and CPU firmware before V1.2.0).

The CPUs have several interfaces.

**Note:** Mounting, disassembling, electrical connection and dimensioned drawings for the Terminal Bases, CPUs, Communication Modules, I/O

Terminal Units and the I/O expansion modules are described in detail in the [AC500 System Data](#) chapters.

## Contents

[Short description](#)  
[Assortment](#)  
[Connections](#)  
 - [I/O-Bus](#)  
 - [Power supply](#)  
 - [Bad wiring on power supply terminals](#)  
 - [Serial interface COM1](#)  
 - [Serial interface COM2](#)  
 - [Network interface ARCNET](#)  
 - [Network interface Ethernet](#)  
 - [FBP interface](#)  
[Lithium battery](#)  
[SD Memory Card](#)  
[Project planning / start-up](#)  
[Displays and operating elements on the front panel of the CPU](#)  
[Technical data](#)  
[Ordering data](#)

## Short Description

AC500-CPU (except PM591-2ETH) can be used as slave in connection with the following FieldBusPlugs:



- PROFIBUS<sup>®</sup> PDP22-FBP (Ordering No. 1SAJ 240 100 R10xx)
- DeviceNet<sup>™</sup> DNP21-FBP (Ordering No. 1SAJ 230 00 R10xx)
- CANopen<sup>®</sup> COP21-FBP (Ordering No. 1SAJ 230 100 R10xx)

## Hardware configuration

Each CPU can operate up to 4 communication modules through its communication module interface. The Communication Modules are mounted on the left side of the CPU on the same Terminal Base. On the right side of the CPU, up to 10 digital or analog I/O expansion modules can be attached (up to 7 I/O Terminal Units before PS501 V1.2 and CPU firmware before V1.2.0) which are automatically interconnected by the I/O-Bus.

Each of these modules requires its own I/O Terminal Unit, whose type depends on the module type.

If both of the following conditions are fulfilled, **max. 10 I/O expansion modules can be connected to the I/O-Bus of the CPU:**

- PS501 as of version V1.2
- CPUs as of firmware V1.2.0

Terminal Bases, Terminal Units, I/O modules, communication modules and accessories have their own technical descriptions which can be found under [Hardware AC500](#) and [Hardware S500](#).

Each CPU can be used as

- bus master within the control system AC500 together with several field buses and networks
- slave (remote processor together with the FieldBusPlug) within the control system AC500 (except PM591-2ETH)
- stand-alone CPU

The CPUs are powered with 24 V DC.



Removal of energized modules is not permitted. All power sources (supply and process voltages) must be switched off while working on any AC500 system.

The following figure shows a CPU with Terminal Base, Communication Modules and I/O Modules.

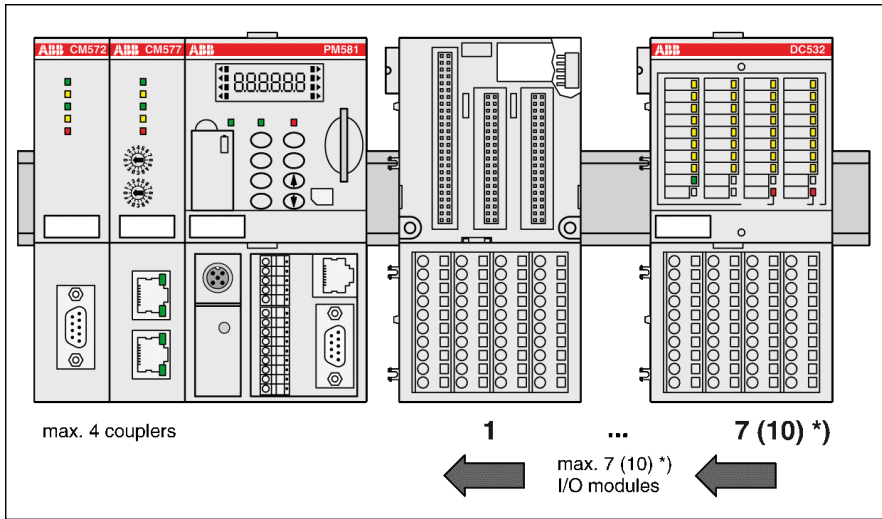


Figure: CPU with Terminal Base, Communication Modules and I/O Modules

\*) If both of the following conditions are fulfilled, **max. 10 I/O Modules can be connected to the I/O-Bus of the CPU:**  
 - PS501 as of version V1.2  
 - CPUs as of firmware V1.2.0


**Assortment**

**CPUs**

CPU	Program memory	Cycle time for 1 instruction	Network interface		Other interfaces	Suitable Terminal Bases	Product life cycle Status	
			Ethernet	Arcnet				
PM571	64 kB	Binary: min. 0.06 µs Word: min. 0.09 µs Floating point: min. 0.70 µs	-	-	Serial interface COM1 Serial interface COM2  FieldBusPlug (FBP)  Communication Module interface  I/O-Bus	TB5x1-ETH	Classic *1)	
PM571-ETH			Integrated Communication Module	-		TB5x1-ETH	Classic *1)	
PM572	128 kB	-	-	TB5x1-ETH		Active		
PM573-ETH	512 kB	Onboard Ethernet	-	TB5x1-ETH (1SAP11x100R0270 only)		Active		
PM581	256 kB	-	-	TB5x1-ETH		Classic *1)		
PM581-ETH		Integrated Communication Module	-	TB5x1-ETH		Classic *1)		
PM581-ARCNET		-	Integrated Communication Module	TB5x1-ARCNET		Classic *1)		
PM582	512 kB	Binary: min. 0.05 µs Word: min. 0.06 µs Floating point: min. 0.50 µs	-	-		TB5x1-ETH	Active / Classic *1)	
PM582-ETH		Integrated Communication Module	-	TB5x1-ETH		Classic *1)		
PM583-ETH		1 MB	Onboard Ethernet	-		TB5x1-ETH (1SAP11x100R0270 only)	Active	
PM590	2 MB	Binary: min. 0.002 µs	-	-		FieldBusPlug (FBP)	TB5x1-ETH	Classic *1)
PM590-ETH *2)			Integrated Communication Module	-		Communication Module interface	TB5x1-ETH	Classic *1)
PM590-ETH			Onboard Ethernet	-	I/O-Bus	TB5x1-ETH (1SAP11x100R0270 only)	Active	
PM590-ARCNET (R0260)			-	Integrated Communication Module	TB5x1-ARCNET	Classic *1)		
PM590-ARCNET (R0261)			-	Integrated Communication Module	TB5x1-ARCNET	Active		
PM591			-	-	TB5x1-ETH	Classic *1)		
PM591-ETH *)	Integrated Communication Module	-	TB5x1-ETH	Classic *1)				
PM591-ETH	Onboard Ethernet	-	TB5x1-ETH (1SAP11x100R0270 only)	Active				

PM591-2ETH	4 MB	Word: min. 0.004 µs Floating point: min. 0.004 µs	2x Onboard Ethernet	-	Serial interface COM1  Communication Module interface  I/O-Bus	TB5x3-2ETH	Active
PM591-ARCNET			-	Integrated Communication Module	Serial interface COM1 Serial interface COM2	TB5x1-ARCNET	Classic *1)
PM592-ETH			Onboard Ethernet	-	FieldBusPlug (FBP)  Communication Module interface  I/O-Bus	TB5x1-ETH (1SAP11x100R0270 only)	Active

\*1) These CPUs should be used as spare parts only. Never use them for planning new plants.  
 \*2) The CPUs PM59x-ETH (1SAP150x00R0170) can only be used with the new Terminal Bases (1SAP11x100R0270) if they have product index C6 or higher. Otherwise, they should be updated to that index.

 <b>NOTE</b>	CPUs PM57x-ETH, PM58x-ETH and PM59x-ETH with ordering No. 1SAPxxxxxR0271 can only be used with Terminal Bases with ordering No. 1SAPxxxxxR0270. CPUs PM5xx-2ETH can only be used with TB5x3-2ETH Terminal Bases.
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For further information see [Technical Data](#) and [Ordering Data](#)

**Terminal Bases**

For more information about the Terminal Bases, see chapter [TB51x to TB54x CPU Terminal Bases](#).

**Connections**

**I/O-Bus**

The I/O-Bus is the I/O data bus for the S500 expansion modules. Through this bus, I/O and diagnosis data are transferred between the AC500 CPU and the I/O expansion modules. Up to 10 I/O Terminal Units (for 1 I/O expansion module each) can be added to one Terminal Base (up to 7 I/O Terminal Units before PS501 V1.2 and CPU firmware before V1.2.0).

The I/O Terminal Units have a bus input at the left side and a bus output at the right side. Thus the length of the I/O-Bus increases with the number of the I/O expansion modules used.

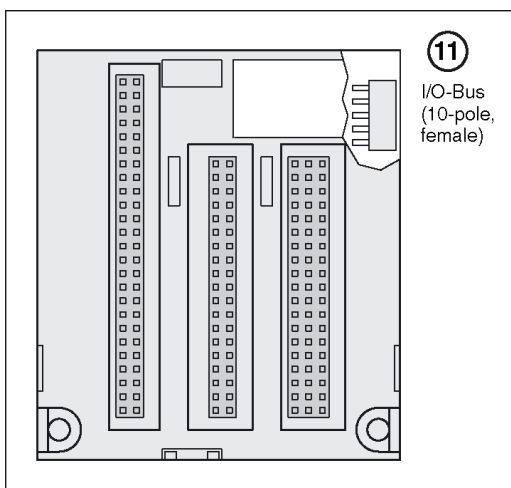
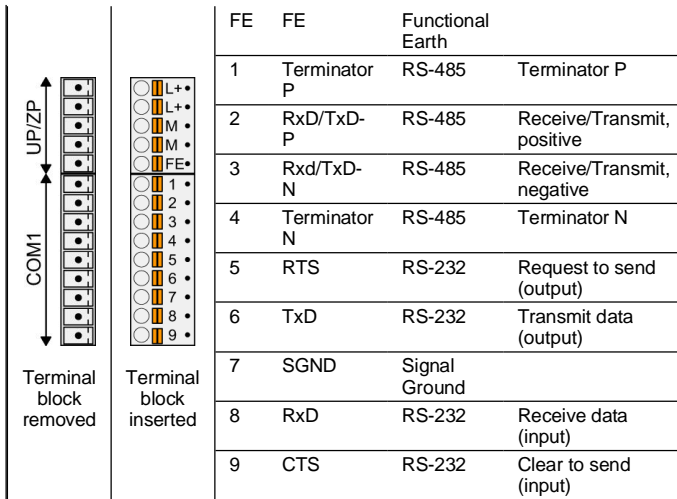


Figure: I/O-Bus

**Power Supply**

The supply voltage of 24 V DC is connected to a 5-pole removable terminal block. ZP and UP exist twice. So it is possible to supply external sensors (up to 8 A max.) from these terminals, for instance.

	L+	+24 V DC	UP
	L+	+24 V DC	UP
	M	0 V	ZP
	M	0 V	ZP



Figure, upper part: Power supply via a 5-pole terminal block  
 Figure, lower part: Terminal assignment of the serial interface COM1

**Bad wiring on power supply terminals**

**Risk of damaging the CPU and the Terminal Base!**  
 CPU and Terminal Base may be damaged by voltages larger than the range allowed. Never connect supply and process voltages > 30 V DC to the Terminal Base.

**Risk of damaging the Terminal Base and the power supply!**  
 Power supply and Terminal Base can be damaged by short circuits. Make sure that the clamps L+ and M which exist twice are not connected in a wrong way (e. g. +/- of power supply is connected to both L+/L+ or both M/M)

**Risk of damaging the Terminal Base!**  
 Clamp and Terminal Base can be damaged by too large currents. Make sure that the current through the removable clamps never exceeds 8 A.

**Serial interface COM1 (for terminal assignment see the figure above)**

The serial interface COM1 is connected to a removable 9-pole terminal block. It is configurable for RS-232 and RS-485 and can be used for

- an online access (RS-232 programming interface for PC/Control Builder)
- a free protocol (communication via the function blocks [COM\\_SEND](#) and [COM\\_REC](#))
- Modbus RTU, master and slave or
- a CS31 system bus (RS-485), as master only

**Risk of damaging the CPU and the Terminal Base!**  
 The CPU and the Terminal Base may be damaged by electrostatic discharge (ESD). Make sure that the 9-pole terminal block is always connected to the Terminal Base even if you do not use COM1.

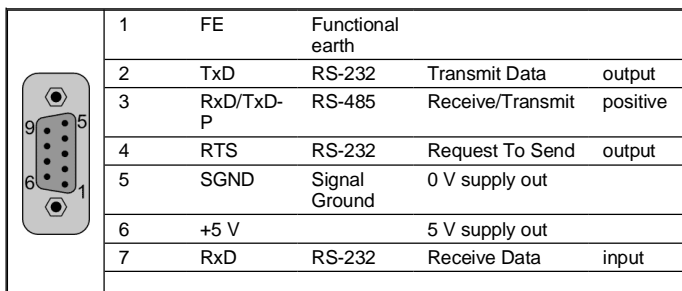
A detailed description for COM1 can be found under [Serial interface COM1 of the CPU Terminal Bases \(PM57x, PM58x, PM59x\)](#).

**Serial interface COM2**

The serial interface COM2 is connected to a 9-pole SUB-D connector. It is configurable for RS-232 and RS-485 and can be used for

- an online access (RS-232 programming interface for PC/Control Builder)
- a free protocol (communication via the function blocks [COM\\_SEND](#) and [COM\\_REC](#))
- Modbus RTU, master and slave

COM2 is not intended to establish a CS31 system bus.



8	RxD/TxD-N	RS-485	Receive/Transmit	negative
9	CTS	RS-232	Clear to Send	input
Shield	FE	Functional earth		

 **NOTE** PM5xx-2ETH CPUs have no COM2 interface.

Figure: Pin assignment of the serial interface COM2

A detailed description for COM2 can be found under [Serial interface COM2 of the CPU Terminal Bases \(PM57x, PM58x and PM59x\)](#).

**Network interface ARCNET**

This interface is the connection to the internal ARCNET Communication Module of the CPUs PM5xx-ARCNET.

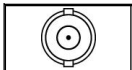


Figure: ARCNET interface

**Network interface Ethernet**

This interface is the connection to the internal Ethernet communication module / Onboard Ethernet of the CPUs PM5xx-ETH. Applications are:

- TCP/IP for PC/Control Builder (programming)
- UDP (communication via function blocks [ETH\\_UDP\\_SEND](#) and [ETH\\_UDP\\_REC](#))
- Modbus on TCP/IP (Modbus on TCP/IP, master and slave)



	8	NC	Not used
	7	NC	Not used
	6	RxD-	Receive data
	5	NC	Not used
	4	NC	Not used
	3	RxD+	Receive data
	2	TxD-	Transmit data
	1	TxD+	Transmit data
Shield	Cable Shield	Signal Ground	

Figure: Pin assignment of the Ethernet interface

 **NOTE** CPUs PM5xx-2ETH have 2 independent Ethernet interfaces.

**FBP interface**

Through this 5-pole fieldbus-neutral interface, the AC500 CPU can be connected **as a slave** to a fieldbus master. The FieldBusPlug is fastened by a screw.



	Pin assignment in serial mode		
	1	+24 V	Standard power supply
	2	Diagnosis pin	
	3	0 V	Standard power supply
	4	Serial data	
	5	Serial data	

Figure: Pin assignment of the FBP interface

 **NOTE** CPUs PM5xx-2ETH do **NOT** support communication via FBP interface.

**Lithium battery**

AC500 CPUs are supplied without a Lithium battery. It therefore must be ordered separately. The TA521 Lithium Battery is used to save RAM contents of AC500 CPUs and back-up the real-time clock. Although the CPUs can work without a battery, its use is still recommended in order to avoid process data being lost.

The CPU monitors the battery status. A low battery warning is output before the battery condition becomes critical (about 2 weeks before). After the warning message appears, the battery should be replaced as soon as possible.

The technical data, handling instructions and the insertion/replacement of the battery is described in detail in chapter [TA521 Lithium Battery](#).

**SD Memory Card**

AC500 CPUs are supplied without an SD Memory Card. It therefore must be ordered separately. The SD Memory Card is used to back-up user data and store user programs as well as to update the internal CPU firmware. AC500 CPUs can be operated with and without SD Memory Cards.

The CPU uses a standard file system. This allows standard card readers to read the MC502 SD Memory Cards.

The technical data, handling instructions and the insertion/replacement of the SD Memory Card is described in detail in chapter [SD Memory Card MC502](#).

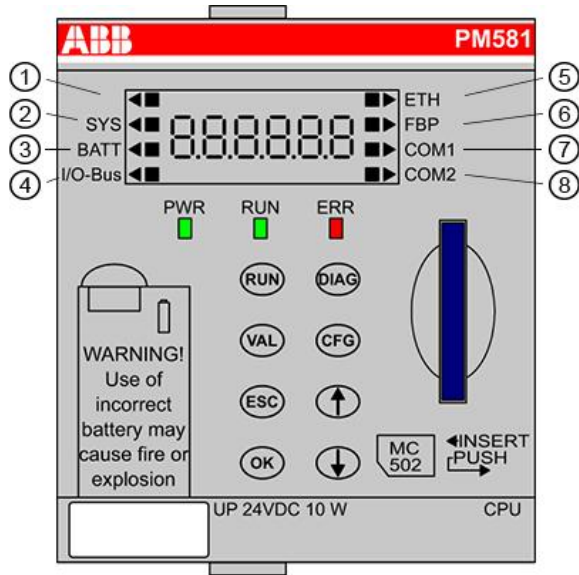
**Project planning / start-up**

Programming is carried out with the AC500 Control Builder software, which is based on the CoDeSys standard. The software can be run on the operating systems Windows 2000, XP and Windows 7.

A fast Online Program Modification of the user program is possible without interrupting the running operation.

If data areas should be saved during power OFF/ON, they can be stored in the Flash EPROM. The installed Lithium battery saves data in the RAM.

**Display and Operating Elements on the Front Panel of a Processor Module**



The display of a Processor Module is equipped with a background-lighted 7-segment display. This display consists of 6 digits for plain text or error codes that denote

- the current activity status of the Processor Module (RUN or STOP mode),
- the battery status,
- error numbers and information on the error,
- current settings of the Processor Module.

Further, the display can be used for simple configurations such as address modifications. The entire functionality of a Processor Module is described in detail under "System technology of the CPUs".

The display contains the following indicators:

- A black square (■) denotes the status/working activity of the corresponding object on the left side/right side of the display. The black square flashes according to the device activity, e.g. on data exchange on ETH, COM1, etc.
- A black triangle (▶) points to the selected device/interface on the left side/right side of the display to be configured or read. Further, it acts as a cursor for the **Count up/Count down** buttons. Exception: A triangle at the BATT item indicates a missing or not fully charged battery.


The black triangles point to the following items on the left side of the display:


No.	On the left side	Meaning
1	<empty item>	Cannot be used.
2	<b>SYS (system)</b>	Refers to the system status.
3	<b>BATT (battery)</b>	Refers to the battery status.
4	<b>I/O-Bus</b>	Refers to I/O bus connection.

The black triangles point to the following items on the right side of the display:


No.	On the right side	Meaning
5	<variable item>	-
	<empty item>	Cannot be used.
	ETH (Ethernet)	Refers to Ethernet connection or can be left empty.
	ETH1	Refers to the first Ethernet connection or can be left empty.
	ARCNET	Refers to ARCNET connection or can be left empty.
6	<variable item>	-

	FBP (FieldBusPlug)	Refers to FBP (FieldBusPlug) or can be left empty.
	ETH2	Refers to the second Ethernet connection or can be left empty.
7	COM1	Refers to COM1 connection or can be left empty.
8	<variable item>	-
	<empty item>	Cannot be used.
	COM2	Refers to COM2 connection or can be left empty.





 **NOTE** All 127 FBP addresses can be set with Automation Builder. On the display only up to 99 FBP addresses can be set.

 **CAUTION** Though it is possible to set a slave address for the FBP manually, this is not recommended as it has high influence on the behaviour of the application. An FBP address that has been set manually replaces the address configured by the AC500 Processor Module.  
If the FBP address (set by Automation Builder or manually) is different from the address assigned by the master device for the same station, the station cannot be accessed. The complete fieldbus cannot work properly or is completely down!

AC500 Processor Module equipped with FBP is always a slave device on the bus. To act as a master, AC500 Processor Module should be equipped with a master communication module (e.g. CM572-DP for PROFIBUS® DP).

 **CAUTION** Manually modified address will only be valid after a power OFF/ON of the Processor Module!

The following table specifies the different display options for ABB Processor Modules:

Processor Module	Display Variant	Meaning
PM5xx		Display for a Processor Module with FBP support.
PM5xx-ETH		Display for a Processor Module with FBP and Ethernet support.
PM5xx-ARCNET		Display for a Processor Module with ARCNET support.
PM5xx-2ETH		Display for a Processor Module with support for 2 Ethernet connections.

Below the display the following LEDs indicate the status of the Processor Module:









LED	Status	Color	LED = ON	LED = OFF	LED Flashes
Power LED (PWR)	Denotes the power supply status of the Processor Module	Green	Voltage is present (24 V DC)	Voltage is missing	--
Run LED (RUN)	Denotes the activity status of the Processor Module	Green	Processor Module is in RUN mode	Processor Module is in STOP mode	If the Run LED (RUN) flashes fast (4 Hz), the Processor Module is reading/writing the SD card. Together with a flashing Error LED (ERR) the Processor Module is writing the internal Flash EEPROM. If the Run LED flashes slowly (1 Hz), a firmware update from the SD card is finished without errors.
Error LED (ERR)	Denotes an error	Red	An error has occurred. After pressing the <b>DIAG</b> button, the error type and the error code is	No errors or only warnings are encountered.	If the Error LED flashes fast (4 Hz) together with a flashing Run LED, the firmware is updated and a Flash EEPROM is written.








			displayed. The error codes can be shown by means of the <b>DIAG</b> and <b>OK</b> buttons.	
--	--	--	--	--

A running Processor Module is indicated with the status **Run** on the display, a deactivated Processor Module is indicated with the status **Stop**. In both cases the background lighting is switched off.

The Processor Module can be operated manually using the buttons on the front panel:

Button	Meaning	Description
	Run	Toggles the Processor Module between RUN and STOP mode. Switching into RUN mode is only possible if a project is configured correctly in Automation Builder.
	Value	Shows different state values of the Processor Module.
	Escape	Quits the current menu, submenu or function without saving.
	OK / Acknowledgement	Acknowledges the current value or selects a menu/submenu. Changes that have been sent to the CPU successfully are confirmed with <b>done</b> on the display.
	Diagnostic	Allows evaluation of error messages in detail.
	Configuration	Allows navigation through addresses and system settings.
	Count up	Press the button repeatedly in order to increase the value each time by 1. Keep the button pressed in order to count up fast.
	Count down	Press the button repeatedly in order to decrease the value each time by 1. Keep the button pressed in order to count down fast.

### Startup Procedure of a PLC

Procedure	Display
Display on system start (power on).	
PLC is in boot mode.	
PLC is in initialization mode.	
PLC is in STOP mode. Manual switch into RUN mode with RUN button.	
PLC is in RUN mode. This is only possible if a valid project is available in the Flash memory. Manual switch into STOP mode with RUN button.	

### Configurations on the Processor Module

#### Configurations for a Version ≥ 2.4

This section describes how to configure a Processor Module manually.

Processor Module can be configured in RUN mode or STOP mode, hence this device state is called Run/Stop mode in the following. By pressing the **CFG** button repeatedly, you simply navigate through the statuses of the device. However, to configure the Processor Module, use the **OK**, **ESC** and **CFG** buttons alternately.








Procedure:

1. The Processor Module is in Run/Stop mode. By pressing the **CFG** button once, the IP configuration for Ethernet connection is displayed (**IPETH1**).
2. By pressing the **CFG** button again, address configuration for Ethernet connection is displayed (**Adr000**).
3. By pressing the **ESC** button, menu is aborted. You revert to the Run/Stop mode.

- By pressing the **OK** button, submenu for Ethernet connection is opened. Either a static IP address can be set or a DHCP address is defined automatically.

**Example: Setting a static IP address**

The following example describes how to set a static IP address for Ethernet connection. This configuration can be done as of CPU Firmware Version 2.4.

Procedure	Display
The Processor Module is in Run/Stop mode.	
Press the <b>CFG</b> button until IPETH1 is displayed.	
Press the <b>CFG</b> button until DHCP is displayed.	
Press the <b>OK</b> button. A submenu for IP configuration is opened. Press the <b>CFG</b> button. STATIC is displayed.	
Press the <b>OK</b> button. A submenu for configuration of the address (A1 ... A4) is opened. Use the <b>Count up/Count down</b> buttons to change the values. Confirm with the <b>OK</b> button to save your changes. To discard your modifications, press the <b>ESC</b> button (you return to the IPETH1 configuration).	
Press the <b>OK</b> button. A submenu for configuration of the network mask (N1 ... N4) is opened. Use the <b>Count up/Count down</b> buttons to change the values. Confirm with the <b>OK</b> button to save your changes. To discard your modifications, press the <b>ESC</b> button (you return to the IPETH1 configuration).	
Press the <b>OK</b> button. A submenu for configuration of the gateway (G1 ... G4) is opened. Use the <b>Count up/Count down</b> buttons to change the values. Confirm with the <b>OK</b> button to save your changes. To discard your modifications, press the <b>ESC</b> button (you return to the IPETH1 configuration).	

The following tables describe navigation through the display of a Processor Module as of CPU Firmware Version  $\geq 2.4$ . Navigation starts with the Processor Module being in Run/Stop mode (State 0). By pressing one of the three buttons a certain action is triggered. The result of this action is described in the result columns of the tables.

State	Description - Main menu	Result on pressing one of the buttons		
		<b>CFG</b>	<b>ESC</b>	<b>OK</b>
0	The Processor Module is in Run/Stop mode.	State 1 is displayed.	Remains in Run/Stop mode.	Remains in Run/Stop mode.
1	<i>IPETH1</i> : IP configuration for Ethernet connection - if connected.	State 2 is displayed.	Return into Run/Stop mode.	Opens the submenu for IP configuration. Refer to State 1.1 in the following table.
2	<i>Adr000</i> : Address configuration for <i>Ethernet</i> connection. Change the values with the <b>Count up/Count down</b> buttons.	State 3 is displayed.	Return into Run/Stop mode.	Your settings are saved. State 2 is displayed.
3	<i>Adr000</i> : Address configuration for <i>FBP</i> connection. Change the values with the <b>Count up/Count down</b> buttons.	State 4 is displayed.	Return into Run/Stop mode.	Your settings are saved. State 3 is displayed.
4	<i>Adr000</i> : Address configuration for <i>COM1</i> interface - if connected. Change the values with the <b>Count up/Count down</b> buttons.	State 5 is displayed.	Return into Run/Stop mode.	Your settings are saved. State 4 is displayed.
5	<i>Adr000</i> : Address configuration for <i>COM2</i> interface - if connected. Change the values with the <b>Count up/Count down</b> buttons.	State 6 is displayed.	Return into Run/Stop mode.	Your settings are saved. State 5 is displayed.
6	<i>Mod 00</i> : Startup mode configuration for the Processor Module. Change the values with the <b>Count up/Count down</b> buttons.	State 7 is displayed.	Return into Run/Stop mode.	Your settings are saved. State 1 is displayed.
7	<i>FL 000</i> : ID configuration for FlexConf for the Processor Module. Change the values with the <b>Count up/Count down</b>	State 8 is displayed.	Return into Run/Stop mode.	Your settings are saved. State 1 is displayed.

	buttons.			
The following States are only displayed if either CM577-ETH or CM597-ETH is plugged:				
8	<i>IPSlT 1</i> : IP configuration for the Communication Module in slot 1 - if Ethernet connection is set.	State 9 is displayed.	Aborts the menu unchanged. Return to State 7.	Opens the submenu for slot 1 configuration. Refer to State 8.1 in the following table.
9	<i>IPSlT 2</i> : IP configuration for the Communication Module in slot 1 - if Ethernet connection is set.	State 10 is displayed.	Aborts the menu unchanged. Return to State 7.	Opens the submenu for slot 2 configuration. Configuration is similar to the description for State 8.1.
10	<i>IPSlT 3</i> : IP configuration for the Communication Module in slot 1 - if Ethernet connection is set.	State 11 is displayed.	Aborts the menu unchanged. Return to State 7.	Opens the submenu for slot 3 configuration. Configuration is similar to the description for State 8.1.
11	<i>IPSlT 4</i> : IP configuration for the Communication Module in slot 1 - if Ethernet connection is set.	State 8 is displayed.	Aborts the menu unchanged. Return to State 7.	Opens the submenu for slot 4 configuration. Configuration is similar to the description for State 8.1.

State	Description - Submenu 1	Result on pressing one of the buttons		
		ⓄCFG	ⓄESC	ⓄOK
1.1	<i>DHCP</i> : Sets a DHCP address. For this, network connection is required.	State 1.2 is displayed.	Aborts the menu unchanged. Return to State 1.	No functionality.
1.2	<i>Static</i> : Configuration of a static IP address.	State 1.3 is displayed.	Aborts the menu unchanged. Return to State 1.	Opens the submenu 2. Refer to State 1.2.1 in the following table.
1.3	<i>Reset</i> : Reset option is displayed. <b>Note:</b> If PLC is in Stop mode, the Reset mode can be displayed as well by pressing the RUN button for a few seconds (longer than 3 s).	Aborts the menu unchanged. Return to State 1.1.	Aborts the menu unchanged. Return to State 1.	PLC resets user program via a soft-reset of the application. Reset to Production data.
The following States are only displayed if either CM577-ETH or CM597-ETH is plugged:				
8.1	<i>DHCP</i> : Submenu for slot 1 configuration opens. Sets a DHCP address.	State 8.2 is displayed.	Aborts the menu unchanged. Return to State 1.	Opens the submenu 2. Refer to State 1.2.1 in the following table.
8.2	<i>Static</i> : Configuration of a static IP address.	Opens the submenu 2. Refer to State 1.2.1 in the following table.	Aborts the menu unchanged. Return to State 1.	No functionality.

State	Description - Submenu 2	Result on pressing one of the buttons		
		ⓄCFG	ⓄESC	ⓄOK
1.2.1	Submenu opens. Configuration of address A1-A4. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.2 is displayed.	No functionality.	No functionality.
1.2.2	Configuration of network mask N1-N4. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.3 is displayed.	Aborts the menu. Return to State 1.	Your settings are saved. State 1.1 is displayed.
1.2.3	Configuration of gateway G1-G4. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.1 is displayed.	Aborts the menu. Return to State 1.	Your settings are saved. State 1.1 is displayed.
The following States are only displayed if either CM577-ETH or CM597-ETH is plugged:				
8.1.1	Submenu opens. Configuration of address A1-A4. Change the values with the <b>Count up/Count down</b> buttons.	State 8.1.2 is displayed.	Aborts the menu unchanged. Return to State 8.	No functionality.
8.1.2	Configuration of network mask N1-N4. Change the values with the <b>Count up/Count down</b> buttons.	State 8.1.3 is displayed.	Aborts the menu unchanged. Return to State 8.	No functionality.
8.1.3	Configuration of gateway G1-G4. Change the values with the <b>Count up/Count down</b> buttons.	State 8.1.1 is displayed.	Aborts the menu unchanged. Return to State 8.	No functionality.

**Configurations for a Version < 2.4**

The following tables describe navigation through the display of a Processor Module with CPU Firmware Version < 2.4. Navigation starts with the Processor Module being in Run/Stop mode (State 0). By pressing one of the three buttons a certain action is triggered. The result of this action is described in the result columns of the tables.

State	Description - Main menu	Result on pressing one of the buttons		
		ⓄCFG	ⓄESC	ⓄOK


		<b>CFG</b>	<b>ESC</b>	<b>OK</b>
0	The Processor Module is in Run/Stop mode.	State 1 is displayed.	Remains in Run/Stop mode.	Remains in Run/Stop mode.
1	<i>IP-Set</i> : IP configuration.	State 2 is displayed.	Return to Run/Stop mode.	Opens the submenu 1 for IP configuration. Refer to State 1.1 in the following table.
2	<i>Adr000</i> : Address configuration for <i>Ethernet</i> connection. Change the values with the <b>Count up/Count down</b> buttons.	State 3 is displayed.	You revert to the Run/Stop mode.	Return to Run/Stop mode.
3	<i>Adr000</i> : Address configuration for <i>FBP</i> connection. Change the values with the <b>Count up/Count down</b> buttons.	State 4 is displayed.	You revert to the Run/Stop mode.	Return to Run/Stop mode.
4	<i>Adr000</i> : Address configuration for <i>COM1</i> interface - if connected. Change the values with the <b>Count up/Count down</b> buttons.	State 5 is displayed.	You revert to the Run/Stop mode.	Return to Run/Stop mode.
5	<i>Adr000</i> : Address configuration for <i>COM2</i> interface - if connected. Change the values with the <b>Count up/Count down</b> buttons.	State 6 is displayed.	You revert to the Run/Stop mode.	Return to Run/Stop mode.
6	<i>Mod 00</i> : Startup mode configuration for the Processor Module. Change the values with the <b>Count up/Count down</b> buttons.	State 7 is displayed.	You revert to the Run/Stop mode.	Return to Run/Stop mode.
7	<i>FL</i> : ID configuration for FlexConf (multiple hardware configurations) for the Processor Module.	Return to State 1.	You revert to the Run/Stop mode.	Return to Run/Stop mode.

State	Description - Submenu 1	Result on pressing one of the buttons		
		<b>CFG</b>	<b>ESC</b>	<b>OK</b>
1.1	<i>SLot00</i> : Configuration of slot 1 -4.	No functionality.	Aborts the menu unchanged. Return to State 1.	State 1.2 is displayed.
1.2	<i>Static</i> : Configuration of a static IP address.	State 1.3 is displayed.	Aborts the menu unchanged. Return to State 1.	Opens the submenu 2. Refer to State 1.2.1 in the following table.
1.3	Reset option is displayed.	State 1.4 is displayed.	Aborts the menu unchanged. Return to State 1.	Reset to Production data ( <i>reset</i> ).
1.4	<i>DHCP</i> : Configuration of a DHCP address.	State 1.2 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.

State	Description - Submenu 2	Result on pressing one of the buttons		
		<b>CFG</b>	<b>ESC</b>	<b>OK</b>
1.2.1	<i>A1 000</i> : Address configuration for A1. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.2 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.2	<i>A2 000</i> : Address configuration for A2. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.3 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.3	<i>A3 000</i> : Address configuration for A3. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.4 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.4	<i>A4 000</i> : Address configuration for A4. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.5 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.5	<i>n1 000</i> : Configuration of the network mask for N1. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.6 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.6	<i>n2 000</i> : Configuration of the network mask for N2. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.7 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.7	<i>n3 000</i> : Configuration of the network mask for N3. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.8 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.8	<i>n4 000</i> : Configuration of the network mask for N4. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.9 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.9	<i>g1 000</i> : Gateway configuration for G1. Change the values with the <b>Count</b>	State 1.2.10 is displayed.	Aborts the menu unchanged. Return to	Return to Run/Stop mode.

	<b>up/Count down</b> buttons.		State 1.	
1.2.10	<i>g2 000</i> : Gateway configuration for G2. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.11 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.11	<i>g3 000</i> : Gateway configuration for G3. Change the values with the <b>Count up/Count down</b> buttons.	State 1.2.12 is displayed.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.
1.2.12	<i>g4 000</i> : Gateway configuration for G4. Change the values with the <b>Count up/Count down</b> buttons.	Return to State 1.2.1.	Aborts the menu unchanged. Return to State 1.	Return to Run/Stop mode.

**Reading out Values on the Processor Module**

The following settings of the Processor Module can be read out in the described order by pressing  repeatedly:

1. Time since last boot of the Processor Module (hh.mm.ss).
2. Date settings for the Processor Module (yy.mm.dd).
3. State of the battery (values 0, 20 100): "ub 100" represents a fully charged battery with 100 %. "ub 20" represents a battery that is charged > 20 % but < 100 %. "ub 000" represents a missing battery of a battery that is charged < 20%.
4. Version of display firmware (d <n.n> r): d = display, <n.n> = version number, r = release. For example "d 2.6 r".
5. Version of CPU firmware (C <n.n.n> r): C = CPU (firmware), <n.n.n> = version number, r = release. For example "C 2.4.0 r".
6. Name and type of the Processor Module. For example "PM590".
7. Return into Run/Stop mode.

Those settings can be displayed but not modified. With **OK** you return into the Run/Stop mode, with **ESC** you return to State 1 (time).

**Reading out Error Messages on the Processor Module**

**Displaying error messages**

This section describes how to handle error messages on a Processor Module with a AC500 Version ≥ 2.0.


In the case of an error, the Error LED (ERR) is switched on. By pressing  information on the error code and diagnostic information can be read out.

By pressing the **DIAG** button repeatedly, you can navigate through 4 diagnostic levels of the selected error (d1 to d4). Each level provides further information on the error. The following diagnostic information of the Processor Module can be read out in the described order:

1. Displays the error code (e.g. E3 026).
2. Displays the diagnostic level 1 (e.g. d1 014).
3. Displays the diagnostic level 2 (e.g. d2 003).
4. Displays the diagnostic level 3 (e.g. d3 031).
5. Displays the diagnostic level 4 (e.g. d4 003).
6. Reverts to State 1 and displays the error code.

In order to switch off the Error LED (ERR) each error must be acknowledged. For this, press the **OK** button from State 1 - 6. By pressing the **ESC** button in State 1 or 6 the diagnostic menu is aborted. The error remains unacknowledged. By pressing the **ESC** button in State 2 - 5 you revert to State 1.

Further, with the PLC browser you can display an error log (command: diagshow all).

 <b>NOTE</b>	The <b>DIAG</b> button is only active in the case of at least one not acknowledged error. In this case the Error LED is switched on. The oldest not yet acknowledged error is displayed first.
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An error code always consists of an error class (E1 ... E4) and an error number (000 ... 255). The error class defines reaction of the Processor Module depending on the error level. The error number can be used for error recognition. For detailed information on an individual error number see [The Diagnosis System in AC500](#). In this example, E4 008 refers to an error of the error level "warning" that indicates an empty or missing component.

The following table specifies the possible error classes of the Processor Module:

Error class	Type	Meaning	Example
E1	Fatal error	Safe function of the operating system is no longer guaranteed. Note: Errors of E1 error class are not shown on the display.	Wrong value, checksum error in system Flash, RAM error, short-circuit, exhausted or missing battery, etc.
E2	Serious error	Operating system works without problems, however, error-free processing of the user program is no longer guaranteed.	Checksum error in user Flash, independent of the task duration.
E3	Minor error	It depends on the application, if the user program should be stopped by the operating system or not. The user decides, which reaction is necessary.	Flash could not be programmed, I/O module has failed.

E4	Warning	Error in periphery (e.g. I/O) which might have influence in the future. The user decides, which reaction is necessary.	Short-circuit at I/O modules, battery is exhausted or not inserted.
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Press the **DIAG** button repeatedly to navigate through 4 diagnostic levels (d1 to d4) that provide further information on the error.

The following table specifies the possible detail levels:

Diagnostic Level	Object	No.	Meaning
d1	Comp (Component)	000 ... 015	Indicates the component which has sent the error (communication module, CPU, COM1, FBP, IO-Bus, etc.).
d2	Dev (Device)	000 ... 255	Defines the faulty device within the component.
d3	Mod (Module)	000 ... 030	Defines the part of the module with an error (slot).
d4	CH (to be defined)	000 ... 031	Defines the channel within the module.

**Example for a diagnostic routine (exhausted battery)**

The following diagnostic routine describes how to proceed in the case of an error:

Diagnostic Level	Meaning
<p>The Processor Module is running (Run mode). The background lighting is switched off.</p> <p>If an error occurs, the Error LED (ERR) switches on.</p>	
<p>Press the <b>DIAG</b> button.</p> <p>The error code with the error class is displayed (in the example E4 008). This error is a warning with the error number 008. As the BATT item is selected and 008 means "Empty/Missing", the error code indicates an issue on the battery.</p>	
<p>Press the <b>DIAG</b> button again.</p> <p>The background lighting switches on.</p> <p>The error code with the diagnostic level1 - d1 is displayed (in the example d1 009). The error number 009 means that the Processor Module has sent the error already.</p>	
<p>Press the <b>DIAG</b> button again.</p> <p>The error code with the diagnostic level2 - d2 is displayed (in the example d2 022). The error number 022 indicates the device type "battery".</p>	
<p>Press the <b>DIAG</b> button again.</p> <p>The error code with the diagnostic level3 - d3 is displayed (in the example d3 031). The error number 031 indicates "no module type" (= module itself).</p>	
<p>Press the <b>DIAG</b> button again.</p> <p>The error code with the diagnostic level4 - d4 is displayed (in the example d4 031). The error number 031 indicates "no channel" (= device itself).</p>	
<p>Press the <b>OK</b> button.</p> <p>The error is acknowledged and the display either returns to normal state or shows the next error. The Error LED (ERR) is switched off (provided that there are no further errors).</p> <p>OR</p> <p>Press the <b>ESC</b> button. The display returns to normal state without acknowledging the error. The Error LED (ERR) remains on.</p>	

For further information see [The Diagnosis System in AC500](#).

**Technical Data**

The [System Data of AC500 and S500](#) are valid for standard version.

The [System Data of AC500-XC](#) are valid for the XC version.

Only additional details are therefore documented below.

**General data of the CPUs and the Terminal Bases**

For more information, please refer to the [AC500 System Data](#) chapter.

Connection of the supply voltage 24 V DC at the Terminal Base of the CPU	at a 5-pole removable terminal block with spring connection
Current consumption from 24 V DC	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
Inrush current at 24 V DC	PM57x, PM58x and PM59x (all variants): 1 A²s *)
Max. power dissipation within the module	10 W
Slots on the Terminal Bases	TB511: 1 CPU, 1 Communication Module
	TB521 / TB523: 1 CPU, 2 Communication Modules
	TB541: 1 CPU, 4 Communication Modules
CPU interfaces at the Terminal Bases TB5x1	I/O-Bus, COM1, COM2, FBP
CPU interfaces at the Terminal Bases TB5x3	I/O-Bus, COM1
CPU network interfaces at the Terminal Bases	<a href="#">TB5x1-ETH</a> / PM5xx-ETH: Ethernet
	<a href="#">TB5x3-ETH</a> / PM5xx-ETH: 2x Ethernet
	<a href="#">TB5x1-ARCNET</a> / PM5xx-ARCNET: ARCNET
Connection system	see <a href="#">Connection System</a>
<b>Dimensions</b>	
Width x height x depth	further details see <a href="#">AC500 System Data</a>
	TB51x with CPU: 95.5 x 135 x 75 mm
	TB52x with CPU: 123.5 x 135 x 75 mm
Weight (CPU without Terminal Base)	PM571: 135 g PM571-ETH: 150 g
	PM581: 135 g PM581-ETH: 150 g PM581-ARCNET: 160 g
	PM582: 135 g PM582-ETH: 150 g
	PM59x: 135 g PM59x-ETH: 150 g PM59x-2ETH: 150 g PM59x-ARCNET: 160 g
Mounting position	horizontal or vertical with derating (50 % output load, reduction of temperature to 40 °C)

\*1) The melting integral for the CPU is depending on the integrated CPU power supply, number and type of Communication Modules and I/O modules connected to the I/O-Bus.

**Detailed data of the CPUs**

CPU	PM571	PM571-ETH	PM572	PM573-ETH (R0271)	PM58x	PM58x-ETH	PM581-ARCNET	PM583-ETH	PM59x	PM59x-ETH	PM59x-ARCNET (R0260, R0261)	PM59x-ETH (R0271) / PM59x-2ETH (R0277)
Program memory Flash EPROM and RAM	64 kB		128 kB	512 kB	PM581: 256 kB PM582: 512 kB		1024 kB		PM590: 2048 kB PM591/PM592: 4096 kB			
Data memory, integrated	28 kB, incl. 12 kB buffered		128 kB, incl. 12 kB buffered	512 kB, incl. 288 kB buffered	416 kB, incl. 288 kB buffered			1024 kB, incl. 288 kB buffered	PM590: 2560 kB, PM591:3584 kB, incl. 1536 kB buffered			PM590: 3072 kB, PM591/592:5632 kB, incl. 1536 kB buffered
Expandable memory	none											
Integrated mass storage memory	none											PM592-ETH: 4 GB flashdisk
Pluggable SD Memory Card for: - User data storage - Program storage - Firmware update	x											
Cycle time for 1 instruction - Binary - Word - Floating point	min. 0.06 µs min. 0.09 µs min. 0.70 µs			min. 0.05 µs min. 0.06 µs min. 0.50 µs					min. 0.002 µs min. 0.004 µs min. 0.004 µs			
Max. number of central inputs and outputs (up to 7 exp. modules): - Digital inputs - Digital outputs - Analog inputs - Analog	224 168 112			224 168 112					224 168 112			

outputs	112	112	112									
Max. number of central inputs and outputs (10 exp. modules: *)												
- Digital inputs	320	320	320									
- Digital outputs	240	240	240									
- Analog inputs	160	160	160									
- Analog outputs	160	160	160									
Number of decentralized inputs and outputs	depends on the used field bus (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	about 3 years											
Battery low indication	warning indication issued about 2 weeks before the battery charge becomes critical											
Real-time clock - With battery back-up - Accuracy	X Typ. ± 2 s / day at 25 °C											
Program execution - cyclic - time-controlled - multitasking	X X X											
Protection of the user program by a password	X											
Serial interface COM1 - Physical link: - Connection: - Usage:	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											
Serial interface COM2 (not for PM5xy-2ETH models) - Physical link: - Connection: - Usage:	configurable for RS-232 or RS-485 (from 0.3 to 187.5 kB/s) SUB-D connector for programming, as Modbus (master/slave), as serial ASCII communication											
Integrated Communication Module, ETH = Ethernet RJ45 ARCNET = ARCNET BNC	-	ETH	-	ETH onboard with Webserver, SNTP and IEC60870-5-104 protocol	-	ETH	ARCNET	ETH onboard with Webserver, SNTP and IEC60870-5-104 protocol	-	ETH	ARCNET	ETH onboard with Webserver, SNTP and IEC60870-5-104 protocol
Number of external Communication Modules	up to 4 Communication Modules like PROFIBUS® DP, Ethernet, CANopen®, DeviceNet™. There is no restriction concerning the communication module types and communication module combinations (e.g. up to 4 PROFIBUS® DP Communication Modules are possible)											
LEDs, LCD display, 8 function keys	for RUN/STOP switch-over, status displays and diagnosis											
Number of timers	unlimited											
Number of counters	unlimited											
Programming languages - Instruction List IL - Function Block Diagram FBD - Ladder Diagram LD - Sequential Function Chart SFC - Continuous Function Chart (CFC)	X X X X X			X X X X				X X X				X
Certifications	CE, GL, DNV, BV, RINA, LRS, cUL											

\*) up to 7 I/O Terminal Units before PS501 V1.2 and CPU firmware before V1.2.0

**Ordering Data**

Order No.	Scope of delivery	Product life cycle status
<b>CPUs</b>		
1SAP 130 100 R0200	PM571, CPU, memory 64 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Classic *)
1SAP 130 100 R0270	PM571-ETH, CPU, memory 64 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module Ethernet TCP/IP	Classic *)
1SAP 130 200 R0200	PM572, CPU, memory 128 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Active



1SAP 130 300 R0271	PM573-ETH, CPU, memory 512 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols	Active
1SAP 330 300 R0271	PM573-ETH-XC, CPU, memory 512 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols, XC version	Active
1SAP 140 100 R0200	PM581, CPU, memory 256 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Classic *)
1SAP 140 100 R0260	PM581-ARCNET, CPU, memory 256 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module ARCNET	Classic *)
1SAP 140 100 R0270	PM581-ETH, CPU, memory 256 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module Ethernet TCP/IP	Classic *)
1SAP 140 200 R0200	PM582, CPU, memory 512 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Classic *)
1SAP 140 200 R0201	PM582, CPU, memory 512 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Active
1SAP 340 200 R0201	PM582-XC, CPU, memory 512 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, XC version	Active
1SAP 140 200 R0270	PM582-ETH, CPU, memory 256 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module Ethernet TCP/IP	Classic *)
1SAP 140 300 R0271	PM583-ETH, CPU, memory 1024 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols	Active
1SAP 340 300 R0271	PM583-ETH-XC, CPU, memory 1024 kB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols, XC version	Active
1SAP 150 000 R0200	PM590, CPU, memory 2 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Classic *)
1SAP 150 000 R0260	PM590-ARCNET, CPU, memory 2 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module ARCNET	Classic *)
1SAP 150 000 R0261	PM590-ARCNET, CPU, memory 2 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module ARCNET	Active
1SAP 150 000 R0270	PM590-ETH, CPU, memory 2 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module Ethernet TCP/IP	Classic *)
1SAP 150 000 R0271	PM590-ETH, CPU, memory 2 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols	Active
1SAP 150 100 R0200	PM591, CPU, memory 4 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display	Classic *)
1SAP 150 100 R0260	PM591-ARCNET, CPU, memory 4 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module ARCNET	Classic *)
1SAP 150 100 R0270	PM591-ETH, CPU, memory 4 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, integrated Communication Module Ethernet TCP/IP	Classic *)
1SAP 150 100 R0271	PM591-ETH, CPU, memory 4 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols	Active
1SAP 150 100 R0277	PM591-2ETH, CPU, memory 4 MB, 24 V DC, Memory Card Slot, interfaces 1 x RS-232/485 (programming, Modbus/CS31), Display, 2x Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols	Active
1SAP 350 100 R0271	PM591-ETH-XC, CPU, memory 4 MB, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols, XC Version	Active
1SAP 150 200 R0271	PM592-ETH, CPU, memory 4 MB / 4 GB flashdisk, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols	Active
1SAP 350 200 R0271	PM592-ETH-XC, CPU, memory 4 MB / 4 GB flashdisk, 24 V DC, Memory Card Slot, interfaces 2 x RS-232/485 (programming, Modbus/CS31), 1 x FBP, Display, Onboard Ethernet TCP/IP with Webserver, SNMP, IEC60870-5-104 protocols, XC version	Active
<b>Accessories</b>		
1SAP 180 300 R0001	TA521, Lithium Battery	
1SAP 180 100 R0001	MC502, SD Memory Card	
1SAP 180 200 R0001	TK501, Programming cable SUB-D / SUB-D, length: 5 m	
1SAP 180 200 R0101	TK502, Programming cable terminal block / SUB-D, length: 5 m	
1TNE 968 901 R1100	TK503, Programming cable USB / SUB-D (RS-485), length 3 m	
1SAP 180 800 R0001	TA526, Wall Mounting Accessory	
<b>Terminal Bases</b>		
For ordering data of Terminal Bases, see chapter <a href="#">TB51x to TB54x CPU Terminal Bases - Ordering Data</a> .		

\*) These CPUs should not be used for planning and commissioning of new installations.



**NOTE**

CPU PM591-2ETH can only be used with TB523-2ETH.



**NOTE**

CPUs PM57x-ETH, PM58x-ETH and PM59x-ETH with ordering No. 1SAPxxxxxR0271 can only be used with Terminal Bases with ordering No. 1SAPxxxxxR0270.

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