MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Amikon cover with selected official ABB reference pages

AC 800M / 3BSE018157R1

PM861AK01

AC 800M PROCESSOR UNIT

OFFICIAL SOURCES

ABB 3BSE036351-600 A. Selected notice, safety and model pages retain their original content, color and aspect ratio.

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Safety Summary

General

In order to minimize the risk of injury to personnel and/or damage to the equipment, always comply with the following safety instructions when installing and operating an AC 800M Controller system. Local, stricter statutory regulations must always take precedence over the safety instructions given here.

The Safety Instructions are classified as mandatory reading for all suitably qualified personnel intending to operate the AC 800M Controller.

Warnings and Information Symbols in the Text Margin

Observe the symbols for warnings and information located in other Chapters and Appendices of this book. The symbols are placed in the left-hand margin, adjacent to paragraphs requiring special attention. For an explanation of the symbols, see About This User Manual - Warning, Caution, Information, and Tip Icons on page 26.

Personnel and Process Safety

TAKE CARE AT ALL TIMES – This will prevent accidents from occurring and help protect valuable equipment.

A control system is a tool used to control various processes. Responsibility for attaining and maintaining a satisfactory level of safety rests with the personnel who engineer, operate and maintain the equipment. It is important to have an extensive knowledge of all control functions, the inherent safety risks that may be involved in the process, and to possess the imaginative ability to anticipate situations in which accidents may occur.

The following Safety Instructions must be observed:

- Take care when:
  - fitting or removing units

  - connecting or disconnecting cables
  - resetting or switching units to manual operation
- For hazardous locations special restrictions apply, see Appendix E, Standards.
- Never connect the equipment to the mains power supply during installation work.
- Take extreme care when connecting the system to the mains power supply. Injury or death can be the result of incorrect procedures.
- Ensure that all personnel operating or maintaining the installation know the exact location of and how to operate the equipment isolating safety switch and the mains power supply isolating switch.
- When the process sub-sections have been checked and a test run has been performed, a person responsible must check the interlocking chains etc. All concerned personnel must be fully informed regarding test runs to be performed.
- Process technicians are to be present when testing and operating process objects.
- Never activate any System Initialization push-button if any uncertainty exists regarding exactly what occurs within the system during initialization. **ALWAYS CHECK FIRST**.
- Remember at all times, that the control system can be controlled from a remote engineering station, connected at another node via Control Network.
- Remember, the AC 800M Controller will start automatically when voltage is applied.

Taking steps to bring the process to a safe state, provides an improved level of safety when power supplies, communication links or parts of the control system fail. Such steps may require, for example, the installation of valves or relays that automatically return to a fail-safe position.

Product Safety

The following safety rules must be observed at all times:

- To avoid discharging static electricity, ground both yourself and any tools before handling printed circuit boards, batteries, memory cards, and other sensitive pieces of the equipment
- All electronic devices are sensitive to ESD (electrostatic discharge). To avoid accidental damage while handling printed circuit boards, it is recommended to wear a wrist strap, grounded to the chassis. The strap must have a built-in protective resistor
- Anti-static, conductive plastic bags must be used for storage and transport of PC boards in transit.

Safety Summary (continued)

Before replacing Units

All procedures for replacing units can be located by referring to the relevant documentation.

Removing or replacing units with system power connected can cause injury to personnel and damage to equipment. It is, therefore, of the utmost importance that the power supply be fully disconnected, on the process side, before removal or insertion of units takes place.

See Online Replacement of Unit on page 206 and I/O documentation.

Maintenance

It is recommended that a stock of suitable spare components be maintained to avoid system downtime.

Ensure that back-up copies of the current application program are made at regular, predetermined intervals to avoid system downtime.

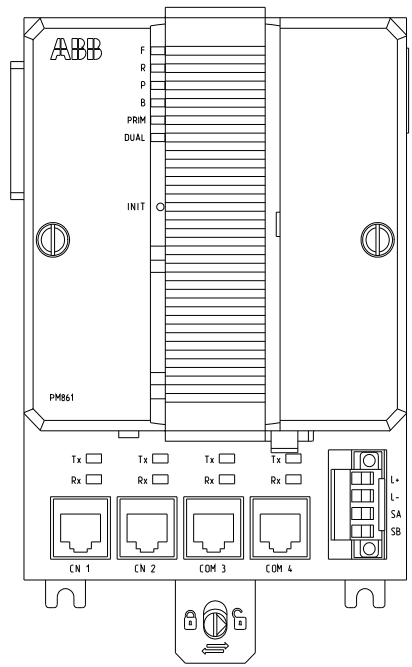
Operating Environment

Before the AC 800M Controller system is brought online, investigate which environmental conditions are applicable. Take note in particular of the following:

PM861/PM861A and TP830 – Processor Unit

Key Features

- MPC860 Microprocessor running at 48 MHz.
- 16 MB RAM with internal or external battery back-up facility.
- 12 x S800 I/O units can be connected to the electrical ModuleBus.
- Four on-board communication ports:
  - CN1 + CN2, Ethernet ports (IEEE 802.3, 10BaseT)
  - COM3, serial port (RS-232C) with modem support
  - COM4, serial port (RS-232C) for service tool
- Basic communication is extendable by using additional communication interface units.
- Redundancy Control Link, for use in redundancy configuration.
- Compact Flash interface which supports loading of application and cold retain data storage.



Technical Data

For technical data on PM861 and TP830, see Table 56 on page 262.

Table 56. PM861 and TP830 – Technical data

Item	Value
Memory	• 2 MB flash PROM (firmware storage). • 16 MB of SDRAM.
Power Dissipation	6 W typical 11 W typical (incl. full supply to ModuleBus and CEX-Bus, see Appendix B, Power Consumption).
Current Consumption	250 mA typical (430 mA max.) (excl. supply of ModuleBus and CEX-Bus, see Appendix B, Power Consumption).
Power Input Connector	Four pin, screw connector L+, L–, SA and SB.
Power Supply Requirements	Inputs designated L+ and L– 24 V nominal, variation between 19.2 V DC and 30 V DC.
Redundant Power Supply Status Inputs	Inputs designated SA, SB • Max input voltage 30 V • Min. input voltage for high level 15 V • Max input voltage for low level 8 V These inputs are status inputs. The threshold levels are logical “0” or “1” input limits, not power fail limits.
Power Reservoir	The processor unit has an internal 5ms power reservoir, sufficient for the CPU to make a controlled power down.
Protection Rating	IP20 according to EN60529, IEC 529.

Table 56. PM861 and TP830 – Technical data (Continued)

Item	Value
Weight	• 1200 g (2.6 lb) (package PM861K01). • 2800 g (6.1 lb) (package PM861K02).
Dimensions	W 119 x H 186 x D 135 mm (4.7 x 7.3 x 5.3 in) Width is measured along the DIN-rail, depth from the wall, and height vertically, including lock mechanism.

Communication Ports and Interfaces

Technical data for communication ports and interfaces is described in Table 47 on page 247.

Battery

The memory content is backed up with either an internal or external battery unit (SB821). For back-up time see e Table 57 on page 263.

The figures in Table 57 on page 263 are valid if the batteries have been installed after a normal CPU power-up, allowing for the memory back-up function to be activated.

Table 57. Back-up times for PM861 and PM861A

Source	Back-up time	
	PM861	PM861A
Internal battery	Minimum 36 hours	Minimum 118 hours
External battery SB821	Minimum 3 weeks	Minimum 12 weeks
External battery SB822	Minimum 85 hours when fully charged	Minimum 285 hours when fully charged

Table 49 on page 249 shows internal battery data. For external battery data, see SB821 External Battery – AC 800M Memory Back-up on page 417 and SB822 Rechargeable External Battery – AC 800M Memory Back-up on page 419

Electro-magnetic Compatibility and Electrical Safety

PM861/TP830 meets the requirements specified in EMC Directive EMCD 2004/108/EC.

For more information regarding electrical safety, see Appendix D, Directive Considerations.

LED Indicators

See Table 19 on page 188.

Performance Data

The PM861 processor unit, in single configuration, has the same performance data as the PM860. In redundant configuration the execution performance is somewhat lower than in single configuration.

Switch over time from Primary CPU to Backup CPU, in redundant CPU configuration, is less than 10 ms.