ABB ABB Series Service Manual

PM857K02

1. Description

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3. Product Information

The CPU board contains the microprocessor and RAM memory, a real-time clock, LED indicators, INIT push button, and a CompactFlash interface.

The base plate of the PM857 controller has two RJ45 Ethernet ports (CN1, CN2) for connection to the Control Network, and two RJ45 serial ports (COM3, COM4). One of the serial ports (COM3) is an RS-232C port with modem control signals, whereas the other port (COM4) is isolated and used for the connection of a configuration tool. The controller supports CPU redundancy for higher availability (CPU, CEX-Bus, communication interfaces and S800 I/O).

The high integrity functionality is enabled by the addition of an SM812 module and the SIL-certified software. This enables non-critical control schemes to be upgraded to SIL-certified schemes by the addition of a plug-in SM81x module, plus a selection of the appropriate software. The AC 800M High-Integrity also offers IEC 61508 and TÜV-certified control environment for combining safety and business-critical process control in one controller unit without sacrificing the safety integrity.

The PM857 can handle Max 128 I/O signals. Certified for SIL3. Requires configuration according to Safety Manual.

Package including:

2 pcs PM857K01, Safety Processor unit

1 pcs TK850, CEX-bus expansion cable

1 pcs TK851, RCU-Link cable

Features and benefits

ISA Secure certified - Read more

AC 800M High up to SIL 3 certified using PM857/SM812, PM863/SM812, PM865/SM811 or PM867/SM812

Supports S800 I/O High Integrity (PM857, PM863, PM865, PM866A and PM891)

The controller can be configured with 800xA control builder

The controller has full EMC certification

TÜV Certified SIL 2 and SIL 3

Built-in redundant Ethernet Communication ports

General info

Article number 3BSE088386R1 (PM857K02)

Redundancy Yes

High Integrity Yes

Clock Frequency 96 Mhz

Performance, 1000 boolean operations 0.17 ms

Performance 0.17 ms

Memory 32 MB

RAM available for application 22.184 MB

Flash memory for storage No

Detailed data

Processor type MPC866

Switch over time in red. conf. Max 10 ms

No. of applications per controller 32

No. of programs per application 64

No. of diagrams per application 128

No. of tasks per controller 32

Number of different cycle times 32

Cycle time per application programs 10 ms

Flash PROM for firmware storage 18 MB

Power supply 24 V DC (19.2-30 V DC)

Power consumption +24 V typ/max 210 / 360 mA

Power dissipation 5.1 W (8.6 W max)

Redundant power supply status input Yes

Built-in back-up battery Lithium, 3.6 V

Clock synchronization 1 ms between AC 800M controllers by CNCP protocol

Event queue in controller per OPC client Up to 3000 events

AC 800M transm. speed to OPC server 36-86 events/sec ,113-143 data messages/sec

Comm. modules on CEX bus 12

Supply current on CEX bus Max 2.4 A

I/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical

I/O clusters on Modulebus with red. CPU 0 eletrical + 7 optical

I/O capacity on Modulebus Max 96 (single PM857) or 84 (red. PM857) I/O modules Max 128 I/O signals in total

Modulebus scan rate 0 - 100 ms (actual time depending on number of I/O modules)

Supply current on Electrical Modulebus 24 V : max 1.0 A

5 V : max 1.5 A

Ethernet channels 2

Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole)

Control Network protocol MMS (Manufacturing Message Service) and IAC (Inter Application Communication)

Recommended Control Network backbone 100 Mbit/s switched Ethernet

Real-time clock stability 100 ppm (approx. 1 h/year)

RS-232C interface 2 (one general, 1 for service tool)

RS-232C interface (COM3) (non red. only) RS-232C, 75-19 200 baud, RJ-45 female (8-pole), not opto isolated, full RTS-CTS support

RS-232C interface (COM4) (non red. only) RS-232C, 9 600 baud, RJ-45 female (8-pole), opto isolated, no RTS-CTS support

Environment and certification

Temperature, Operating +5 to +55 °C (+41 to +131 °F)

Temperature, Storage -40 to +70 °C (-40 to +158 °F)

Temperature changes 3 °C/minutes according to IEC/EN 61131-2

Pollution degree Degree 2 according to IEC/EN 61131-2

Corrosion protection G3 compliant to ISA 71.04

Relative humidity 5 to 95 %, non-condensing

Emitted noise < 55 dB (A)

Vibration 10 < f < 50 Hz: 0.0375 mm amplitude, 50 < f < 150 Hz: 0.5 g acceleration, 5 < f < 500 Hz: 0.2 g acceleration

Rated Isolation Voltage 500 V a.c.

Dielectric test voltage 50 V

Protection class IP20 according to EN 60529, IEC 529

Altitude 2000 m according to IEC/EN 61131-2

Emission & Immunity EN 61000-6-4, EN 61000-6-2

Environmental conditions Industrial

CE Mark Yes

Electrical Safety EN 50178, IEC 61131-2, UL 61010-1, UL 61010-2-201

Hazardous location cULus Class 1, Zone 2, AEx nA IIC T4, ExnA IIC T4Gc X

ISA Secure certified Yes

Marine certificates ABS, BV, DNV-GL (LR, Lloyd (Pending)

TUV Approval Yes

RoHS compliance EN 50581:2012

WEEE compliance DIRECTIVE/2012/19/EU

Dimensions

Width 119 mm (4.7 in.)

Height 186 mm (7.3 in.)

Depth 135 mm (5.3 in.)

Weight (including base) 2700 g (5.95 lbs)