

DATA SHEET

PM863K01

ABB Ability™ System 800xA® hardware selector



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 PM863 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.

Requires configuration according to Safety Manual.

Features and benefits

- ISA Secure certified <u>Read more</u>
- 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, PM66A 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	3BSE088381R1 (PM863K01)	
Redundancy	No	
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	

Processor type MPC866 Switch over time in red. conf. Max 10 ms No. of applications per controller No. of papilications per controller No. of programs 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 Power supply Power supply 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 17/ Colusters on Modulebus with non-red. CPU 1 electrical, 7 optical 1/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical 1/O clusters on Modulebus with red. CPU 1 electrical, 7 optical 1/O clusters on Modulebus with red. CPU 1 electrical, 7 optical 1/O clusters on Modulebus with red. CPU 24 V: max 1.0 A 54 V:			
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No. of tasks per controller Number of different cycle times 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 12 Supply current on CEX bus Max 2.4 A 1/O clusters on Modulebus with non-red. CPU 1/O clusters on Modulebus with non-red. CPU 1/O clusters on Modulebus with red. CPU 1/O clusters on Modulebus with red. CPU 1/O capacity on Modulebus with red. CPU 1/O capacity on Modulebus Max 96 (single PM863) or 84 (red. PM863) 1/O modules Modulebus scan rate 0 - 100 ms (actual time depending on number of 1/O modules) 24 V · max 1.0 A 5 V · max 1.5 A Ethernet channels 2 Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, R3-45, female (8-pole) MmS (Manufacturing Message Service) and IAC (inter Application Communication) Recommended Control Network backbone 100 Mbit/s switched Ethernet Real-time clock stability 100 pom (approx. 1 h/year) 8-232C interface 2 (one general, 1 for service tool) Re-232C interface 2 (one general, 1 for service tool)	No. of programs per application	64	
Number of different cycle times 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 Wes Built-in back-up battery Lithium, 3.6 V Lithium, 3.6 V Lick synchronization Lock synchronization 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 V/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical V/O capacity on Modulebus with red. CPU O eletrical + 7 optical V/O capacity on Modulebus 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 S V: max 1.5 A Ethernet channels 2 Ethernet interface Ethernet (IEEE 80.2.3, 1.0 Mbit/s, R3-45, female (8-pole) Control Network protocol Recommended Control Network backbone Real-time clock stability 100 ppm (approx. 1 h/year) RS-232C interface (COM3) (non red. only)	No. of diagrams per application	128	
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 S.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 1/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical 1/O clusters on Modulebus with red. CPU 2 eletrical +7 optical 1/O clusters on Modulebus with red. CPU 349 (single PM863) or 84 (red. PM863) 1/O modules Modulebus scan rate 0 -100 ms (actual time depending on number of 1/O modules) 24 V : max 1.0 A 5 V : max 1.5 A Ethernet channels 2 Ethernet channels 2 Ethernet channels 2 Ethernet interface Control Network protocol Recommended Control Network backbone Real-time clock stability MS -232C, 75-19 200 baud, R3-45 female (8-pole), not opto isolated, full RTS-CTS support	No. of tasks per controller	32	
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 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 1/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical 1/O capacity on Modulebus with red. CPU 0 eletrical +7 optical 1/O capacity on Modulebus with red. CPU 36-86 events/sec_ 1.13-143 data messages/sec Comm. module on CEX bus 4x 2.4 A 4x 2.4 A 4x 2.4 A 4x 2.4 A 5y circle PM663) or 84 (red. PM863) I/O modules Max 96 (single PM863) or 84 (red. PM863) I/O modules Modulebus scan rate 0 -100 ms (actual time depending on number of I/O modules) 24 V : max 1.0 A 5 V : max 1.0 A 5 V : max 1.5 A Ethernet channels 2 Ethernet (IEEE 802.3), 10 Mbit/s, R3-45, 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) 2 (one general, 1 for service tool) RS-232C interface 100 R9-232C interface (COM3) (non red. only)	Number of different cycle times	32	
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 1/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical 1/O capacity on Modulebus with red. CPU 0 eletrical + 7 optical 1/O capacity on Modulebus with red. CPU 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 (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole) Control Network protocol Ms (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) 2 (one general, 1 for service tool) RS-232C, TS-19 200 baud, RJ-45 female (8-pole), not opto isolated, full RTS-CTS support	Cycle time per application programs	10 ms	
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 1/O clusters on Modulebus with non-red. CPU 1 electrical, 7 optical 1/O capacity on Modulebus with red. CPU 0 eletrical + 7 optical 1/O capacity on Modulebus Max 96 (single PM863) or 84 (red. PM863) I/O modules Modulebus scan rate 0 - 100 ms (actual time depending on number of I/O modules) 24 V : max 1.0 A 5 V : max 1.0 A 5 V : max 1.5 A Ethernet channels 2 Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, R3-45, female (8-pole) 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 (COM3) (non red. only) RS-232C interface (COM3) (non red. only)	Flash PROM for firmware storage	18 MB	
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 with red. CPU 0 eletrical + 7 optical I/O capacity on Modulebus Max 96 (single PM863) or 84 (red. PM863) I/O modules Modulebus scan rate 0 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 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 (cone general, I for service tool) RS-232C interface (COM3) (non red. only)	Power supply	24 V DC (19.2-30 V DC)	
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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 capacity on Modulebus with red. CPU 0 eletrical + 7 optical I/O capacity on Modulebus Max 96 (single PM863) or 84 (red. PM863) I/O modules 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) MMS (Manufacturing Message Service) and IAC (Inter Application Communication) Recommended Control Network backbone Real-time clock stability 100 ppm (approx. 1 h/year) 2 (one general, 1 for service tool) RS-232C interface RS-232C interface (COM3) (non red. only)	Power dissipation	5.1 W (8.6 W max)	
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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 capacity on Modulebus with red. CPU O eletrical + 7 optical I/O capacity on Modulebus Max 96 (single PM863) or 84 (red. PM863) I/O modules Modulebus scan rate O - 100 ms (actual time depending on number of I/O modules) Supply current on Electrical Modulebus Ethernet on Electrical Modulebus Ethernet channels 2 Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole) MMS (Manufacturing Message Service) and IAC (Inter Application Communication) Recommended Control Network backbone Real-time clock stability 100 ppm (approx. 1 h/year) RS-232C interface (COM3) (non red. only) RS-232C interface (COM3) (non red. only)	Clock synchronization	1 ms between AC 800M controllers by CNCP protocol	
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1/O clusters on Modulebus with red. CPU O eletrical + 7 optical 1/O capacity on Modulebus Max 96 (single PM863) or 84 (red. PM863) I/O modules Modulebus scan rate O - 100 ms (actual time depending on number of I/O modules) 24 V: max 1.0 A 5 V: max 1.5 A Ethernet channels Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole) Control Network protocol Recommended Control Network backbone Real-time clock stability 100 Mbit/s switched Ethernet Real-time clock stability RS-232C interface 2 (one general, 1 for service tool) RS-232C interface (COM3) (non red. only)	Supply current on CEX bus	Max 2.4 A	
Max 96 (single PM863) or 84 (red. PM863) I/O modules Modulebus scan rate 0 - 100 ms (actual time depending on number of I/O modules) 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 Recommended Control Network backbone Real-time clock stability 100 ppm (approx. 1 h/year) RS-232C interface (COM3) (non red. only) Max 96 (single PM863) or 84 (red. PM863) I/O modules 0 - 100 ms (actual time depending on number of I/O modules) 24 V : max 1.0 A 5 V : max 1.5 A Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole) MMS (Manufacturing Message Service) and IAC (Inter Application Communication) Recommended Control Network backbone 100 Mbit/s switched Ethernet 100 ppm (approx. 1 h/year) 2 (one general, 1 for service tool) RS-232C, 75-19 200 baud, RJ-45 female (8-pole), not opto isolated, full RTS-CTS support	I/O clusters on Modulebus with non-red. CPU	1 electrical, 7 optical	
Modulebus scan rate 0 - 100 ms (actual time depending on number of I/O modules) 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) MMS (Manufacturing Message Service) and IAC (Inter Application Communication) Recommended Control Network backbone 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)	I/O clusters on Modulebus with red. CPU	0 eletrical + 7 optical	
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	I/O capacity on Modulebus	Max 96 (single PM863) or 84 (red. PM863) I/O modules	
Supply current on Electrical Modulebus 5 V : max 1.5 A Ethernet channels 2 Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole) 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	Modulebus scan rate	0 - 100 ms (actual time depending on number of I/O modules)	
Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole) MMS (Manufacturing Message Service) and IAC (Inter Application Communication) Recommended Control Network backbone 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 interface (COM3) (non red. only)	Supply current on Electrical Modulebus		
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Communication) Recommended Control Network backbone 100 Mbit/s switched Ethernet 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 interface (COM3) (non red. only)	Ethernet interface	Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole)	
Real-time clock stability RS-232C interface 2 (one general, 1 for service tool) RS-232C interface (COM3) (non red. only) RS-232C interface (COM3) (non red. only)	Control Network protocol		
RS-232C interface 2 (one general, 1 for service tool) RS-232C interface (COM3) (non red. only) RS-232C interface (COM3) (non red. only) 2 (one general, 1 for service tool) RS-232C, 75-19 200 baud, RJ-45 female (8-pole), not opto isolated, full RTS-CTS support	Recommended Control Network backbone	100 Mbit/s switched Ethernet	
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	Real-time clock stability	100 ppm (approx. 1 h/year)	
RS-232C Interface (COM3) (non red. only) support	RS-232C interface	2 (one general, 1 for service tool)	
RS-232C interface (COM4) (non red. only) RS-232C, 9 600 baud, RJ-45 female (8-pole), opto isolated, no RTS-CTS support	RS-232C interface (COM3) (non red. only)		
	RS-232C interface (COM4) (non red. only)	RS-232C, 9 600 baud, RJ-45 female (8-pole), opto isolated, no RTS-CTS support	

Facilities and a settle set on		
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)	1200 g (2.6 lbs)	



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