

DATA SHEET

## PM866AK01

## 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 PM866 / PM866A 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).

Simple DIN rail attachment / detachment procedures, using the unique slide & lock mechanism. All base plates are provided with a unique Ethernet address which provides every CPU with a hardware identity. The address can be found on the Ethernet address label attached to the TP830 base plate.

## Features and benefits

- ISA Secure certified Read more
- Reliability and simple fault diagnosis procedures
- Modularity, allowing for step-by-step expansion
- IP20 Class protection without the requirement for enclosures
- The controller can be configured with 800xA control builder
- The controller has full EMC certification
- Sectioned CEX-Bus using a pair of BC810 / BC820
- Hardware based on standards for optimum communication connectivity (Ethernet, PROFIBUS DP, etc.)
- Built-in redundant Ethernet Communication ports

General info		
Article number	3BSE076939R1 (PM866AK01)	
Redundancy	No	
High Integrity	No	
Clock Frequency	133 MHz	
Performance, 1000 boolean operations	0.09 ms	
Performance	0.09 ms	
Memory	64 MB	
RAM available for application	51.389 MB	
Flash memory for storage	Yes	

Processor type  Switch over time in red. conf.  No. of applications per controller  32  No. of programs per application  64  No. of diagrams per application  128  No. of tasks per controller  32  Cycle time per application programs  Down to 1 ms  Flash PROM for firmware storage  4 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)  Pedundant power supply status input  Yes  Built-in back-up battery  Lithium, 3.6 V  Clock synchronization  I 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  I/O clusters on Modulebus with non-red. CPU  1/O clusters on Modulebus with non-red. CPU  1/O capacity on Modulebus  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  4 V : max 1.5 A  Ethernet channels  2  Ethernet channels  2  Ethernet channels	Detailed data		
Switch over time in red. conf.  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  Down to 1 ms  Hash PROM for firmware storage  4 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  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 PM866) or 84 (red. PM866) I/O modules)  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  5 V: max 1.5 A		ND COCC	
No. of applications per controller  No. of programs per application  128  No. of diagrams per application  128  No. of tasks per controller  32  A MB  4 MB  4 MB  4 MB  5 V: max 1.0 A  5 V: max 1.5 A  No. of tasks per controller  32  No. of tasks per controller  32  No. of tasks per controller  32  24 V max 1.0 A  5 V: max 1.5 A  Supply current on Electrical Modulebus			
No. of programs per application 128 No. of diagrams per application 128 No. of tasks per controller 32 Number of different cycle times 32 Number of different cycle times 32 Supply corrent on CEX bus 128 No. of tasks per controller 32 Number of different cycle times 32 Number of different cycle t			
No. of diagrams per application  No. of tasks per controller  32  Number of different cycle times  32  Cycle time per application programs  Down to 1 ms  Flash PROM for firmware storage  4 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  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  I/O clusters on Modulebus with non-red. CPU  1 electrical +7 optical  I/O clusters on Modulebus with non-red. CPU  1/O capacity on Modulebus  Max 96 (single PM866) or 84 (red. PM866) I/O modules)  Modulebus scan rate  0 -100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus			
No. of tasks per controller  No. of tasks per controller  Number of different cycle times  22  Cycle time per application programs  Down to 1 ms  Flash PROM for firmware storage  4 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 classers on Modulebus with red. CPU  O eletrical + 7 optical  I/O capacity on Modulebus  Max 96 (single PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  O - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  Supply current on Electrical Modulebus	No. of programs per application	64	
Number of different cycle times  Cycle time per application programs  Down to 1 ms  Flash PROM for firmware storage  4 MB  Power supply  24 V DC (19.2-30 V DC)  Power consumption +24 V typ/max  210 / 360 mA  Power dissipation  Solution back-up battery  Lithium, 3.6 V  Clock synchronization  Ins 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  I/O clusters on Modulebus with non-red. CPU  1 electrical +7 optical  I/O capacity on Modulebus  Max 96 (single PM866) or 84 (red. PM866) I/O modules)  Modulebus scan rate  0 -100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus	No. of diagrams per application	128	
Cycle time per application programs  Plash PROM for firmware storage  4 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  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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V: max 1.5 A	No. of tasks per controller	32	
Flash PROM for firmware storage  4 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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 -100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus	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  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 PM866) or 84 (red. PM866) I/O modules)  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus	Cycle time per application programs	Down to 1 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  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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V: max 1.0 A  5 V: max 1.5 A	Flash PROM for firmware storage	4 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  Max 96 (single PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  Supply current on Electrical Modulebus	Power supply	24 V DC (19.2-30 V DC)	
Redundant power supply status input  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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V: max 1.0 A  5 V: max 1.5 A	Power consumption +24 V typ/max	210 / 360 mA	
Built-in back-up battery  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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V: max 1.5 A	Power dissipation	5.1 W (8.6 W max)	
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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V: max 1.5 A	Redundant power supply status input	Yes	
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  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 PM866) or 84 (red. PM866) 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	Built-in back-up battery	Lithium, 3.6 V	
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 PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  0 - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V : max 1.0 A  5 V : max 1.5 A	Clock synchronization	1 ms between AC 800M controllers by CNCP protocol	
Comm. modules on CEX bus  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 PM866) or 84 (red. PM866) 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	Event queue in controller per OPC client	Up to 3000 events	
Supply current on CEX bus  I/O clusters on Modulebus with non-red. CPU  1 electrical + 7 optical  I/O clusters on Modulebus with red. CPU  O eletrical + 7 optical  I/O capacity on Modulebus  Max 96 (single PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  O - 100 ms (actual time depending on number of I/O modules)  Supply current on Electrical Modulebus  5 V: max 1.5 A	AC 800M transm. speed to OPC server	36-86 events/sec, 113-143 data messages/sec	
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 PM866) or 84 (red. PM866) 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	Comm. modules on CEX bus	12	
I/O clusters on Modulebus with red. CPU  O eletrical + 7 optical  I/O capacity on Modulebus  Max 96 (single PM866) or 84 (red. PM866) I/O modules  Modulebus scan rate  O - 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	Supply current on CEX bus	Max 2.4 A	
I/O capacity on Modulebus  Max 96 (single PM866) or 84 (red. PM866) 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	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	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	I/O capacity on Modulebus	Max 96 (single PM866) or 84 (red. PM866) I/O modules	
Supply current on Electrical Modulebus 5 V : max 1.5 A	Modulebus scan rate	0 - 100 ms (actual time depending on number of I/O modules)	
Ethernet channels 2	Supply current on Electrical Modulebus		
	Ethernet channels	2	
Ethernet interface Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole)	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)	Control Network protocol		
Recommended Control Network backbone 100 Mbit/s switched Ethernet	Recommended Control Network backbone	100 Mbit/s switched Ethernet	
Real-time clock stability 100 ppm (approx. 1 h/year)	Real-time clock stability	100 ppm (approx. 1 h/year)	
RS-232C interface 2 (one general, 1 for service tool)	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 (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	RS-232C interface (COM4) (non red. only)	RS-232C, 9 600 baud, RJ-45 female (8-pole), opto isolated, no RTS-CTS support	

Fundament and contification		
Environment and certification		
Temperature, Operating	0 to +55 °C (+32 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	UL 60079-15, cULus Class 1, Zone 2, AEx nA IIC T4, ExnA IIC T4Gc X	
ISA Secure certified	Yes	
Marine certificates	DNV-GL (currently PM866: ABS, BV, DNV-GL, LR)	
TUV Approval	No	
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)	



solutions.abb/800xA solutions.abb/controlsystems

800xA and Symphony Plus is a registered trademark of ABB. All rights to other trademarks reside with their respective owners.

We reserve the right to make technical changes to the products or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not assume any responsibility for any errors or incomplete information in this document.

We reserve all rights to this document and the items and images it contains. The reproduction, disclosure to third parties or the use of the content of this document – including parts thereof – are prohibited without ABB's prior written permission.

Copyright© 2025 ABB All rights reserved