MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Amikon cover with selected official ABB pages

AC 800M CEX BUS

BC810K02 3BSE031155R1

REDUNDANT CEX BUS INTERCONNECTION KIT

OFFICIAL SOURCES

ABB AC 800M Controller and Communication Interfaces Data Sheet. Selected pages retain their original content, color and aspect ratio.

DATA SHEET

AC 800M Controller and Communication interfaces

Outline of all modules

AC 800M is a family of rail-mounted modules, consisting of CPUs, communication modules, power supply modules and various accessories. There are several CPU modules to choose from, ranging from medium processor power and low cost to high processor power and support for full redundancy.



The AC 800M family does also include IEC 61508-SIL3 certified controllers PM857, PM863, PM865 and PM867, which supports controller configurations for:

- Safety application
- Combined Process Automation and Safety application

For updated information regarding System 800xA hardware please visit our 800xA Hardware Selector. In the selector you can compare different communication modules, AC 800M controllers, S800 IO modules, module termination units, 800xA networks equipment, power supplies and voters, panels and also print your own PDF files.

www.800xahardwareselector.com

Features / CPUs	**PM851A**	**PM856A**	**PM857**	**PM858**	**PM860A**
Article number	3BSE066485R1 (PM851AK01)	3BSE066490R1 (PM856A)	3BSE088385R1 (PM857K01) 3BSE088386R1 (PM857K02)	3BSE082895R1 (PM858K01) 3BSE082896R1 (PM858K02)	3BSE066495R1 (PM860AK01)
Processor Unit	**PM851AK01 incl:** 1 PM851A CPU and required optional items	**PM856AK01 incl:** 1 PM856A CPU and required optional items	**PM857K01 incl:** 1 PM857 CPU and required optional items **PM857K02 incl:** 2 PM857K01	**PM858K01 incl:** 1 PM858 CPU and required optional items **PM858K02 incl:** 2 PM858K01	**PM860AK01 incl:** 1 PM860A CPU and required optional items
Optional items (partly included in Processor Units, see Price List)	TP830 Baseplate, TP850 CEX-bus term., TK850 CEX-bus cable, TB807, Modulebus term, Battery RAM backup, TB852/ TB853 RCU-link term, TB851/TB855/TB856 RCU-link cable, SB822 External Battery Unit, TK212A Tool cable, TC562 Short Distance Modem, TK853V020 Modem cable, BC810K02, BC820K02, CEX-bus Interconnection unit; TK851V010 Connection cable, SD831/SD832/SD833/SD853/SD854 Power Supply, SS832 Voting Unit, Mains Breaker Kit, SM811 Supervisory Module and SM812 Supervisory Module.				
High Integrity Controller	No	No	Yes	No	No
Clock frequency	24 MHz	24 MHz	96 Mhz	33 MHz	48 MHz
Memory (RAM)	8 MB	8 MB	32 MB	16MB	8 MB
From 5.1 FP4	12 MB	16 MB			16 MB
RAM available for application	2.282 MB	2.282 MB	22.184 MB	7.147 MB	2.282 MB
From 5.1 FP4	6.253 MB	10.337 MB			10.346 MB
Processor type	MPC860	MPC860	MPC866	MPC866	MPC860

Features / CPUs	PM851A	PM856A	PM857	PM858	PM860A
Certificates and Standards[1]	CE- marking: Meets EMC directive 2004/108/EC acc. to EN 61000-6-4, EN 61000-6-2 and Low Voltage Directive acc. to EN 61131-2 Electrical Safety: EN 50178, IEC 61131-2, UL 508 (Note! UL 508 not valid for PM858, PM862) Hazardous location: UL 60079-15 (Note! UL 60079-15 not valid for PM858, PM862) RoHS compliance: DIRECTIVE/2011/65/EU (EN 50581:2012) WEEE compliance: DIRECTIVE/2012/19/EU				
Dimensions	Width 119 x Height 186 x Depth 135 mm (4.7 x 7.3 x 5.3 in.)				
Weight (including base)	1100 g (2.4 lbs)	1100 g (2.4 lbs)	1200 g (2.6 lbs)	1200 g (2.6 lbs)	1100 g (2.4 lbs)

(1) For detailed information on each module, please visit: **www.800xAhardwareselector.com**

Features / CPUs	PM861A (Classic)	PM862	PM863	PM864A (Classic)
Article number	3BSE018157R1 (PM861K01) 3BSE018160R1 (PM861K02)	3BSE076940R1 (PM862K01) 3BSE081636R1 (PM862K02)	3BSE088381R1 (PM863K01) 3BSE088382R1 (PM863K02)	3BSE018161R1 (PM864K01) 3BSE018164R1 (PM864K02)
Processor Unit	**PM861AK01 incl:** 1 PM861A CPU and required optional items **PM861AK02 incl:** 2 PM861AK01	**PM862K01 incl:** 1 PM862 CPU and required optional items. **PM862K02 incl:** 2 PM862K01	**PM863K01 incl:** 1 PM863 CPU and required optional items **PM863K02 incl:** 2 PM863K01	**PM864AK01 incl:** 1 PM864A CPU and required optional items **PM864AK02 incl:** 2 PM864AK01
Optional items (partly included in Processor Units, see Price List)	TP830 Baseplate, TP850 CEX-bus term., TK850 CEX-bus cable, TB807, Modulebus term, Battery RAM backup, TB852/TB853 RCU-link term, TB851/TB855/TB856 RCU-link cable, SB822 External Battery Unit, TK212A Tool cable, TC562 Short Distance Modem, TK853V020 Modem cable, BC810K02, BC820K02, CEX-bus Interconnection unit; TK851V010 Connection cable, SD831/SD832/SD833/SD853/SD854 Power Supply, SS832 Voting Unit, Mains Breaker Kit, SM811 Supervisory Module and SM812 Supervisory Module.			
High Integrity Controller	No	No	Yes	No
Clock frequency	48MHz	67 MHz	96 Mhz	96 MHz
Memory (RAM) From 5.1 FP4	16 MB	32 MB	32 MB	32 MB
RAM available for application From 5.1 FP4	7.155 MB	23.521 MB	22.184 MB	23.522 MB
Processor type	MPC860	MPC866	MPC866	MPC862
Flash memory for storage of appli-cation and data	Yes	Yes	No	Yes
CPU redundancy support	Yes	Yes	Yes	Yes
Switch over time in red. conf.	Max 10 ms	Max 10 ms	Max 10 ms	Max 10 ms
Performance, 1000 boolean operations (a:=b and c)	0.23 ms	0.18 ms	0.17 ms	0.15 ms
No. controllers per control projects	32			
No. of applications per control project	1024			
No. of applications per controller	32			
No. of programs per application	64			
No. of tasks per controller	32			
Number of different cycle times	32			
Cycle time per application programs	Down to 1 ms (HI Integrity controllers 10 ms)			
Flash PROM for firmware storage	2 MB	4 MB	18 MB	2 MB
Power supply	24 V DC (19.2-30 V DC) max 5 % ripple acc. to IEC 61131-2			
Power consumption +24 V (typ/max)	250/430 mA	210/360 mA	210/360 mA	287/487 mA
Power dissipation typ.	6.0 W	5.1 W	5.1 W	6.9 W
Power Reservoir	Internal 5 ms power reservoir, sufficient for the CPU to make a controlled power down			
Power supply connector	Detachable 4-pole screw terminal block			
Redundant power supply status inputs	Yes: 2 inputs designated SA, SB (Max 30 V, high level >15 V, low level < 8 V)			
Built-in back-up battery	Type: Lithium, 3.6 V, 0.95 Ah, size 1/2 AA, 0.3 g Lithium content			
Real-time clock stability	100 ppm (approx. 1 h/year)			
Clock synchronization	1 ms between AC 800M controllers by CNCP protocol			
Comm. modules on CEX bus	12	12	12	12
Supply current on CEX bus	Supply current: Max 24 V - 2.4 A (fuse 3.15 A fast, PM891 has an embedded auto fuse)			
I/O clusters on Modulebus with non-redundant CPU	1 el. + 7 opt.	1 el. + 7 opt.	1 el. + 7 opt.	1 el. + 7 opt.
I/O clusters on Modulebus with redundant CPU	0 el. + 7 opt.	7 optical	7 optical	0 el. + 7 opt.

Features / CPUs	**PM865**	**SM811**	**PM866A**	**PM867**	**SM812**	**PM891**
Article number	3BSE031151R1 (PM865K01) 3BSE031150R1 (PM865K02)	3BSE018173R1	3BSE076939R1 (PM866AK01) 3BSE081637R1 (PM866AK02)	3BSE076355R1 (PM867K01) 3BSE081638R1 (PM867K02)	3BSE072270R1	3BSE053241R1 (PM891K01) 3BSE053242R1 (PM891K02)
Processor Unit	**PM865K01 incl:** 1 PM865 CPU and required optional items **PM865K02 incl:** 2 PM865K01	**SM811K01 incl:** 1 SM811	**PM866AK01 incl:** 1 PM866A CPU and required optional items **PM866AK02 incl:** 2 PM866AK01	**PM867K01 incl:** 1 PM867 CPU and required optional items **PM867K02 incl:** 2 PM867K01	**SM812K01 incl:** 1 SM812	**PM891K01 incl:** 1 PM891 CPU and required optional items **PM891K02 incl:** 2 PM891K01
Optional items (partly included in Processor Units, see Price List)	TP830 Baseplate, TP850 CEX-bus term., TK850 CEX-bus cable, TB807, Modulebus term, Battery RAM backup, TB852/TB853 RCU-link term, TB851/TB855/TB856 RCU-link cable, SB822 External Battery Unit, TK212A Tool cable, TC562 Short Distance Modem, TK853V020 Modem cable, BC810K02, BC820K02, CEX-bus Interconnection unit; TK851V010 Connection cable, SD831/SD832/SD833/SD853/SD854 Power Supply, SS832 Voting Unit, Mains Breaker Kit, SM811 Supervisory Module and SM812 Supervisory Module.					
High Integrity Controller	Yes	Yes	No	Yes	Yes	No
Clock frequency	96 MHz	96 MHz	133 MHz	133 MHz	133 MHz	450 MHz
Memory (RAM) From 5.1 FP4	32 MB	32 MB	64 MB	64 MB	64 MB	256 MB
RAM available for application	22.184 MB	-	51.389 MB	46.559 MB	-	208.985 MB
Processor type	MPC862P	MPC862P	MPC866	MPC866	MPC866	MPC8270
Flash memory for storage of application and data	No	No	Yes	No	No	Yes
CPU redundancy support	Yes	Yes	Yes	Yes	Yes	Yes
Switch over time in red. conf.	Max 10 ms	Max 10 ms	Max 10 ms	Max 10 ms	Max 10 ms	Max 10 ms
Performance, 1000 boolean operations (a:=b and c)	0.17 ms	-	0.09 ms	0.09 ms	-	0.043 ms
No. controllers per control projects	32					
No. of applications per control project	1024					
No. of applications per controller	32					
No. of programs per application	64					
No. of tasks per controller	32					
Number of different cycle times	32					
Cycle time per application programs	Down to 1 ms (HI Integrity controllers 10 ms)					
Flash PROM for firmware storage	4 MB	4 MB	4 MB	18 MB	4 MB	16 MB
Power supply	24 V DC (19.2-30 V DC) max 5 % ripple acc. to IEC 61131-2					
Power consumption +24 V (typ/max)	287/487 mA	160/250 mA	210/360 mA	210/360 mA	160/250 mA	660/750 mA
Power dissipation typ.	6.9 W	3.8 W	5.1 W	5.1 W	3.8 W	15.8 W
Power Reservoir	Internal 5 ms power reservoir, sufficient for the CPU to make a controlled power down					
Power supply connector	Detachable 4-pole screw terminal block					
Redundant power supply status inputs	Yes: 2 inputs designated SA, SB (Max 30 V, high level >15 V, low level < 8 V)					
Built-in back-up battery	Type: Lithium, 3.6 V, 0.95 Ah, size 1/2 AA, 0.3 g Lithium content	No	Type: Lithium, 3.6 V, 0.95 Ah, size 1/2 AA, 0.3 g Lithium content		No	No
Real-time clock stability	100 ppm (approx. 1 h/year)					50 ppm
Clock synchronization	1 ms between AC 800M controllers by CNCP protocol					
Comm. modules on CEX bus	12		12	12		12
Supply current on CEX bus	Supply current: Max 24 V - 2.4 A (fuse 3.15 A fast, PM891 has an embedded auto fuse)					
I/O clusters on Modulebus with non-redundant CPU	1 el. + 7 opt.	N/A	1 el. + 7 opt.	1 el. + 7 opt.	N/A	0 el. + 7 opt.
I/O clusters on Modulebus with redundant CPU	0 el. + 7 opt.	N/A	0 el. + 7 opt.	0 el. + 7 opt.	N/A	0 el. + 7 opt.
I/O capacity on Modulebus with non-redundant/redundant CPU	Max 96/84 I/O modules	N/A	Max 96/84 I/O modules	Max 96/84 I/O modules	N/A	Max 84/84 I/O modules
Modulebus scan rate	0 - 100 ms (actual time depending on number of I/O modules), 0 - 300 for PM865 and PM867					
Supply current on Electrical Modulebus	Supply current: Max 24 V - 1.0 A (short circuit proof, fuse 2.0 A), Max 5 V - 1.5 A (short circuit proof)			24 V : max 1.0 A 5 V : max 1.5 A		Not supported
I/O capacity on PROFIBUS (remote I/O)	Max 99 I/O stations (max 62 redundant I/O stations), max 24 I/O modules per I/O station (max 12 redundant I/O pairs)					
Ethernet channels	2	N/A	2	2	N/A	2
Ethernet interface	Ethernet (IEEE 802.3), 10 Mbit/s, RJ-45, female (8-pole)					10/100 Mbit/s
Control Network protocol	MMS (Manufacturing Message Service) and IAC (Inter Application Communication)					

Features / CPUs	PM865	SM811	PM866A	PM867	SM812	PM891
Recommended Control Network backbone	100 Mbit/s switched Ethernet					
No of controllers on Control Network	Max 50					
RS-232C interface	2 (one general, 1 for service tool)				N/A	1 for service tool (COM 4)
RS-232C interface (COM3) (non red.conf. only)	RS-232C, 75-19 200 baud, RJ-45 female (8-pole), not opto isolated, full RTS-CTS support				N/A	Not supported
RS-232C interface (COM4) (non red.conf. only)	RS-232C, 9 600 baud, RJ-45 female (8-pole), opto isolated, no RTS-CTS support					
Temperature • Operating • Storage	 +5 to +55 °C (+41 to +131 °F) -40 to +70 °C (-40 to +158 °F)					
Temperature changes	3 °C/minutes according to IEC/EN 61131-2					
Altitude	2000 m according to IEC/EN 61131-2					
Pollution degree	Degree 2 according to IEC/EN 61131-2					
Corrosion protection	G3 compliant to ISA 71.04					
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					
Emitted noise	< 55 dB (A)					
Shock, no package	150 m/s2 in 11 ms, 20 g in 3 ms					
Relative humidity	5 to 95 %, non-condensing					
Isolation voltage	Type test voltage: 500 V AC (corresponding to 700 V DC)					
Environmental conditions	Industrial					
Protection class	IP20 according to EN 60529, IEC 529					
Certificates and Standards (1)	CE- marking: Meets EMC directive 2004/108/EC acc. to EN 61000-6-4, EN 61000-6-2 and Low Voltage Directive acc. to EN 61131-2 Electrical Safety: EN 50178, IEC 61131-2, UL 508 (Note! UL 508 not valid for PM866A, PM867, PM891) Hazardous location: cULus Class1, Zone2, AEx nA IIC T4, ExnA IIC T4Gc X (Note! UL 60079-15 not valid for PM866A, PM867, PM891) RoHS compliance: DIRECTIVE/2011/65/EU (EN 50581:2012) WEEE compliance: DIRECTIVE/2012/19/EU					
TÜV Approval	IEC 61508 SIL3	IEC 61508 SIL3	No	IEC 61508 SIL3	IEC 61508 SIL3	No
Emission	Tested according to EN 61000-6-4 EMC – Generic Emission Standard, Part 2 – Industrial Environment					
Immunity	Tested according to EN 61000-6-2 EMC – Generic Immunity Standard, Part 2 – Industrial Environment					
Height	186 mm (7.3 in.)	186 mm (7.3 in.)	186 mm (7.3 in.)	186 mm (7.3 in.)	186 mm (7.3 in.)	186 mm (7.3 in.)
Width	119 mm (4.7 in.)	59 mm (2.9 in.)	119 mm (4.7 in.)	119 mm (4.7 in.)	59 mm (2.9 in.)	174 mm (6.9 in.)
Depth	135 mm (5.3 in.)	127.5 mm (5.0 in.)	135 mm (5.3 in.)	135 mm (5.3 in.)	127.5 (5.0 in.)	94 mm (3.7 in.)
Weight (including base)	1200 g (2.6 lbs)	700g (1.5 lbs)	1200 g (2.6 lbs)	1200 g (2.6 lbs)	700 g (1.5 lbs)	1600 g (3.5 lbs)

(1) For detailed information on each module, please visit: **www.800xAhardwareselector.com**

Features	BC810	BC820
Article number	3BSE031155R1	3BSE071500R1
Redundancy	Yes	Yes
High Integrity	Yes	No
Performance	Hot swap supported	Hot swap supported
Power supply	Inputs designated L+ and L- 24 V nominal, variation between 19.2 V DC and 30 V DC.	
Power consumption +24 V typ/max	50 mA typical (70 mA max)	120 mA typical (200 mA max)
Power dissipation typ.	1.2 W typical	2.9 W typical
Temperature, Operating	+5 to +55 °C (+41 to +131 °F)	
Temperature, Storage	-40 to +70 °C (-40 to +158 °F)	
Relative humidity	5 to 95 %, non-condensing	
Protection class	IP20 according to EN60529, IEC 529	
CE- marking	Yes	
Electrical Safety	UL508	UL508
Hazardous location	cULus Class 1, Zone 2, AEx nA IIC T4, ExnA IIC T4Gc X	
Marine certificates	ABS, BV, DNV-GL, LR, RS, CCS	ABS, BV, DNV-GL, LR
RoHS compliance	DIRECTIVE/2011/65/EU (EN 50581:2012)	
WEEE compliance	DIRECTIVE/2012/19/EU	
Height	185 mm (7.3 in.)	185 mm (7.3 in.)
Width	59 mm (2.9 in.)	59 mm (2.9 in.)
Depth	127.5 (5.0 in.)	127.5 (5.0 in.)
Weight	1.5 kg (3.31 lbs) (BC810K02 package)	1.4 kg (3.1 lbs) (BC820K02 package)