

DATA SHEET

AC 800M Controller

Outline of all modules

AC 800M is a family of rail-mounted modules, consisting of CPU:s, 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, S800 IO modules, module termination units, controllers, power supplies and voters, panels and also print your own pdf files.

www.800xahardwareselector.com

| Features / CPUs | PM851A | PM856A | PM858 | PM860A | PM861A | PM862 |
|---|--|--|---|--|---|--|
| Processor Unit | PM851AK01 incl: 1 PM851A CPU and required optional items | PM856AK01 incl: 1 PM856A CPU and required optional items | PM858K01 incl: 1 PM858 CPU and required optional items PM858K02 incl: 2 PM858K01 | PM860AK01 incl: 1 PM860A CPU and required optional items | 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 |
| 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 | No | No | No | No |
| Clock frequency | 24 MHz | 24 MHz | 33 MHz | 48 MHz | 48 MHz | 67 MHz |
| Memory (RAM) | 8 MB | 8 MB | 16MB | 8 MB | 16 MB | 32 MB |
| From 5.1 FP4 | 12 MB | 16 MB | | 16 MB | | |
| RAM available for application | 2.282 MB | 2.282 MB | 7.147 MB | 2.282 MB | 7.155 MB | 23.521 MB |
| From 5.1 FP4 | 6.253 MB | 10.337 MB | | 10.346 MB | | |
| Processor type | MPC860 | MPC860 | MPC866 | MPC860 | MPC860 | MPC866 |
| Flash memory for storage of application and data | Yes | Yes | Yes | Yes | Yes | Yes |

| Features / CPUs | PM851A | PM856A | PM858 | PM860A | PM861A | PM862 |
|---|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| CPU redundancy support | No | No | Yes | No | Yes | Yes |
| Switch over time in red. conf. | - | - | Max 10 ms | - | Max 10 ms | Max 10 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 | 2 MB | 4 MB | 2 MB | 2 MB | 4 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 180/300 mA | typ/max 180/300 mA | typ/max 210/360 mA | typ/max 180/300 mA | typ/max 250/430 mA | typ/max 210/360 mA |
| Power dissipation typ. | 4.32 W | 4.32 W | 5.1 W | 4.32 W | 6.0 W | 5.1 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 | 1 | 12 | 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. + 1 opt. | 1 el. + 7 opt. | 1 el. + 7 opt. | 1 el. + 7 opt. | 1 el. + 7 opt. | 1 el. + 7 opt. |
| I/O clusters on Modulebus with redundant CPU | NA | NA | 7 optical | NA | 0 el. + 7 opt. | 7 optical |
| I/O capacity on Modulebus with non-redundant/ redundant CPU | Max 24/NA I/O modules | Max 96/NA I/O modules | Max 96/84 I/O modules | Max 96/NA I/O modules | Max 96/84 I/O modules | Max 96/84 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: Max 24 V - 1.0 A (short circuit proof, fuse 2.0 A), Max 5 V - 1.5 A (short circuit proof) | | | | | |
| 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 | 1 | 2 | 2 | 2 | 2 | 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 | | | | | |
| No. of controllers on Control Network | Max 50 | | | | | |
| RS-232C interface | 2 (one general, 1 for service tool) | | | | | |
| 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 | | | | | |
| 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 | +5 to +55 °C (+41 to +131 °F) | | | | | |
| • Storage | -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/s ² in 11 ms, 20 g in 3 ms | | | | | |

| Features / CPUs | PM851A | PM856A | PM858 | PM860A | PM861A | PM862 |
|---|---|------------------|------------------|------------------|------------------|------------------|
| 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 Hazardous location: UL 60079-15, cULus Class 1, Zone 2, AEx nA IIC T4, ExnA IIC T4Gc X RoHS compliance: EN 50581:2012 WEEE compliance: DIRECTIVE/2012/19/EU | | | | | |
| TÜV Approval | No | No | No | No | No | 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 | | | | | |
| 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) | 1100 g (2.4 lbs) | 1200 g (2.6 lbs) | 1200 g (2.6 lbs) |

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

| Features / CPUs | PM864A | PM866A | PM867 | PM891 |
|---|--|---|---|---|
| Processor Unit | PM864AK01 incl: 1 PM864A CPU and required optional items PM864AK02 incl: 2 PM864AK01 | 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 | 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 | No | No | Yes | No |
| Clock frequency | 96 MHz | 133 MHz | 133 MHz | 450 MHz |
| Memory (RAM) From 5.1 FP4 | 32 MB | 64 MB | 64 MB | 256 MB |
| RAM available for application | 23.522 MB | 51.389 MB | 46.559 MB | 208.985 MB |
| Processor type | MPC862 | MPC866 | MPC866 | MPC8270 |
| Flash memory for storage of application 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) | 0.15 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 | 2 MB | 4 MB | 18 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 | typ/max 210/360 mA | typ/max 210/360 mA | typ/max 660/750 mA |
| Power dissipation typ. | 6.9 W | 5.1 W | 5.1 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 | | | |

| Features / CPUs | PM864A | PM866A | PM867 | PM891 |
|--|---|-----------------------|-------------------------------------|--------------------------------------|
| 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 |
| 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. | 1 el. + 7 opt. | 1 el. + 7 opt. | 0 el. + 7 opt. |
| I/O clusters on Modulebus with redundant CPU | 0 el. + 7 opt. | 0 el. + 7 opt. | 0 el. + 7 opt. | 0 el. + 7 opt. |
| I/O capacity on Modulebus with non-redundant/redundant CPU | Max 96/84 I/O modules | Max 96/84 I/O modules | Max 96/84 I/O modules | 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 | 2 | 2 | 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) | | | |
| 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) | | | 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 | | | 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 | <ul style="list-style-type: none"> • Operating +5 to +55 °C (+41 to +131 °F) • Storage -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/s ² 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 Hazardous location: UL 60079-15, cULus Class 1, Zone 2, AEx nA IIC T4, ExnA IIC T4Gc X RoHS compliance: EN 50581:2012 WEEE compliance: DIRECTIVE/2012/19/EU | | | |
| TÜV Approval | No | No | 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 | | | |
| Dimensions | Width 119 x Height 186 x Depth 135 mm (4.7 x 7.3 x 5.3 in.) | | | Width 174 x Height 186 x Depth 94 mm |
| Weight (including base) | 1100 g (2.4 lbs) | 1200 g (2.6 lbs) | 1200 g (2.6 lbs) | 1600 g (3.5 lbs) |

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

| Supported Communication modules | PROFIBUS DP | FOUNDATION FIELDBUS | RS-232 C | MB300 | INSUM | Drivebus | S100 I/O | Genius TRIO I/O | Satt I/O | MODBUS TCP | IEC 61850 |
|--|--|--------------------------------|--|---------------------------|----------------------|-----------------|---------------------|---------------------|-----------------|--------------------------------------|----------------------|
| Module | CI854B | CI860 | CI853 | CI855 | CI857 | CI858 | CI856 | CI862 | CI865 | CI867 | CI868 |
| Protocol | DP-V1 (PA via Linking Device) | FF HSE (H1 via Linking Device) | MODBUS RTU master, COMLI master/ slave, Siemens 3964R master, User defined protocols | MasterBus 300 | IEEE 802.3 | ABB's DriveBus | ABB's S100 I/O | Genius | ABB's Satt I/O | MODBUS TCP | IEC 61850 |
| Master or slave | Master | Master | Master/slave | Master/slave | Master | Master | Master | Master | Master | Master/slave | Master |
| Number of channels | 2 | 1 | 2 | 2 | 1 | 1 main, 2 aux | 1 | 1 | 1 | 2 | 1 |
| Max units on CEX bus | 12 | 12 | 12 | 12 | 6 | 2 | 12 | 12 | 4 | 12 | 4 |
| Transmission speed | 9.6 - 12,000 kbit/s | 10/100 Mbit/s | 75 - 19 200 b/s | 10 Mbit/s, 200 Datasets/s | 10 Mbit/s | 4 Mbit/s | - | 38.4 - 153.6 kbit/s | - | 10/100 Mbit/s (Ch1), 10 Mbit/s (Ch2) | 10/100 Mbit/s |
| Cable redundancy | Yes | No | No | Yes | No | No | No | No | No | No | No |
| Module redundancy | Yes | Yes | No | No | No | No | No | No | No | Yes | No |
| Hot Swap | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Used together with High Integrity Controller | Yes | No | Yes | Yes | Yes | No | No | No | No | Yes | Yes |
| Connectors | DB female (9-pin) | RJ-45 female (8-pin) | RJ-45 female (8-pin) | RJ-45 female (8-pin) | RJ-45 female (8-pin) | Fiberoptic | Miniribbon (36-pin) | Phoenix (4-pin) | BNC | RJ-45 female (8-pin) | RJ-45 female (8-pin) |
| 24 V current consumption | typ 190 mA | typ 100 mA | typ 100 mA | typ 150 mA | typ 150 mA | typ 200 mA | typ 200 mA | typ 190 mA | typ 120 mA | typ 160 mA | typ 160 mA |
| Protection class | IP20 according to EN60529, IEC 529 | | | | | | | | | | |
| Certification ⁽¹⁾ | | | | | | | | | | | |
| • CE-marked | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| • UL 508 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes |
| • UL 60079-15 (Class 1 Zone 2) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes |
| • RoHS compliance | EN 50581:2012 | | | | | | | | | | |
| • WEEE compliance | DIRECTIVE/2012/19/EU | | | | | | | | | | |
| Dimensions | Width 58 x Height 186 x Depth 135 mm (2.3 x 7.3 x 5.3 in.) | | | | | | | | | | |
| Weight (including base) | 700 g (1.5 lbs) | 455 g (0.9 lbs) | 520 g (1.2 lbs) | 700 g (1.5 lbs) | 600 g (1.3 lbs) | 700 g (1.5 lbs) | 600 g (1.3 lbs) | 600 g (1.3 lbs) | 600 g (1.3 lbs) | 700 g (1.5 lbs) | 700 g (1.5 lbs) |

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

| Supported Communication modules | AF100 | PROFINET IO | EtherNet/IP DeviceNet |
|--|--|----------------------|-------------------------------------|
| Module | CI869 | CI871 | CI873 |
| Protocol | Advant Fieldbus 100 | PROFINET IO | EtherNet/IP DeviceNet (via LD800DN) |
| Master or slave | Slave | Master | Master |
| Number of channels | 2 | 1 | 1 |
| Max units on CEX bus | 4 | 12 | 4 |
| Transmission speed | Up to 500 Kbit/s | 10/100 Mbit/s | 10/100 Mbit/s |
| Cable redundancy | Yes | No | No |
| Module redundancy | Yes | No | No |
| Hot Swap | Yes | Yes | Yes |
| Used together with High Integrity Controller | Yes | Yes | Yes |
| Connectors | Phoenix (4-pin) | RJ-45 female (8-pin) | RJ-45 female (8-pin) |
| 24 V current consumption | typ 160 mA | typ 160 mA | typ 160 mA |
| Protection class | IP20 according to EN60529, IEC 529 | | |
| UL 508 | Yes | Yes | Yes |
| UL 60079-15 (Class 1 Zone 2) | Yes | Yes | Yes |
| Dimensions | Width 58 x Height 186 x Depth 135 mm (2.3 x 7.3 x 5.3 in.) | | |
| Weight (including base) | 700 g (1.5 lbs) | 700 g (1.5 lbs) | 700 g (1.5 lbs) |

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