Compact 800 5.0
Flexible process control products

Power and productivity
for a better world™

ABB

The only control products you need
for your automation applications

Compact 800 is a range of products that can be used individually or combined to create cost-effective control solutions to fulfill a wide range of user needs.

Compact Products includes the following:

– A full-featured, application-ready Human Machine Interface (HMI)
– A stunning new series of tough, high-resolution operator panels for interaction with control applications
– Scalable PLC's/controllers with choice of speed, memory and availability
– Control-building software with easily extended, reusable libraries and six programming languages
– Robust I/O modules with easy and space-saving installation

Control a wide range of applications
The products work individually or in combination, smoothly controlling a broad spectrum of industrial applications.

All components are built with openness in mind. All are based on standards that ensure they can be operated with other control products on the automation market.

Compact 800 – the simple and cost-effective way to improve production, maximize availability and minimize maintenance.

Compact 800 topology
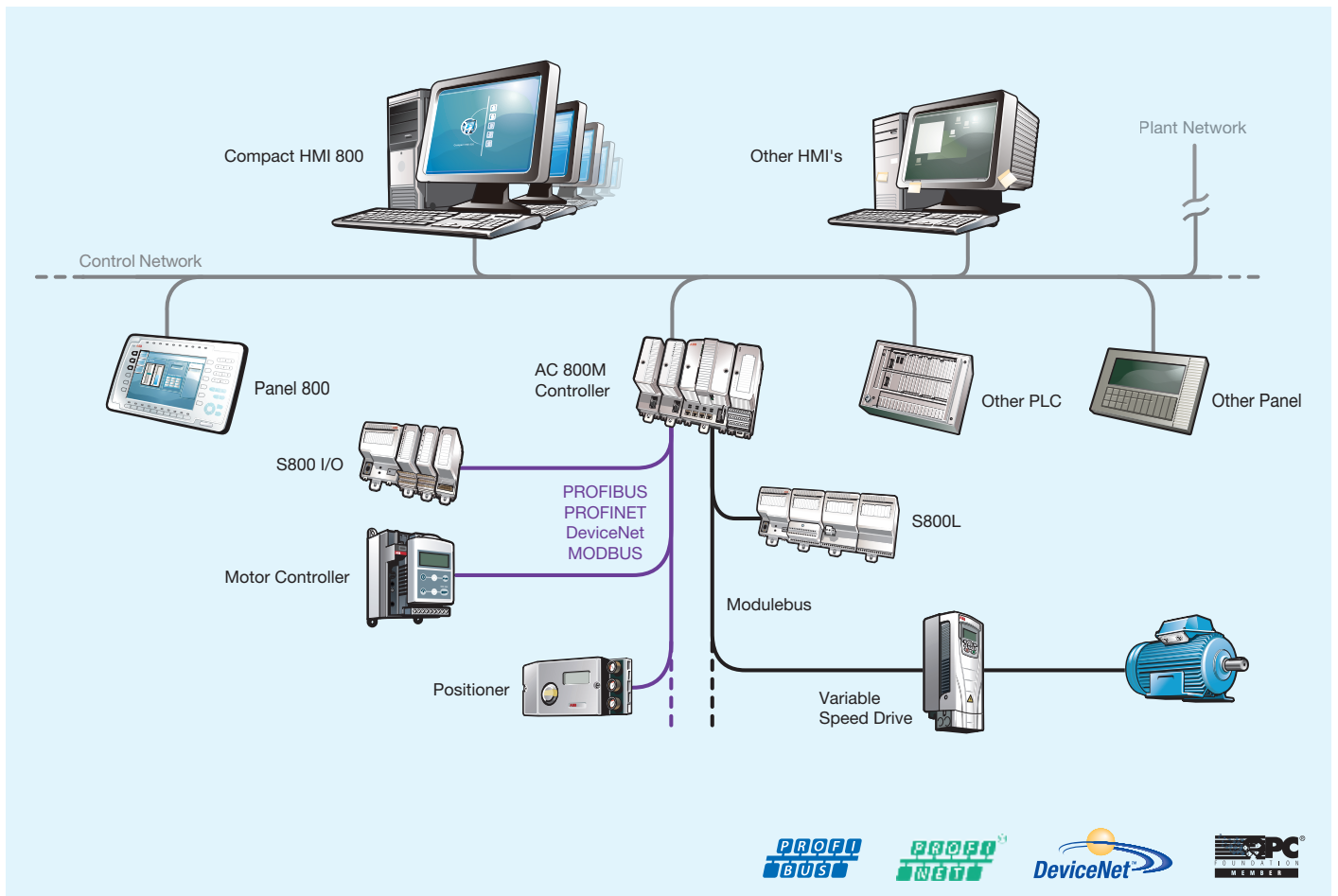
Compact 800 is a set of products that are suitable to be used individually or combined to fulfill any automation need. The AC 800M PLC/controller can be connected to the field using the S800L or S800 I/O families or be combined with any Profibus based I/O system on the market. The Compact HMI 800 can be used together with the AC 800M or with any other controller and PLC on the market. The communication uses the powerful features of the OPC standard. The Panel 800 is a panel HMI suitable for local plant floor operation or for machine level applications. Panel 800 connects to nearly any PC and a very wide range of PLCs via the built in drivers.

When using AC 800M there are multiple communication options:

– **Process Electrification and Process Instrumentation:**
  PROFIBUS DP, PROFINET IO, DeviceNet, Modulebus
– **Serial protocols:** COMLI, MODBUS RTU, MODBUS TCP, Siemens 3964R, user defined
– **ABB I/O systems:** S100, S200, S700, S800, S900
– **Evolution:** MB300, AF100, SattBus on TCP/IP

Redundancy is available in all critical areas of the AC 800M Control and I/O subsystem. These include control networks, field buses, internal buses, power supplies, CPUs and I/O.

Compact HMI 800 can be connected to AC 800M or third-party PLC-type controllers. It enables the remote connection of controllers and PLCs in single as well as in redundant systems. Combine all parts of Compact 800 and get some additional advantages like integrated alarm handling, or use one part and integrate it with a third-party product.

Complete and ready directly after installation

Compact HMI 800

Compact HMI 800 is a fully-equipped PC-based Human Machine Interface (HMI) for top-of-the-line HMI or SCADA applications. Operator functions include Graphics, Faceplates, Alarm/Events, Trending, History/Reporting, plus messaging, calculations, system supervision, SCADA real-time database and document handling.

Its Basic PLC-type Object Library comprises a full range ready-to-use graphic presentation components for efficient application engineering. Compact HMI 800 is delivered on a DVD to be installed on a standard PC with Windows XP.

HMI Server

Hardware requirements

Standard PC with Windows XP

1.5 GHz multicore CPU

3 GB RAM

36 GB HD (SAS)

Graphics card with 512 MB memory

Supported Configurations

1 Server Workplace

Operation and Engineering

Server Workplace Size

Option Pack

50 Signals (20 Tags)

500 Signals (200 Tags)

2500 Signals (1000 Tags)

HMI Client

Hardware requirements

Standard PC with Windows XP

1.5 GHz multicore CPU

3 GB RAM

36 GB HD (SAS or SATA)

Graphics card with 512 MB memory

Supported Configurations

1-9 Clients Workplaces

Client Workplace Size

≤ 200 Signals

≤ 500 Signals

≤ 1000 Signals

≤ 2500 Signals

≤ 5000 Signals

Outstanding graphics in a tough package

Panel 800

High-resolution operator panels with robust exteriors, ergonomic design, market-leading performance and stunning graphics. Panel 800's wide range of advanced functions includes integrated alarm handling with AC 800M. It forms part of a common system where alarms/events can be displayed, managed and acknowledged from all connected panels, HMIs and PCs.

Specifications	PP820	PP826	PP836	PP846
Display size	127.0 x 33.8 mm	5.7"	6.5"	10.4"
Display type	Graphic monochrome	Graphic 64K colors TFT	Graphic 64K colors TFT	Graphic 64K colors TFT
Resolution	240 x 64 pixels	320 x 240 pixels	640 x 480 pixels	800 x 600 pixels
Interaction type	Function key	Function key	Function key	Function key
LED	16 (2 color)	16 (2 color)	16 (2 color)	20 (2 color)
Power consumption (normal/max)	0.15 A / 0.35 A	0.3 A / 0.5 A	0.4 A / 0.9 A	0.5 A / 1 A
Front panel, W x H x D	202 x 187 x 57 mm	275 x 168 x 57 mm	285 x 177 x 60 mm	382 x 252 x 60 mm
Cut-out dimensions	166 x 149 mm	240 x 130 mm	246 x 139 mm	343 x 208 mm
Mounting depth	57 mm	58 mm	55 mm	58 mm
Weight	0.875 Kg	1.11 Kg	1.3 Kg	2.3 Kg

Specifications	PP815	PP825	PP835	PP845	PP865	PP865S
Display size	3.8"	5.7"	6.5"	10.4"	15"	15"
Display type	Graphic 64K colors TFT	Graphic 64K colors STN	Graphic 64K colors TFT	Graphic 64K colors TFT	Graphic 64K colors TFT	Graphic 64K colors TFT
Resolution	320 x 240 pixels	320 x 240 pixels	640 x 480 pixels	800 x 600 pixels	1024 x 768 pixels	1024 x 768 pixels
Interaction type	Resistive Touch	Resistive Touch	Resistive Touch	Resistive Touch	Resistive Touch	Resistive Touch
Power consumption (normal/max)	0.15 A / 0.35 A	0.25 A / 0.45 A	0.4 A / 0.9 A	0.5 A / 1 A	1.2 A / 1.7 A	1.2 A / 1.7 A
Front panel, W x H x D	156 x 119 x 59 mm	201 x 152 x 57 mm	219 x 154 x 60 mm	302 x 228 x 60 mm	398 x 304 x 60 mm	398 x 304 x 60 mm
Cut-out dimensions	139 x 105 mm	180 x 130 mm	189 x 138 mm	265 x 206 mm	356 x 279 mm	356 x 279 mm
Mounting depth	57 mm	57 mm	55 mm	58 mm	60 mm	60 mm
Weight	0.56 Kg	0.87 Kg	1.1 Kg	2 Kg	3.7 Kg	4.9 Kg

Certified panels

The unrivalled high-resolution graphics of Panel 800 are available in six touch-screen and four keypad formats, including a large 15-inch, 1024 x 768 pixel version. The panels are delivered pre-installed and pre-configured to minimize installation and commissioning times.

Panel 800 complies with IP 66 and NEMA 4X for front cover protection and with CE (EMC), UL, DNV, RINA, ABS, GL and IACS standards.
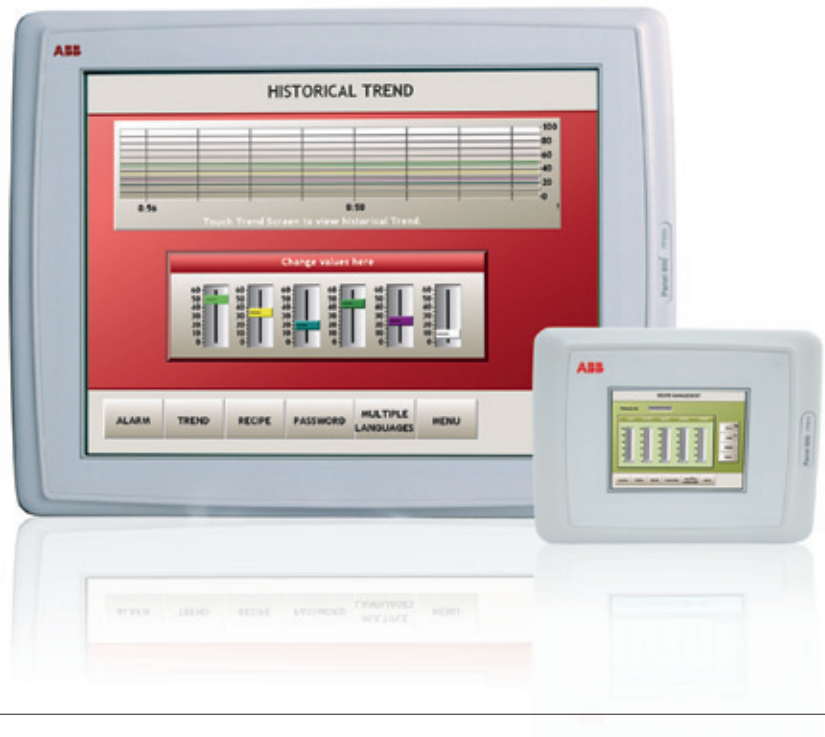
Specifications Panel 800	
Display backlight	CCFL backlight with dimming and burn-out detection
CPU	316 or 416 MHz RISC CPU (Intel Xscale)
Memory, flash	32 MB (Intel StrataFlash)
Memory, RAM	64 MB
Flash memory for application	12 MB
Real time clock	YES
Power supply	+24 C14 20-30 V
Ambient temperature	0 ° to +50 °C
Relative humidity	5 - 85 % non-condensing
Housing material	Powder-coated aluminium
Front side material	Autotex F250 / F157 (keyboard), (PP865S in Stainless Steel 316/1.4401)
Peripherals	
Serial Ports	RS422/RS485, female, 25-pin D-Sub, RS232C, male, 9-pin D-Sub
Ethernet	Shielded RJ45 10/100 Mbit/sec
USB	Host type A (power consumption max. 500 mA), Device type B
Profibus	Expansion slot for Profibus DP
Environmental Data for Panel 800	
Climatic Operating Conditions	Vertical installation: 0 ° to +50 °C
	Horizontal installation: 0 ° to +40 °C
	Storage temperature -20 °C to +70 °C
	Relative humidity 5 - 85 % non-condensed
Protection class	Front panel seal IP 66
	Rear panel seal IP 20
Electromagnetic Compatibility and CE-mark	Meets EMC directive 2004/108/EC
Electromagnetic Emission	Tested according to EN61000-6-4 (2007)
Electromagnetic Immunity	Tested according to EN61000-6-2 (2005)
Electrical Safety	UL508
Hazardous Classified Locations*	UL 1604 Class I, Div 2 Groups A, B, C, D, T4
Marine Certificates*	ABS, DNV, GL, RINA

* PP865S is not marine or UL certified

Run your control solutions in a reliable environment

AC 800M PLC/controller

Modular AC 800M PLC/controller boasts a broad set of communication functions as well as full redundancy and support for a wide range of I/O systems. All AC 800M PLC/controllers support standard IEC 61131 programming languages. The controller is configured using Compact Control Builder, and supports Compact Flash memory cards for loading applications by simply inserting the card.

Features / CPUs	PM851	PM856	PM860	PM861A	PM864A	PM866
Clock frequency	24 MHz	24 MHz	48 MHz	48 MHz	96 MHz	133 MHz
Memory (RAM)	8 MB	8 MB	8 MB	16 MB	32 MB	64 MB
RAM available for application	2.787 MB	2.787 MB	2.787 MB	8.289 MB	25.049 MB	52.996 MB
CPU redundancy support	No	No	No	Yes	Yes	Yes
Performance, 1000 boolean operations (a:=b and c)	0.46 ms	0.46 ms	0.23 ms	0.23 ms	0.15 ms	0.09 ms
Recommended Control Network backbone	100 Mbit/s switched Ethernet					
Dimensions	W 119 x H 186 x D 135 mm (4.7 x 7.3 x 5.3 in.)					
Weight (including base)	1100 g (2.4 lb)	1100 g (2.4 lb)	1100 g (2.4 lb)	1200 g (2.6 lb)	1200 g (2.6 lb)	1200 g (2.6 lb)

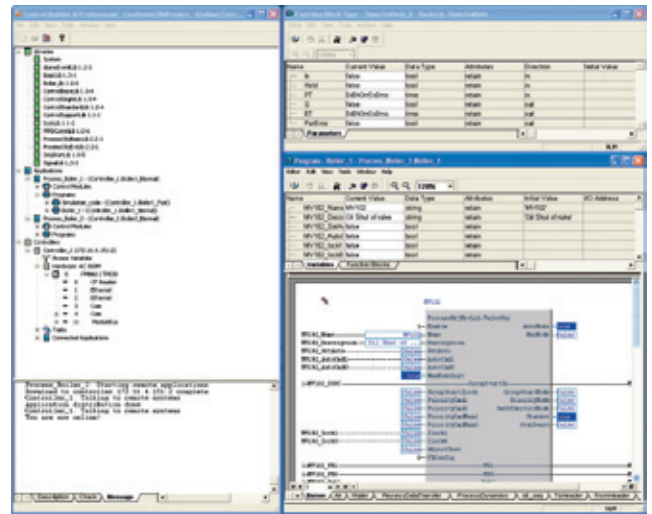| Environmental Data for AC 800M and S800 I/O	
Climatic Operating Conditions	0 to +55 C (Storage -40 to +70C), RH = 5 to 95 % no condensation, IEC/EN 61131-2
Protection class	IP20 according to EN 60529, IEC 529
Corrosive protection	G3 compliant according to ISA-71.04
Electromagnetic Compatibility and CE-mark	Meets EMC directive 2004/108/EC according to EN 61000-6-2 and EN 61000-6-4
Electromagnetic Emission	Tested according to EN 61000-6-4 EMC – Generic Emission Standard, Part 2 – Industrial Environment
Electromagnetic Immunity	Tested according to EN 61000-6-2 EMC – Generic Immunity Standard, Part 2 – Industrial Environment
Electrical Safety	UL508, IEC/EN 61131-2
Hazardous Classified Locations	UL/CSA 60079-15 (Class 1 Zone 2)
Hazardous Classified Locations ATEX	S890 series of I/O modules: Category 3 (1) G, EEx nA [ia] IIC T4

Create control solutions and reusable libraries

Compact Control Builder AC 800M

Compact Control Builder creates logic, sequential and analog control-intensive automation solutions. Its powerful libraries can easily be extended with your own solutions, making it the perfect tool for automation solution suppliers where standardization and reuse are the keys to cost-effective solutions.

Compact Control Builder offers a wide range of powerful control solutions for the AC 800M controllers. Code reuse and libraries of ready-to-use functions promote efficient configuration.

Specifications

PLC/controller hardware	AC 800M
Languages	Supports all the five standard IEC 61131-3 programming languages plus Control Modules for high-level configuration of control applications graphically.
Performance	A project can handle up to 1024 applications, each application can handle 64 programs at the most.
Support for multi-user environment	A maximum of 32 Control Builder PCs can be used together in multi-user environment and up to 32 PLCs can be created and handled within a project.
OPC Server performance	An OPC Server can handle up to 24 controllers, while a controller can handle up to 3 OPC Servers.

Software requirements

Operating system	Windows XP
Printing project documentation	Microsoft Word
Reading online manuals	Acrobat Reader 9.0 or later

Robust and cost-effective

S800L I/O modules

S800L I/O modules are both cost-effective and space-saving. They connect to any PLC or controller via Profibus. The S800L I/O is also fully integrated with the AC 800M PLC/controller. In addition, its modules can freely be combined with high-performance S800 I/O modules to bring advanced field interface functionality into any S800L configuration.

With their GSD files, S800L I/O modules can be used with any control system. Cost-effective design plus a mere 59 mm depth installation make them an obvious and economic choice for PLC applications.

S800L I/O modules	
DI801	16 ch., 1 group, 24 V d.c., current sink.
DI802	8 ch., 110 V d.c., 120 V a.c.
DI803	8 ch., 220 V d.c., 230 V a.c.
DO801	16 ch., common return, 24 V, max 0.5 A d.c., transistor, current source, short-circuit-proof.
DO802	8 ch., 5-250 V, max 2 A a.c./d.c., relay (N.O.).
AI801	8 ch., single-ended, 0(4)-20 mA, 12 bits.
AO801	8 ch., common return, 0(4)-20 mA, 12 bits, load: less than 750 ohms.

Connect any signal from the field

S800 I/O modules

The S800 I/O includes a very rich set of I/O modules built to allow both hot-swap and redundancy. Functionality includes built-in Ex barriers, time-stamping high-frequency pulse inputs and much, much more.

Features like 'hot swap' of modules, 'on-line' reconfiguration and redundancy options help S800 I/O modules keep your production up.

Digital input modules	
DI810	16 ch., 2 groups of 8 ch., 24 V d.c., current sink.
DI811	16 ch., 2 groups of 8 ch., 48 V d.c., current sink.
DI814	16 ch., 2 groups of 8 ch., 24 V d.c., current source.
DI820	8 ch., separate returns, 110 V d.c., 120 V a.c.
DI821	8 ch., separate returns, 220 V d.c., 230 V a.c.
DI825	With time tagging, 8 ch., separate returns, 125 V d.c.
DI830	With time tagging. 16 ch., 2 groups of 8 ch., 24 V d.c., current sink. Resolution: <0.5 ms.
DI831	With time tagging. 16 ch., 2 groups of 8 ch., 48 V d.c., current sink. Resolution: <0.5 ms.
DI885	With time tagging & wire-fault detection. 8 ch., common return, 24-48 V d.c., current sink. Resolution: 1ms.

Pulse input modules	
DP820	2 ch., separate returns, 0.25 Hz - 1.5 MHz, signal voltage: 5 / 24 V d.c.
DP840	8 ch., sep. returns, freq. measurement or pulse counting, 0.5-20 kHz, 12/24 V d.c or NAMUR.

Digital output modules	
DO810	16 ch., 2 groups of 8 ch., 24 V, max 0.5 A d.c., transistor, current source, short-circuit-proof.
DO814	16 ch., 2 groups of 8 ch., 24 V d.c., max 0.5 A, transistor, current sink, short-circuit-proof.
DO815	8 ch., 2 groups of 4 ch., 24 V d.c., max 2 A, transistor, current source, short-circuit-proof.
DO820	8 ch., separate returns, 5-250 V, max 3 A a.c./d.c., relay (N.O.).
DO821	8 ch., separate returns, 5-250 V, max 3 A a.c./d.c., relay (N.C.).

Analog input modules

AI810	8 ch., single-ended, 0(4)-20 mA, 0(2)-10 V, 12 bits.
AI820	Differential inputs, 4 ch., 0(1)-5 V, ±0(2)-10 V, ±0(4)-20 mA, 14 bits + sign.
AI825	Individually galvanically isolated channels, 4 ch., ±0(2)-10 V, ±0(4)- 20 mA, 14 bits + sign.
AI830A	RTD inputs, 8 ch., Pt100, Ni100, Ni120, Cu10, resistor 0-400 ohms, 14 bits, 3-wire.
AI835	TC inputs, 8 ch., (7+ ref. junction), separate returns. TC types B, C, E, J, K, N, R, S, T, - 30…75 mV, 15 bits.

Analog output modules

AO810	8 ch., common return, 0(4)-20 mA, 14 bits, load: 850 ohms (short-circuit-proof).
AO820	Isolated output. 4 ch., separate returns, measuring range: ±0(2)-10 V, ±0(4)-20 mA, resolution: 12 bits + sign, load: less than 500 ohms (current) / more than 2 kohms (voltage), short-circuit-proof.

I/O modules with intrinsic-safety interface

DI890	8 ch., separate returns, proximity sensors (NAMUR) or voltage-free contact., current sink, wire-fault detection.
DO890	4 ch., separate returns, load 150-5000 ohms, 11 V @ 40 mA, current source, wire-fault detection, short circuit-proof.
AI890	8 ch., single-ended, 0(4)-20 mA, 12 bits, transmitter power supply.
AI893	8 ch., TC: 7 + ref. junction, sep. returns. TC types B, C, E, J, K, L, N, R, S, T, U, -10… 80 mV. RTD: Pt50-1000, Ni100-500, Cu10-100, resistor 0-4000 W, 3-wire. 15 bits + sign.
AI895	8 ch., single-ended, 4-20 mA, 12 bits, transmitter power supply, HART pass-through.
AO890	8 ch., common return, 0(4)-20 mA, 12 bits, load: 750 ohms short-circuit-proof.
AO895	8 ch., common return, 4-20 mA, 12 bits, load: 750 ohms short-circuit-proof, HART pass-through.

S800 I/O modules for redundancy

DI840	16 ch., common return, 24 V d.c., current sink, extended diagnostics.
DP840	8 ch., sep. returns, freq. measurement or pulse counting, 0.5-20 kHz, 12/24 V d.c or NAMUR.
DO840	16 ch., common return, 24 V d.c., max. 0,5 A, current source, short-circuit-proof, extended diagnostics.
AI843	TC input, 8 ch. + ref. junction. TC types: B, C, E, J, K, L, N, R, S, T, U, -30…75 mV, 16 bits, extended diagnostics.
AI845	8 ch., common return, 0(4)-20 mA 0(1)-5 V, extended diagnostics, HART pass-through.
AO845	8 ch., common return, 4-20 mA, extended diagnostics, HART pass-through.

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