ABB

ABB Ability™ Symphony® Plus
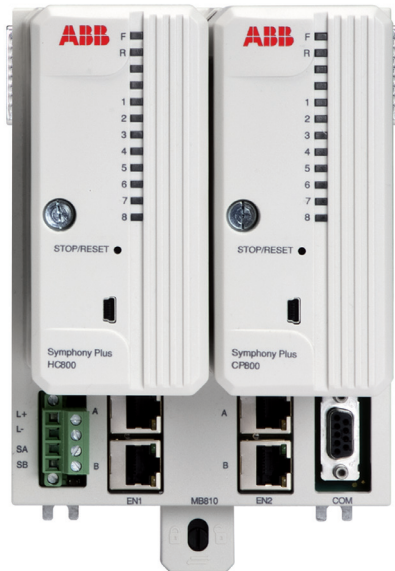## SD Series controller HPC800

ABB Ability Symphony Plus SD Series HPC800 is a high-performance, high-capacity process controller that is used to support the plant's total control requirements.

Highlights

Included in ABB Ability Symphony Plus is a comprehensive suite of standards-based control hardware and software that meets the requirements of total plant automation. The SD Series represents the latest addition to the Symphony Plus controller and I/O family. SD Series HPC800 control-based system solutions feature modular DIN-rail packaging; a flexible, high-performance Fast Ethernet-based plant network; intelligent field device integration; PROFIBUS and HART communication protocols; integrated turbine control. Furthermore, HPC800 control-based solutions protect investments made in previous generation controllers while delivering higher performance, reliability and capacity.

The SD Series HPC800 is a high-performance, high-capacity process controller that is used to support the plant's total control requirements, from discrete and continuous, to advanced control applications. The HPC800's controller environment executes demanding process control applications that are both data and program intensive.

S+ Operations, S+ Engineering and other applications communicate with HPC800 controllers over the system's high-speed,

high-throughput and high-security 100 Mbps Fast Ethernet-based redundant Plant Network (PN800). The network centric architecture allows for integration of field devices, process and electrical system areas, and business enterprise systems in a simple, scalable, seamless and secure manner.

Simultaneously, the HPC800 connects to DIN-rail mounted SD Series and S800 I/O modules, as well as traditional Rack I/O modules. Intelligent I/O devices such as smart transmitters, actuators, intelligent electronic devices (IEDs) are easily integrated through industry-standard fieldbuses and protocols (PROFIBUS DP/PA, HART, IEC 61850, Modbus TCP, IEC 60870-5-104, DNP 3.0, etc). Each device's resident information can be used in control strategies and higher-level applications in order to produce tighter and more reliable process control solutions.

The HPC800 controller uses ABB's extensive set of field-proven standard function code algorithms and S+ Engineering's graphical design tools to develop its control strategies. By using the same function code algorithms as previous generations of Symphony and INFI 90 controllers, the HPC800 supports the easy and risk-free porting of installed control execution environments.

The controller's industrial grade embedded system architecture allows the HPC800 to execute closed loop control of more than 5,000 I/O in less than 250 msec. Low power consumption allows for installation in sealed enclosures without requiring fans, louvers, air filters or other for ced cooling techniques. This eliminates many potential trouble factors and contributes to the controller's high reliability and availability. Redundancy options are available at all levels of control, I/O and communication, resulting in maximum flexibility and availability. All in all, the HPC800 provides users with the benefits of fast, accurate and uninterrupted control of their process.

—
Specifications

Property	Characteristic/Value
Mounting	Standard 35mm wide DIN-rail horizontally
HC800 (control processor)	Key positions to MB810 mounting base 1 = E, 2 = E
CP800 (communication process)	Key positions to MB810 mounting base 1 = C, 2 = C
Microprocessor	2x ColdFire 32-bit processor running at 256 MHz
	1 for HC800
	1 for CP800
Memory	
HC800	64 Mbytes RAM; 4 Mbytes ROM; 2 Mbytes NVRAM
CP800	64 Mbytes RAM; 4 Mbytes ROM
Power requirements	24 VDC ± 10% at 400 mA; 10 W typical
	Support redundant power inputs
Overvoltage category	Tested according to IEC/EN 61010-1
	I for power
Redundant controllers	
Link	8 Mbytes per second (normal operation)
Switch over time	Bumpless switch over
Programmability	
Language	Function Codes, Batch 90, User Defined Function Codes (UDF)
Number of Function Block	Up to 32,000 Function Block address
Number of segment (task)	Up to 8
Execution cycle time	Each segment can define individual execution cycle time down to 1 msec
Communications and Ports	
Ethernet ports	4x 10/100 Mbps Ethernet ports on MB810 base
	2x redundant Ethernet PN800 Plant Network
	1x Time synchronization SNTP Protocol
	1x Foreign Device Interface
HN800	Redundant 4 Mbps, connecting I/O Modules, Interface Modules, and other HN800 devices
CW800	Redundant 4 Mbps, controllers peer-to-peer
Service port	2x mini-USB ports, one on HC800 front plate, one on CP800 front plate
Serial port	1x RS-232-C serial port on MB810 base (reserved for future use)
Device integration and interfaces	
PROFIBUS DP	Through PDP800 interface module. Up to 8 PDP800 modules to one HPC800 controller
PROFIBUS PA	Through PDP800 and PROFIBUS Power Hub linking device
HART	Through SD Series HART I/O modules
IEC 61850	Through CI850 interface module. Up to 8 CI850 modules and 160 IEDs to one HPC800 controller
Modbus TCP	Through Foreign Device Interface Ethernet port on MB810 base. HPC800 with S+ Engineering HGS software supports one Modbus TCP server capable of up to 8 foreign client connections, and up to 128 Modbus TCP clients to be configured simultaneously in one controller, up to 10,000 points in total.
IEC 60870-5-104	Through SCI200 interface module. Up to 8 SCI200 modules and 128 devices to one HPC800 controller. SCI200 supports 104 Master or Slave configuration but not both simultaneously, up to 1,500 points.
DNP 3.0	Through SCI200 interface module. Up to 8 SCI200 modules and 128 DNP outstations to one HPC800 controller. SCI200 supports DNP Master configuration up to 1,500 points.
Capacity	
HN800[1,2,3,4,5]	Up to 64 devices in total per electrical bus; up to 8 horizontal Bus Segments per electrical bus, up to 24 devices per horizontal Bus Segment; up to 10 vertical Bus Segments per electrical bus, up to 8 vertical standard bases (single or redundant), or 12 vertical compact bases per vertical Bus Segment.
	Up to 30 meters total bus length (includes cables + module bases) of each electrical bus Extendable up to 3 km by fiber-optic links via cRBX01 remote bus extenders, up to 4 fiber-optic links in Star topology.
CW800	Up to 4 redundant pairs of HPC800 controllers per CW800 bus; Up to 128 reading points per controller
	Up to 30 meters total bus length (includes cables + module bases) of each electrical bus Extendable up to 3 km by fiber-optic link via cRBX01 remote bus extenders, up to one fiber-optic link per CW800 bus
PN800	Up to 250 network segments per system. Up to 250 nodes per network segment. HPC800 node address on PN800 network must be even between 2 and 248

—
Specifications (continued)

Property	Characteristic/Value
Dimensions	
HPC800	124 mm width, 186 mm height, 127 mm depth
CTB810 or CTB811	(4.88 in. width, 7.32 in. height, 5 in. depth)
(Communication Termination Board)	43 mm width, 186 mm height, 31 mm depth
	(1.69 in. width, 7.32 in. height, 1.22 in. depth)
Weight	
HPC800	0.96 kg (2.12 lbs)
CTB810 or CTB811	0.16 kg (0.36 lbs)
Ambient temperature (operational)[6]	0° to 70°C (32° to 158°F) Tested according to IEC/EN 60068-2-1, IEC/EN 60068-2-2, IEC/EN 60068-2-14
Temperature (storage)	-40° to 85°C (-40° to 185°F). Tested according to MIL-STD-810G
Relative humidity	20% to 95% @ 40°C (104°F) non-condensing. Tested according to IEC/EN 60068-2-78, IEC/EN 61298-3
Vibration (operational sinusoidal)	5 to 60 Hz 0.137 mm (0.0054 in.) 60 to 150 Hz 1.0 G. Tested according to IEC/EN 60068-2-6
Vibration (transportation)	10 to 500 Hz. Tested according to MIL-STD-810G
Shock (storage)	15 G, 11 msec. Tested according to IEC/EN 60068-2-27
Drop	100 mm. Tested according to IEC/EN 60068-2-31
Altitude (operational)	Sea level to 3,048 meters (10,000 ft.) Tested according to MIL-STD-810G
Altitude (storage)	Sea level to 12,192 meters (40,000 ft.) Tested according to MIL-STD-810G
Air quality	ISA S71.04 G1 ISA S71.04 G3 compliance version HPC800A is also available
ESD Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-2, Severity level 3
Surge Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-5, Severity level 3
Electrical Fast Transient Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-4, Severity level 3
Radiated RFI Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-3, Severity level 3
Conducted Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-6, Severity level 3
Magnetic field Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-8, Severity level 4
Radiated Emission	Tested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM Equipment
Conducted Emission	Tested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM Equipment
Voltage Fluctuation and Interruption Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-11
Certification	
Canadian Standard Association (CSA)	Certified for use as process control equipment in an ordinary (nonhazardous) location
CE Mark	CE Mark EMC Directive 2004/108/EC & Low Voltage Directive 2006/95/EC

Notes:
[1] A Bus Segment is defined as the collection of HN800 devices physically connected between a pair of local Bus Extenders.
[2] A redundant pair of SD Series I/O modules counts as 2 HN800 devices.
[3] A single or a redundant pair of cRBX01 counts the same as 4 HN800 devices.
[4] Vertical bases can be installed by any mix of standard size bases and compact size bases, as long as the total length of a vertical Bus Segment does not exceed
  8 vertical standard bases   (which is equal to 12 vertical compact bases).
[5] 5 Besides limitation of maximum number of devices, the power consumption of all devices in a Bus Segment (horizontal or vertical) cannot exceed 2.5 A.
  Refer to product user manuals for detailed calculation.
[6] 0° to 55°C (32° to 131°F) without forced air venting system, up to 70°C (158°F) with forced air venting system.

—
abb.com/symphonyplus
abb.com/powergeneration
abb.com/water