DATA SHEET

SPC810ev

ABB Ability™ Symphony® Plus Hardware Selector

The SPC810ev is a Symphony Plus SDe Series controller assembly. SPC810ev is a Form / Fit / Function replacement for MFPxx and BRCxxx controllers. SPC810ev controller features include; a modular high-density design, low energy consumption, extreme operating temperature range (-40 to +70 °C), and the ability to re-deply the SPC810e module into multiple applications.

The SPC810ev controllers also are high-performance process controllers that support all types of control requirements including discrete, continuous, sequential, and advanced control applications. SPC810ev controllers are capable of executing control applications that are demanding in terms of both data and computations.

SPC810ev controllers have a total of four (4) RJ45 Ethernet ports. PN800A and PN800B (located on PBA811 Process Bus Adaptor) for connection to the PN800 Plant Network, EN 2A for connection to an optional SNTP network that provides precise time synchronization, and EN 2B for connection to MODBUS TCP networks. Both EN 2A & 2B ports are located on the module front plate.

SPC810ev supports up to 30,000 Function Blocks, 5000 hardwired IO, and up to 8 remote IO links. SPC810ev is capable of executing closed-loop control logic for up to 5000 process IO in less than 250 msec.

SPC810ev is a Harmony Rack mounted controller.

Features and benefits

- SIMPLE: SPC810ev controllers provide time-proven solutions optimized for processed control
- SCALABLE: SPC810ev is optimized for large-sized control applications of up to 5000 process I/O
- SEAMLESS: SPC810ev controllers connect directly to Harmony Rack IO over IOX-BUS. PBA811 enables the controller to connect to SD Series IO over the redundant HN800 IO Bus.
- SECURE: S+ systems using SPC810ev controllers have been designed to meet Security Level 1 as defined by IEC 62443
- SPC810ev controllers support high speed, synchronous, PTP controller communications over the CW800 bus.
- SPC810ev controllers are configured by the S+ Engineering Tool Suite.
- SPC810ev hardware is designed for the optimum evolution/replacement of MFPxx and BRCxxx HR Controllers.

General info	
Article number	7PAA001436R11
Life cycle status	Active
Redundancy	No
SIL	No
Clock Frequency	250 MHz
FBs per controller	30 000
Closed loop control performance	5000 I/O in under 250 msec (70% Digital, 30% Analog)
XR communications	Up to 100 import + 1000 export XR messages per sec
DRAM Memory	128 MB RAM
NVRAM	2.0 MB MRAM
Flash ROM	4 MB Flash ROM
Form factor	HR Module
Mounting	HR (1-Slot in MMU)
HN800 bus length	355 mm
MTBF (per MIL-HDBK-217-FN2)	SPC810ev PR: D = 230,710 hours @ 40 °C
MTTR (Hours)	SPC810ev1K02 MTTR = 1 hour

Program Language Support	
B90/UDF (Batch 90 & UDF Programming)	B90 (BSEQ, CSEQ, & PHASEX FBs), UDF Type 1 & 2
SGS (Symphony Gateway Software)	Up to 8 Servers, 128 Clients and 10,000 Total Points
ANSI "C" programming	One (1) 'C' program per controller, One (1) instance in each of up to eight(8) segments

Detailed data	
Processor type	MCF54418 @ 250 MHz
Module power requirements	4.125 W = 850 mA (typical) @ 5 VDC per module & PBA811
Module power connection	+5v connection on MMU
Overvoltage category	Category 1 for power. Tested according to IEC/EN 61010-1
Built-in back-up battery	No battery is required!
Controller switch over time	1 controller scan cycle
No. of Segments (or Tasks) per controller	Configurable from 1 (min & typical) to 8 (max)
Segment (or Task) cycle time	Configurable from 1 msec (min), 250 msec (default / typical), 30 sec (max)
No. of FBs per Segment (or Task)	Min 2 FBs per segment, Max 30000 FBs per segment, 30000 FBs Total per controller
Max no. of local SD Series IO modules	60
Max no. of remote IO links per controller	8
Max no. of SD Series IO modules	Up to 60 IO modules per remote IO link, 240 IO modules Total
Max no. of HR Series IO modules	Up to 64 Local HR IO modules + 64 Remote HR IO modules via RIO22
Max no. of local HN800 IO modules	Up to 10 vertical bus segments (columns) each column with up to 8 full-size or 12 compact modules, 64 modules Total
Max length of electrical HN800 bus	Up to 30 meters (includes module bases + cables that connect segments)
Max length of optical HN800 bus	Up to 3000 meters using OM1 62.5/125 µm multi-mode fiber optic cable with cRBX01 F.O. repeater modules
PN800 Plant Network capacity	Up to 250 network segments per system, up to 250 nodes per segment
Controller PN800 node address	SPC810ev controller node address must be an even number between 2 and 248
Control Network protocol	PN800 Plant Network a.k.a "INFI-Net over Ethernet" based on Ethernet TCP
Recommended Control Network backbone	100 MBps or 1.0 Gbps Ethernet TCP
Real-time clock stability	50 ppm (clock is re-synchronized every 2 sec)
Standard time precision	10-20 msec via time master node on PN800 Plant Network
Enhanced time precision	1 msec via time master on dedicated SNTP network (EN 2A)
PROFIBUS capability	992 PROFIBUS Slaves via (2) pairs of PDP800 master modules
HART (v5.4) capacity	2000 HART signals via SD Series IO modules
IEC 61850 capability	16 IEDS via (8) CI850 modules
IEC 60870-5-104	128 Devices, 1500 Total Points via (8) SCI200 modules
DNP 3.0	Up to 128 Outstations via (8) SCI200 modules
DeviceNet	Ethernet IP (via SCI200) to DeviceNet adaptor
MODBUS TCP	8 Servers, 128 Clients, 10000 Total Points

Environment and certification	
Temperature, Operating	-40 to +70 °C Tested according to IEC/EN 60068-2-1, IEC/EN 60068-2-2
Temperature, Storage	-40 to +85 °C Tested according to MIL-STD-810G
Relative humidity	20 % to 95 % @ 40 °C 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
Protection class	IP20 according to EN 60529, IEC 529
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 G3 compliant
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 dips and interruption immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-11
CSA non-hazardous locations	Certified for use as process control equipment in an ordinary (non-hazardous) location
CSA hazardous, nonincendive locations	Class I, Division 2, Groups A, B, C, D
CE Mark	CE Mark EMC directive 2004/108/EC & Low Voltage Directive 2006/95/EC
RoHS compliance	RoHS Directive 2015/863
WEEE compliance	DIRECTIVE/2012/19/EU

Dimensions	
Width	35.6 mm
Height	177.8 mm
Depth	298.5 mm
Weight (including base)	585 g

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