DATA SHEET

I/O Systems - SD Series I/O
ABB Ability™ Symphony® Plus hardware selector

SD (Symphony DIN) Series I/O is Symphony Plus flexible and modular I/O offering that works across the entire control landscape regardless of application type, size, or physical location. It includes traditional analog, HART, and digital modules as also turbine specific modules for integrated turbine control solutions.

The SD Series I/O product family includes DIN Rail horizontally or vertically mounted digital and analog modules, as well as integration with intelligent field devices and protocols. Hardwire I/O and Fieldbus I/O coexist and use the same function block library to build real-time control applications.

Traditional SD Series analog input modules interface with field inputs such as pressure and flow transmitter signals, thermocouple inputs, and resistive temperature device (RTD) inputs. Analog output modules provide output signals to adjust final control elements such as control valves, positioners, actuators, etc. SD Series digital input modules have input channels to read the states of switches, relay contacts, solenoids, etc. Digital output modules provide output channels for DC or AC switching applications.

The digital outputs can be used to drive annunciators and to drive two-state final control elements such as actuators, relays, and solenoids. For SD Series Digital I/O, each channel can be individually configured as an SOE (Sequence of Events) point. This flexibility removes the cost and complexity of assigning additional digital inputs as SOE in the field. SOE with 1 msec timestamp is available across the entire system, whether the I/O is local or remotely located.

Below is an outline of the range of different SD I/O modules available.




Specific feature [1]	AD11	AI01	AI02	AI03
General info				
Article number	8VZZ004175R01 (AD11)	AI01	AI02	AI03
Type	Mixed I/O	Analog Input		RTD Analog Input
Signal specification	AI: 4…20 mA, or 1…+5 VDC | AO: 4…20 mA, or 1…+5 VDC | DI: 24/48/110/125 VDC, 100/120 VAC | DO: 24 to 48 VDC	AI: 4…20 mA, 0/1…+5 VDC, or -10/0…+10VDC	AI: 4…20 mA,or 1…+5 VDC	RTD Types: 100 Ω Platinum U.S. & Euro Std., 120 Ω Nickel, or Chinese 53 Ω Copper
Life cycle status	ACTIVE			
Number of channels	16			8
Signal type	4x AI + 4x AO + 4x DI + 4xDO	AI	AI with HART	2/3/4-Wire RTDs
HART	Yes	No	Yes	No
SOE	Yes	No		
Redundancy	No			
Form factor	Standard (190 mm)			
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR A: 138,503 Hours	PR E: 148,671 Hours	PR C: 132,367 Hours	PR G: 235,718 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	190 mm			
Weight	240 g	228 g	250 g	226 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**




Specific feature [1]	AI04	AI05	AI06	AO01
General info				
Article number	AI04	AI05	8VZZ002136R01 (AI06)	AO01
Type	mV / TC Analog Input	Analog Input		Analog Output
Signal specification	TC Type: E, J, K, R, S, T, B, L, N (14 or 28 AWG), U, Chinese E or S mV Ranges: -100/0 to +100 mV	AI: 4…20 mA,or 1…+5 VDC	Hi Lvl: 4…20 mA, 0/1…+5 VDC, -10/0…+10 VDCmV: -100/0… +100mVThermocouple: Type B, E, J, K, L, N(14 or 28 AWG), R, S, T, U or Chinese E, S RTD: 100 Ω Platinum U.S. & Euro Std, 120 Ω Nickel, Chinese 53 Ω Copper, and 10 Ω Copper	AO: 4…20 mA,or 1…+5 VDC
Life cycle status	ACTIVE			
Number of channels	16	8		16
Signal type	mV / TC	AI with HART	Universal AI: High Level, mV, TC, and RTD	AO
HART	No	Yes	No	
SOE	No			
Redundancy	No			
Form factor	Standard (190 mm)			
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR G: 218,273 Hours	PR D: 71,355 Hours	PR A: 187,592 Hours	PR E: 103,176 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	190 mm			
Weight	228 g	380 g	240 g	235 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**




Specific feature [1]	AO02	AO05	AS01	cAI01
General info				
Article number	AO02	AO05	2VAA008174R01 (AS01)	2VAA008440R1 (cAI01)
Type	Analog Output		Auto Synchronizer	Compact Analog Input
Signal specification	AO: 4…20 mA,or 1…+5 VDC		AI: 0…120VACDI: 24…48 VDCDO: Form A contact	AI: 4…20 mA,or 1…+5 VDC
Life cycle status	ACTIVE			
Number of channels	16	8	16	8
Signal type	AO with HART		2x AI + 7x DI + 7x DO	AI
HART	Yes		No	
SOE	No		Yes	No
Redundancy	No			
Form factor	Standard (190 mm)			Compact (127 mm)
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR B: 95,637 Hours	PR D: 68,550 Hours	PR D: 241,065 Hours	PR B: 186,540 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	190 mm			127 mm
Weight	240 g	360 g	294 g	168 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**




Specific feature [1]	cAI04	cAO01	DI01	DI02
General info				
Article number	2VAA008414R1 (cAI04)	2VAA008441R1 (cAO01)	DI01	DI02
Type	Compact Analog Input	Compact Analog Output	Digital Input	
Signal specification	TC Type: E, J, K, R, S, T, B, L, N (14 or 28 AWG), U, Chinese E or S mV Ranges: -100/0 to +100 mV	AI: 4…20 mA,or 1…+5 VDC	24 / 48 VDC	125 VDC / 120 VAC
Life cycle status	ACTIVE			
Number of channels	8		16	
Signal type	mV / TC	AO	DI with SOE	DI
HART	No			
SOE	No		Yes	
Redundancy	No			
Form factor	Compact (127 mm)		Standard (190 mm)	
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR A: 327,498 Hours	PR B: 168,920 Hours	PR F: 208,017 Hours	PR F: 232,036 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	127 mm		190 mm	
Weight	168 g		228 g	230 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**




Specific feature [1]	DI03	DI04	DO01	DO02
General info				
Article number	DI03	DI04	DO01	DO02
Type	Digital Input		Digital Output	
Signal specification	24 VDC	48 VDC DI		
Life cycle status	ACTIVE			
Number of channels	16			
Signal type	DI		DO	
HART	No			
SOE	No			
Redundancy	No			
Form factor	Standard (190 mm)			
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR C: 238,260 Hours	PR C: 292,434 Hours	PR E: 387,896 Hours	PR A: 131,490 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	190 mm			
Weight	228 g	230 g	228 g	240 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**




Specific feature [1]	DO05	PI01	RAI02	RAI04
General info				
Article number	8VZZ000167H1 (DO05)	PI01	2VAA008427R1 (RAI02)	8VZZ000340H1 (RAI04)
Type	Digital Output	Pulse Input	Redundant Analog Input	
Life cycle status	ACTIVE			
Number of channels	16	8	16	
Signal type	DO	PI	AI	mV / TC
HART	No		Yes	No
SOE	No			
Redundancy	No		Yes	
Form factor	Standard (190 mm)			
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR B: 364,666 Hours	PR E: 338,368 Hours	PR A: 138,941 Hours	PR A: 240,188 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	190 mm			
Weight	295 g	223 g	250 g	227 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**




Specific feature [1]	RAO02	RDI01	RDI02	RDO01
General info				
Article number	2VAA008428R1 (RAO02)	2VAA008429R1 (RDI01)	2VAA008430R1 (RDI02)	2VAA008431R1 (RDO01)
Type	Redundant Analog Output	Redundant Digital Input		Redundant Digital Output
Signal specification	AO: 4…20 mA,or 1…+5 VDC	DI: 24 or 48 VDC		
Life cycle status	ACTIVE			
Number of channels	16			
Signal type	AO	DI		DO
HART	Yes	No		
SOE	No	Yes		No
Redundancy	Yes			
Form factor	Standard (190 mm)			
Mounting	Horizontal Row or Vertical Column			
MTBF (per MIL-HDBK-217-FN2)	PR A: 109,487 Hours	PR A: 240,889 Hours	PR C: 266,749 Hours	PR C: 436,897 Hours
MTTR (Hours)	1 Hours			
Dimensions				
Width	27 mm			
Depth	106 mm			
Height	190 mm			
Weight	240 g	228 g	230 g	228 g
Environment and certification				
RoHS compliance	RoHS Directive 2015/863			
WEEE compliance	DIRECTIVE/2012/19/EU			

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**

Specific feature [1]	TP01	VP01
General info		
Article number	2VAA008173R01 (TP01)	2VAA008172R01 (VP01)
Type	Turbine Protection	Valve Positioner
Signal specification	AI: 5 group isolated 4…20 mA or 1…+5 VDCAO: 2 group isolated 0… 24mADI: 5 CH-2-CH isolated 24/48/125VDC 120 VACDO: 2 Form A contact 120 VAC / 149 VDC	Coil Driver: 502 mA maxPosition FB: 4…20 mA position transducer, AC LVDT 1.05…8.96 VRMS, 400…15,000Hz,Unipolar DC position transducer (0…+12 V),Bi-polar DC position transducer (± 6 V or ±12 V) AO: 4…20 mA (System Powered)DI: 24 VDC, 6 mA each (Field Power)DO: Form A max 400 mA @ +24 VDC
Life cycle status	ACTIVE	
Number of channels	14	12
Signal type	5x AI + 2x AO + 5x DI + 2x DO	2x Coil Driver, 2x Position FB, 2x AO, 3x DI, 2x DO, 1x AI
HART	No	
SOE	Yes	
Redundancy	Yes	
Form factor	Standard (190 mm)	
Mounting	Horizontal Row or Vertical Column	
MTBF (per MIL-HDBK-217-FN2)	PR E: 234,052 Hours	PR E: 169,924 Hours
MTTR (Hours)	1 Hours	
Dimensions		
Width	27 mm	
Depth	106 mm	
Height	190 mm	
Weight	294 g	
Environment and certification		
RoHS compliance	RoHS Directive 2015/863	
WEEE compliance	DIRECTIVE/2012/19/EU	

[1] For detailed information on each module, please visit: **symphonyplushardwareselector.com**

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