DATA SHEET

AI12e

ABB Ability™ Symphony® Plus Hardware Selector

The AI12e Analog Input module processes up to sixteen (16) high-level analog input field signals. Each channel is independently configurable for any of the supported high-level signal ranges.

FC 221 (I/O Device Definition) sets AI module operating parameters, and each input channel is configured using FC 222 (Analog Input CH) to set individual input channel parameters such as engineering units, High/Low alarm limits, etc.

The analog input channels are 1 x 16 group isolated and support HART.

Features and benefits

- Sixteen (16) high-level Analog Input signal channels, including:
- 4 to 20 mA DC, 0 to 1 VDC, 0 to 5 VDC, 1 to 5 VDC, -10 to +10 VDC, 0 to +10 VDC
- Up to 64 HART v5.4 secondary variables Total, max 4 secondary variables per analog I/O CH
- Secondary HART variable update 2.5 typical, 8 max seconds
- ±0.1 % of Full Scale Range accuracy
- In HN800 operating mode, AI12e supports optional module redundancy

General info	
Article number	7PAA003099R11
Type	Analog Input with HART
Signal specification	4…20 mA, 0…+1 VDC, 0…+ 5 VDC,1…+5 VDC, -10…+10 VDC, 0…+10 VDC
Life cycle status	ACTIVE
Number of channels	16
Signal type	High Level AI
HART	Yes
SOE	No
Redundancy	Yes
Form factor	Compact (127 mm)
Mounting	EMB01S-XIO
MTBF (per MIL-HDBK-217-FN2)	PR: D = 126,435 Hours @ 30 ˚C 99,979 Hours @ 40 ˚C 59,072 Hours @ 70 ˚C
MTTR (Hours)	AI12e MTTR = 1 hour

Detailed data	
Module power requirements	76 mA (typical) @ 24 VDC ± 10%
Module power connection	POWER TB on EMC-_B0x, cHBX01L or VBX01T
Field IO power	20 mA per CH @ 24 VDC ± 10%
Overvoltage category	Category I for power, inputs or outputs. Tested according to EN 61010-1
Max field cable length	600 meters (1968 feet)
Number of Channels	16 independently configurable channels
Signal ranges and types	4…20 mA, 0…+1 VDC, 1…5+5 VDC, -10…+10 VDC, or 0…+10 VDC
No. of HART modems	1 HART modem per module
Max no. of secondary HART variables	Up to 40 secondary variables Total, up to 4 variables per CH (HART v 5.4)
Secondary HART variable update rate	2.5 seconds typical, 8.0 seconds max
Input Impedance	250 Ω current mode (externally powered), >= 250 kΩ voltage mode
Output load	0 to 750 Ω Current mode, minimum 22kΩ voltage mode
A/D Conversion	1 A/D converter per module
A/D Resolution	16-Bits with polarity
A/D Update rate	100 msec for all channels
Accuracy, FSR	±0.1% FSR, FSR = 25 mA or 20 VDC
Temp effect on accuracy	Max ±0.003% per deg C
Field signal to Logic isolation	Galvanically isolated, 1500 V up to 1 minute
Channel isolation	1x16 group isolated, 1500 V up to 1 minute
Open circuit detection time	Less than 5 seconds (current mode)
Short circuit protection	Max 96 mA per AI CH (current mode)
Normal mode noise rejection	-70 dB minimum
Common mode noise rejection	-90 dB minimum
DC common mode rejection	-90 dB minimum

Diagnostics	
Front plate LED's	R (Run), F (Fault), P (Primary), and B (Backup) + 8 Diagnostic & Status LEDs
Local availability	R (Run), F (Fault), P (Primary), and B (Backup) + 8 Diagnostic & Status LEDs
Remote availability	HN800 device diagnostics via SPE

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
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 61000-6-2, IEC/EN 61000-4-6, Severity level 3
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

Compatibility	
Use with MTU	EMB01S-XIO, HBS01e-EPD, HBS01e-FPH, VBS01e-EPD, VBS01e-FPH
Module keying code for base	slot #1 = 5, slot #2 = 19

Dimensions	
Width	27 mm
Depth	127 mm
Height	127 mm
Weight	181 g

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