DATA SHEET

AI05

ABB Ability™ Symphony® Plus Hardware Selector

The AI05 Analog Input module processes up to 8 high level, CH-2-CH isolated, analog input field signals. Each channel is independently configurable for either 4 to 20 mA or 1 to +5 VDC 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 indivdual input channel parameters such as engineering units, High/Low alarm limits, etc.

A/D resolution of each channel is configurable from 12 to 16 bits with polarity. The AI05 module has a dedicated A/D converter for each input channel. The module will update all 8 input channels in 100 msecs.

In current mode, the AI05 module supports HART v5.4 instruments and provides short circuit protection by limiting current to a maximum of 96 mA. The AI05 module will also detect an open circuit in less than 5 seconds.

Features and benefits

- 8 independently configurable channels supporting:
- 4 to 20 mADC
- 1 to +5 VDC
- Up to 32 HART v5.4 secondary variables Total, max 4 sec vars per analog input CH
- 16-Bit (with polarity) A/D resolutionV
- A/D update of all 16 Channels in 100 msecs
- Accuracy is ±0.1 % of Full Scale Range where FSR = 25 mA or 6.5 VDC

General info	
Article number	AI05
Type	Analog Input
Signal specification	AI: 4...20 mA,or 1...+5 VDC
Life cycle status	ACTIVE
Number of channels	8
Signal type	AI with HART
HART	Yes
SOE	No
Redundancy	No
Form factor	Standard (190 mm)
Mounting	Horizontal Row or Vertical Column
MTBF (per MIL-HDBK-217-FN2)	PR D: 71,355 Hours
MTTR (Hours)	1 Hours

Detailed data	
Module power requirements	24 VDC ± 10%, 84 mA typical, 120 mA max
Module power connection	POWER TB on cHBX01L or VBX01T
Field IO power	24 VDC ± 10%, 20 mA per CH
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	8 independently configurable AI channels
Signal ranges and types	Analog Inputs: 4…20 mA,or 1…+5 VDC with HART
No. of HART modems	8 Total, 1 HART modem per input channel
Max no. of secondary HART variables	Up to 32 secondary variables Total, up to 4 variables per CH (HART v 5.4)
Secondary HART variable update rate	650 ms typical, 750 ms maximum
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 dedicated A/D converter for each CH
A/D Resolution	16-Bits with Polarity
A/D Update rate	100 msec for all 8 channels
Accuracy, FSR	±0.01% FSR, FSR = 25 mA or 6.25 VDC
Field signal to Logic isolation	Galvanically isolated, 1500 V up to 1 minute
Channel isolation	Individual CH-2-CH isolated, 1500 V up to 1 minute
Open circuit detection time	Less than 5 seconds
Short circuit protection	Max 96 mA per CH
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	STATUS LEDs: R (Run) and F (Fault) + 1 thru 8
Local availability	Mini USB connection on module front plate
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, 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 G1, ISA S71.04 G3 compliant versions SPCxxxA are 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 accTested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM equipmentording 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	HBS01-EPD, VBS01-EPD, VBS01-SFP
Module keying code for base	slot #1 = 08, slot #2 = 19

Dimensions	
Width	27 mm
Depth	106 mm
Height	190 mm
Weight	380 g

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