

cAI01

ABB Ability™ Symphony® Plus Hardware Selector



The cAI01 Analog Input module processes up to 8 high level, group 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 Channel) to set individual 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 cAI01 module has one A/D converter for all 8 input channels. The module will update all 8 input channels in 100 msec.

The cAI01 module will also detect an open circuit in less than 5 seconds.

Features and benefits

- 16 independently configurable channels supporting:
- 4 to 20 mADC or 1 to +5 VDC
- 12 to 16-Bit (with polarity) A/D resolution
- A/D update of all 8 Channels in 100 msec
- Accuracy is $\pm 0.1\%$ of Full Scale Range where FSR = 25 mA or 6.25 VDC

| General info | |
|-----------------------------|-----------------------------------|
| Article number | 2VAA008440R1 (cAI01) |
| Type | Compact Analog Input |
| Signal specification | AI: 4...20 mA, or 1...+5 VDC |
| Life cycle status | ACTIVE |
| Number of channels | 8 |
| Signal type | AI |
| HART | No |
| SOE | No |
| Redundancy | No |
| Form factor | Compact (127 mm) |
| Mounting | Horizontal Row or Vertical Column |
| MTBF (per MIL-HDBK-217-FN2) | PR B: 186,540 Hours |
| MTTR (Hours) | 1 Hours |

| Detailed data | |
|---------------------------------|--|
| Module power requirements | 24 VDC \pm 10%, 75 mA typical, 84 mA max |
| Module power connection | POWER TB on cHBX01L or VBX01T |
| Field IO power | 20 mA/channel @ 24 VDC \pm 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 | 8 Analog Input channels |
| Signal ranges and types | Analog Outputs: 4...20 mA, or 1...+5 VDC |
| Input Impedance | 250 Ω current mode (externally powered), \geq 250 k Ω voltage mode |
| Output load | 0 to 750 Ω Current mode, minimum 22k Ω 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 16 channels |
| Accuracy, FSR | \pm 0.01% FSR, FSR = 25 mA or 6.25 VDC |
| Temp effect on accuracy | Max \pm 0.003% per deg C |
| Field signal to Logic isolation | Galvanically isolated, 1500 V up to 1 minute |
| Channel isolation | 1x8 group isolated, 1500 V up to 1 minute |
| 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 according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM equipment 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 | cHBS01-EPD, cHBS01-FPH, cVBS01-EPD, cVBS01-FPH |
| Module keying code for base | slot #1 = 02, slot #2 = 15 |

| Dimensions | |
|-------------------|--------|
| Width | 27 mm |
| Depth | 106 mm |
| Height | 127 mm |
| Weight | 168 g |

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