Function

The Low Level Analog Input (LLAI) Module accepts up to 16 channels of temperature inputs from RTD & TC.

Notable Features

- TC and RTD operation
- Remote Cold Junction compensation capability
- 1 Second PV scanning with OTD protection
- Configurable OTD protection (See below)
- Temperature points can be added in 16 point increments

Temperature Support

The Temperature variable is collected from all points at a 1 second rate. The 1 second update includes a configurable check for Open Thermocouple Detection (OTD) (see below) before propagation of the temperature variable. All TC inputs include integral Cold Junction Compensation (CJC).

Sampling and Open Sensor Detect

The TC/RTD IOM supports a configuration parameter for Open Sensor Detect before PV delivery. With the OTD configuration active, the PV is sampled and held while an OTD cycle is performed within the same measurement window. If the OTD is negative, the PV is propagated up through the system. If the OTD is positive, the PV is set to NAN and the input channel soft failure is set. In this way, no inappropriate control action occurs for PV values that are invalid due to an open thermocouple. PV sampling/reporting incurs no added delays from OTD processing.

Detailed Specification- Low Level Analog Input - RTD & TC (8C-PAIMA1)

| Parameter | Specification | | |
|--|---|--|--|
| Input / Output Module | 8C-PAIMA1- Low Level Analog (Temperature) Input, Coated | | |
| IOTA Modules | 8C-TAIMA1 Non-Redundant, Coated 9" | | |
| Input Type | Thermocouple and / or RTD | | |
| Voltage Rating | 24 VDC | | |
| Module current rating | 120m A | | |
| Input Channels | 16 fully-isolated channel-to-channel, channel-to-IOL, and channel-to- power supply common in 16 channel increments | | |
| Input scan rate | 1 second fixed by IOM, (up to 16 channels/sec max.) | | |
| Channel bandwidth | 0 to 4.7 Hz (-3 dB) | | |
| Nominal input range (TC only) | -20 to +100 millivolts | | |
| Maximum normal mode continuous | -10 to +10 volts (TC) | | |
| input non-damaging (any thermocouple | -1 to +2 Volts @ 100 milliamps (RTD) | | |
| type configured) | | | |
| Gain error (-20 to +100 millivolt range) | 0.050% full scale max | | |

| Temperature | TC, millivolt inputs | +/-20 ppm per deg C max | |
|--|-------------------------------|--|---------------------|
| Long term drift | | 500 ppm | |
| Input impedance | | 1 megohm at dc (TC only) | |
| CMV with respect to Power System common, dc to 60 Hz | | Channel to Shield :+/-250 VDC or VAC RMS Channel to Channel: +/-33 VDC or VAC RMS | |
| CMRR, 50 or 60 Hz (with 1000 ohms source impedance max.) | | 120 dB min | |
| Voltage, channel-to | o-channel, dc to 60 | +/-33 VDC or VAC RMS | |
| Voltage, channel-to | o-shield, dc to 60 Hz | +/-250 VDC or VAC RMS | |
| Crosstalk, dc to 60 Hz | | 80 dB (120 dB at 50 and 60 Hz) | |
| NMRR at 50/ 60 Hz | | 60 dB min | |
| Line frequency inte | egration | Fixed selection of 50 Hz or 60 Hz | |
| RTD sensor excitation | tion current | 1 milliamp | |
| Cold Junction Com | pensation Range | -20 to +60 deg C (± 0.5 deg C typical) | |
| TC Linearization Accuracy ¹ | | ± 0.05 Ω / deg C | |
| Open Thermocoup | le Detection | Each conversion qualified, $\leq 1000 \Omega$ = guaranteed no-trip $\geq 1500 \Omega$ guaranteed trip. | |
| RTD Max Lead Re | sistance | 15 Ω | |
| Surge protection (s | sensor terminals) | EN 61000-4-5 (for Industrial locations, 1kV line to line, 2kV line to gnd.) | |
| Surge protection (p cable adapter optic | oower/serial link with on) | EN 61000-4-5 (for Industrial locations, 1kV line to line, 2kV line to gnd.) | |
| | Pt: 100 ohm DIN 4376 | -180 to +800 deg C | |
| | | Pt: 100 ohm JIS C-1604 | -180 to +650 deg C |
| | | Pt: 1000 ohm | -40 to +260 deg C |
| Supported RTD types | Ni: 120 ohm ED #7 | -45 to +315 deg C | |
| | Cu: 10 ohm SEER | 20 to +250 deg C | |
| | | Cu: 50 ohm SEER | -50 to +150 deg C |
| Supported Thermocouple types | | ANSI specification J | -200 to +1200 deg C |
| | ocouple types | ANSI specification K | -100 to +1370 deg C |
| | | ANSI specification E | -200 to +1000 deg C |
| | | ANSI specification T | -230 to +400 deg C |