

|  |           |                                  |  |    |   |
|--|-----------|----------------------------------|--|----|---|
|  | CC-TUIO31 | Universal Input Output IOTA      |  | 9  |   |
|  | CC-TUIO41 | Universal Input Output IOTA Red. |  | 12 | √ |

## 5. Specifications

Specifications for Series-C I/O modules are shown below.

For information on environmental specifications, please refer to the Series-C Platform Specification and Technical data sheet EP03-520-xxx.

### 5.1. Analog Input with HART – CC-PAIH01 / 02

#### Function

The Analog Input Module accepts high level current or voltage inputs from transmitters and sensing devices.

#### Notable Features

- Extensive self-diagnostics
- Optional redundancy
- Open Wire Detection
- Supplies non-incendive field power
- Non-incendive Power
- HART-capable, multivariable instruments and multiple modems for fast collection of control variables
- Fast loop scan
- PV protection through an open wire detection diagnostic
- Open-wire Bad PV Detection

#### Detail Specifications - Analog Input with HART

| Parameter                                                                | Specification                                                   |           |
|--------------------------------------------------------------------------|-----------------------------------------------------------------|-----------|
| Input / Output Model                                                     | CC-PAIH02 - High-Level Analog Input with HART                   |           |
| IOTA Models                                                              | Non-Redundant                                                   | Redundant |
|                                                                          | CC-TAIX01                                                       | CC-TAIX11 |
|                                                                          | CC-GAIX21                                                       | CC-GAIX11 |
|                                                                          | CC-TAID01                                                       | CC-TAID11 |
| Input Type                                                               | Voltage, current (2-wire or self-powered transmitters)          |           |
| Input Channels <sup>1</sup>                                              | 16 Channels (12 Single Ended / 4 Differential )                 |           |
| Common Mode Rejection Ratio, dc to 60 Hz (500 $\Omega$ source imbalance) | 70 dB                                                           |           |
| Common Mode Voltage, dc to 60 Hz                                         | -6 to +5 V peak                                                 |           |
| A/D Converter Resolution                                                 | 16 bits                                                         |           |
| Input Range <sup>1</sup>                                                 | 0 to 5 V, 1 to 5 V, 0.4 to 2 V, 4-20 mA (through 250 $\Omega$ ) |           |
| Normal Mode Rejection Ratio, at 60 Hz                                    | 19 dB                                                           |           |

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Specification                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Normal Mode Filter Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Single-pole RC, -3 dB @ 6.5 Hz                                                                                    |
| Maximum Normal Mode Input (differential inputs, no damage)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ± 30 Volts                                                                                                        |
| Crosstalk, dc to 60 Hz (channel-to-channel)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | -60 dB                                                                                                            |
| Input Impedance (voltage inputs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | > 10 M $\Omega$ powered                                                                                           |
| Input Scan Rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 50 ms                                                                                                             |
| Hardware Accuracy (@ CMV = 0 V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ± 0.075% of full-scale (23.5°± 2°C)<br>± 0.15% of full-scale (0 to 60°C)                                          |
| Transmitter Field Power Conditioning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Individually Protected Current Limiting Circuits for Class 1, Div 2 non-incendive interfacing. No fusing required |
| Note 1: CC-PAIH01 supports voltage inputs for channels 13-16 CC-PAIH02 supports voltage inputs for channels 1-16 when used with CC-TAIDx1 IOTA. Each channel's 250-Ohm load resistor is connected to the input terminal through a wire jumper on the IOTA. This jumper should be cut by the user on channels to be used with voltage transmitters. For channels 13-16 the low-side input connection is normally connected to system common by a wire jumper on the IOTA. This jumper may be cut by the user to enable differential operation subject to operating within the CMV specification. |                                                                                                                   |

## 5.2. Analog Input with HART – CC-PAIH51

### Function

The Analog Input Module accepts high level current inputs from transmitters and sensing devices.

### Notable Features

- Extensive self-diagnostics
- Optional redundancy
- Supplies non-incendive field power (No external user supplied power)
- Suitable for Configure / Status for HART devices
- HART-capable, multivariable instruments for fast collection of control variables
- Fast loop scan
- Non-Incendive Power

### Detail Specifications - Analog Input with HART

| Parameter                                                         | Specification                                                                                                     |               |     |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------|-----|
| Input / Output Model                                              | CC-PAIH51 - High-Level Analog Input with HART                                                                     |               |     |
| IOTA Models                                                       | CC-TAIX51                                                                                                         | Non Redundant | 6"  |
|                                                                   | CC-TAIX61                                                                                                         | Redundant     | 12" |
| Input Type                                                        | Current (2-wire or self-powered transmitters)                                                                     |               |     |
| Input Channels <sup>1</sup>                                       | 16 Channels (ALL Single Ended).                                                                                   |               |     |
| Common Mode Rejection Ratio, dc to 60 Hz (500 Ω source imbalance) | 70 dB                                                                                                             |               |     |
| Common Mode Voltage, dc to 60 Hz                                  | -6 to +5 V peak                                                                                                   |               |     |
| A/D Converter Resolution                                          | 16 bits                                                                                                           |               |     |
| Input Range <sup>1</sup>                                          | 4-20 mA only (through 200 Ω)                                                                                      |               |     |
| Normal Mode Rejection Ratio, at 60 Hz                             | 19 dB                                                                                                             |               |     |
| Normal Mode Filter Response                                       | Single-pole RC, -3 dB @ 6.5 Hz                                                                                    |               |     |
| Maximum Normal Mode Input                                         | ± 30 Volts                                                                                                        |               |     |
| Crosstalk, dc to 60 Hz (channel-to-channel)                       | -60 dB                                                                                                            |               |     |
| Input Scan Rate                                                   | 50 ms                                                                                                             |               |     |
| Hardware Accuracy (@ CMV = 0 V)                                   | ± 0.075% of full-scale (23.5°± 2°C)<br>± 0.15% of full-scale (0 to 60°C)                                          |               |     |
| Transmitter Field Power Conditioning                              | Individually Protected Current Limiting Circuits for Class 1, Div 2 non-incendive interfacing. No fusing required |               |     |
| Note 1: No differential / voltage inputs are supported.           |                                                                                                                   |               |     |

### 5.3. Analog Input – CC-PAIX01 / 02

#### Function

The Analog Input Module accepts high level current or voltage inputs from transmitters and sensing devices.

#### Notable Features

- Extensive self-diagnostics
- Optional redundancy
- Supplies non-incendive field power
- Non-Incendive Power
- Fast loop scan

#### Detail Specifications -Analog Input

| Parameter                                                                | Specification                                                                                                       |           |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------|
| Input / Output Model                                                     | CC-PAIX02 - High-Level Analog Input                                                                                 |           |
| IOTA Models                                                              | Non-Redundant                                                                                                       | Redundant |
|                                                                          | CC-TAIX01                                                                                                           | CC-TAIX11 |
|                                                                          | CC-GAIX21                                                                                                           | CC-GAIX11 |
|                                                                          | CC-TAID01                                                                                                           | CC-TAID11 |
| Input Type <sup>1</sup>                                                  | Voltage, current (2-wire or self-powered transmitters)                                                              |           |
| Input Channels <sup>1</sup>                                              | 16 Channels (12 Single Ended / 4 Differential )                                                                     |           |
| Common Mode Rejection Ratio, dc to 60 Hz (500 $\Omega$ source imbalance) | 70 dB                                                                                                               |           |
| Common Mode Voltage, dc to 60 Hz                                         | -6 to +5 V peak                                                                                                     |           |
| A/D Converter Resolution                                                 | 16 bits                                                                                                             |           |
| Input Range <sup>1</sup>                                                 | 0 to 5 V, 1 to 5 V, 0.4 to 2 V, 4-20 mA (through 250 $\Omega$ )                                                     |           |
| Normal Mode Rejection Ratio, at 60 Hz                                    | 19 dB                                                                                                               |           |
| Normal Mode Filter Response                                              | Single-pole RC, -3 dB @ 6.5 Hz                                                                                      |           |
| Maximum Normal Mode Input (differential inputs, no damage)               | $\pm 30$ Volts                                                                                                      |           |
| Crosstalk, dc to 60 Hz (channel-to-channel)                              | -60 dB                                                                                                              |           |
| Input Impedance (voltage inputs)                                         | > 10 M $\Omega$ powered                                                                                             |           |
| Input Scan Rate                                                          | 50 ms                                                                                                               |           |
| Hardware Accuracy (@ CMV = 0 V)                                          | $\pm 0.075\%$ of full-scale (23.5 $\pm 2^\circ\text{C}$ )<br>$\pm 0.15\%$ of full-scale (0 to 60 $^\circ\text{C}$ ) |           |
| Transmitter Field Power Conditioning                                     | Individually Protected Current Limiting Circuits for Class 1, Div 2 non-incendive interfacing. No fusing required   |           |