Honeywell

Technical Information

# Experion Series-C I/O Specification



## EP03-490-520

**Release 520**

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# 1. Product Introduction Summary

## 1.1. Overview

This document provides technical information to configure the Experion® Series C I/O and the C300 Controller, released starting with Experion R300.

## 1.2. Scope

The following Series C I/O items are included in this document.

- Digital Input 24 VDC
- Digital Input 110 VAC / 125VDC
- Digital Input 220 VAC
- Digital Output (24 VDC bussed)
- Digital Output Relay
- High Level Analog Input with HART
- High Level Analog Input without HART
- Analog Output with HART
- Analog Output without HART
- Low Level Multiplexer – RTD & TC
- Low Level Input – RTD & TC
- Pulse Input
- Universal Input Output

## 1.3. Definitions

- **Input Output Termination Assembly (IOTA):** An assembly that holds the IOM and the connections for field wiring,
- **Input Output Module (IOM):** A device that contains most of the electronics required to perform a specific I/O function. The IOM plugs onto the IOTA.

# 2. Features

All Series C components feature an innovative design that supports enhanced heat management. This unique look provides a significant reduction in overall size for the equivalent function.

The unique features of Series C I/O include:



- I/O Module and field terminations are combined in the same area. The I/O Module is plugged into the IOTA to eliminate the need for a separate chassis to hold the electronics assemblies.
- Two level “detachable” terminals for landing the field wiring in the enclosure, providing easier plant installation and maintenance.
- Field power is supplied through the IOTA, with no need for extra power supplies and the associated craft wired marshalling.
- Redundancy is available directly on the IOTA without any external cabling or redundancy control devices, by simply adding a second IOM to an IOTA.
- The Series C innovative styling is one of its unique features. This styling includes features to facilitate the effective use of control hardware in a systems environment. These features include:
- Vertical mounting for more effective wiring since most field wiring applications require entry from the top or bottom of the systems cabinet.
- An “information circle” for a quick visual cue to draw the Maintenance Technician’s eye to important status information.
- “Tilted” design for effective heat management within the cabinet enclosure. Since Series C allows for a significant increase in cabinet density, an effective heat management system is critical for high systems availability.
- Input and output circuits are protected from shorts to alleviate the need for in-line fusing, reducing installation and maintenance costs.



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| | | | | | |
|---|---|---|---|---|---|
| CC-PAOH01<br>CC-PAOX01 | | Analog Output 16pt HART<br>Analog Output 16pt w/o HART | 16 | | √ |
| | CC-TAOX01 | AO IOTA | | 6 | |
| | CC-TAOX11 | AO IOTA Red. | | 12 | √ |
| CC-PAOH51 | | Analog Output 16pt HART | 16 | | √ |
| | CC-TAOX51 | AO IOTA | | 6 | |
| | CC-TAOX61 | AO IOTA Red | | 12 | √ |
| CC-PAON01 | | Analog Output 16pt w/o HART | 16 | | √ |
| | CC-TAON01 | AO IOTA | | 6 | |
| | CC-TAON11 | AO IOTA Red | | 12 | √ |
| CC-PDIL01<br>CC-PDIS01 | | Digital Input 24V<br>Digital Input Sequence of Events | 32 | | √ |
| | CC-TDIL01 | DI 24V IOTA | | 9 | |
| | CC-TDIL11 | DI 24V IOTA Red. | | 12 | √ |
| CC-PDIL51 | | Digital Input 24V | 32 | | √ |
| | CC-TDIL51 | DI 24V IOTA | | 9 | |
| | CC-TDIL61 | DI 24V IOTA Red. | | 12 | √ |
| CC-PDIH01 | | Digital Input High Voltage | 32 | | √ |
| | CC-TDI110 | DI 110V IOTA | | 9 | |
| | CC-TDI120 | DI 110V IOTA Red. | | 12 | √ |
| | CC-TDI220 | DI 220VAC IOTA | | 9 | |
| | CC-TDI230 | DI 220VAC IOTA Red. | | 12 | √ |
| CC-PDOB01 | | DO - 24V Bussed Out | 32 | | √ |
| | CC-TDOB01 | DO 24V Buss IOTA | | 9 | |
| | CC-TDOB11 | DO 24V Buss IOTA Red. | | 12 | √ |
| | CC-TDOR01 | DO Relay IOTA | | 6 | |
| | CC-TDOR11 | DO Relay IOTA Red. | | 12 | √ |
| | CC-SDOR01 | DO Relay Extension Board | | 12 | |
| CC-PUIO01 | | Universal Input Output | 32 | | √ |
| | CC-TUIO01 | Universal Input Output IOTA | | 12 | |
| | CC-TUIO11 | Universal Input Output IOTA Red. | | 18 | √ |
| CC-PUIO31 | | Universal Input Output | 32 | | √ |



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## 5.11. Analog Output – CC-PAON01

### Function

The Analog Output (AO) Module delivers high-level constant current to actuators and recording/indicating devices.

### Notable Features

- Extensive self-diagnostics
- Optional redundancy
- Safe-state (FAILOPT) behaviors configurable on a per channel basis
- Output read-back and alarm on discrepancy
- Non-incendive output

### FAILOPT

Series C AO module supports the FAILOPT parameter on a per channel basis. The user can configure each channel to either HOLD LAST VALUE, or SHED to a SAFE VALUE. The Output will always go to zero, the safe state, if the IOM device electronics fails.

### Open-wire Detection

This Series C IO function will be able to detect and annunciate open field wire with a Channel Soft Failure indication

### Detail Specifications – High Level Analog Output

| Parameter | Specification | | |
|---|---|---|---|
| Input / Output Model | CC-PAON01 - High-Level Analog Output | | |
| IOTA Models | CC-TAON01 | Non-Redundant | 6” |
| | CC-TAON11 | Redundant | 12” |
| Output Type | 4-20 mA | | |
| Output Channels | 16 | | |
| Output Ripple | < 100 mV peak-to-peak at power line frequency, across 250 Ω load | | |
| Output Temperature Drift | 0.005% of Full Scale/°C | | |
| Output Readback Accuracy | ±4% of Full Scale | | |
| Output Current Linearity | ± 0.05% of Full Scale nominal | | |
| Resolution | ± 0.05% of Full Scale | | |
| Calibrated Accuracy | ± 0.35% of Full Scale (25ºC) including linearity | | |
| Directly Settable Output Current Range | 0 mA, 2.9 mA to 21.1 mA | | |
| Maximum Resistive Load<br>(24 V supply = 22 VDC through 28 VDC) | 800 ohms | | |
| Maximum Output Compliant Voltage<br>(24 V supply = 22 VDC through 28 VDC) | 16 V | | |
| Maximum Open Circuit Voltage | 22 V | | |
| Response Time(DAC input code to output) | Settles to within 1% of final value within 80 ms | | |



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# 6. Function Matrix

The following tables assist in selecting I/O Modules and IOTAs with similar functional characteristics

## AI Function Matrix

| Series-C IO | | | Function | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IOM | NR IOTA | Red IOTA | AI 4-20ma | HART Conf / Status | HART on CTL | HART Fast Ctl | AI 0-5V 1-5V | Int. IS | NR IOTA Size | Differential Inputs |
| CC-PAIH01 CC-PAIH02 | CC-TAIX01 | CC-TAIX11 | ♦ | ♦ | ♦ | ♦ | ♦ | | 6" | 13 - 16 |
| CC-PAIH02 | CC-TAID01 | CC-TAID11 | ♦ | ♦ | ♦ | ♦ | ♦ | | 9" | 1 - 16 |
| CC-PAIH01 CC-PAIH02 | CC-GAIX21 | CC-GAIX11 | ♦ | ♦ | ♦ | | | ♦ | 6" | NA |
| CC-PAIH51 | CC-TAIX51 | CC-TAIX61 | ♦ | ♦ | | | | | 6" | NA |
| CC-PAIX01 CC-PAIX02 | CC-GAIX21 | CC-GAIX11 | ♦ | | | ♦ | ♦ | ♦ | 6" | NA |
| CC-PAIX01 CC-PAIX02 | CC-TAIX01 | CC-TAIX11 | ♦ | | | ♦ | ♦ | | 6" | 13 - 16 |
| CC-PAIX02 | CC-TAID01 | CC-TAID11 | ♦ | | | ♦ | ♦ | | 9" | 1 - 16 |
| CC-PAIN01 | CC-TAIN01 | CC-TAIN11 | ♦ | | | | | | 6" | None |
| CC-PUIO31 | CC-TUIO31 | CC-TUIO41 | ♦ | ♦ | ♦ | | | | 9” | None |

## AO Function Matrix

| Series-C IO | | | | Function | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IOM | NR IOTA | Red IOTA | AO 4-20ma | HART Conf / Status | HART on CTL | HART Fast CTL | Output Vali-dation | Open Wire Det. | NR IOTA Size | Int IS |
| CC-PAOH01 | CC-TAOX01 | CC-TAOX11 | ♦ | ♦ | ♦ | | ♦ | ♦ | 6" | |
| CC-PAOH01 | CC-GAOX21 | CC-GAOX11 | ♦ | ♦ | ♦ | | ♦ | ♦ | 9" | ♦ |
| CC-PAOH51 | CC-TAOX51 | CC-TAOX61 | ♦ | ♦ | | | | ♦ | 6" | |
| CC-PAOX01 | CC-TAOX01 | CC-TAOX11 | ♦ | | | | ♦ | ♦ | 6" | |
| CC-PAOX01 | CC-GAOX21 | CC-GAOX11 | ♦ | | | | ♦ | ♦ | 9" | ♦ |
| CC-PAON01 | CC-TAON01 | CC-TAON11 | ♦ | | | | ♦ | ♦ | 6" | |
| CC-PUIO31 | CC-TUIO31 | CC-TUIO41 | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | 9” | |



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1250 West Sam Houston Parkway South
Houston, TX 77042

Honeywell House, Arlington Business Park,
Bracknell, Berkshire, England RG12 1EB UK

Shanghai City Centre, 100 Junyi Road
Shanghai, China 20051

www.honeywellprocess.com

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