Honeywell CC-PDIL01 51405040-176

24V Digital Input Module



Honeywell CC-PDIL01 51405040-176 is a Series C digital input module for acquiring equipment and process on/off states in an Experion PKS system. It accepts 32 nominal 24 VDC discrete inputs and supplies their values and status to the control application. Internal diagnostics support data integrity, while open-wire detection can identify a broken field circuit and mark the affected process value invalid when that function is correctly implemented. Direct or reverse indication, selectable field-power arrangements and optional redundancy let this input interface match the required Series C application.

Technical Specifications

Product Identity	
Manufacturer / complete model	Honeywell / CC-PDIL01 51405040-176
Product identity	Series C 24 V digital input IOM; separate IOTA required
Functional Configuration	
Input channels	32
ON input threshold	13 VDC minimum or 3 mA minimum
OFF input threshold	5 VDC maximum or 1.2 mA maximum
Isolation	Optical isolation in IOM; 1500 VAC RMS or +/-1500 VDC, referenced to common
Guaranteed ON field resistance	300 ohms maximum at 15 VDC
Guaranteed OFF field resistance	30 kilohms minimum at 30 VDC
Open-wire detection	Optional; requires appropriate field resistor and configuration; detected open wire invalidates input PV
Non-redundant IOTA	CC-TDIL01,9-inch
Redundant IOTA	CC-TDIL11,12-inch; appropriate module pair and configuration required
Sequence of events	Not the CC-PDIL01 function; use the applicable CC-PDIS01 selection evidence
Performance & Power	
Nominal signal / field-power range	24 VDC / 18-30 VDC
Input impedance	4.2 kilohms
Filter plus isolation delay	5 ms, tolerance +/-20%
Field power	Internal or external, selected for the applicable IOTA
Environment	
Enclosure requirement	Series C open equipment for subpanel mounting inside a suitable enclosure.

Selected original manufacturer material follows on pages 3–5.

Compatibility & Selection Guide

System compatibility. Series C I/O is used with Experion PKS and its C300 control architecture. CC-PDIL01 pairs with the 9-inch CC-TDIL01 non-redundant IOTA or 12-inch CC-TDIL11 redundant IOTA. A redundant arrangement requires the corresponding IOM pair and configuration. CC-PDIL51 has different diagnostic capability, while sequence-of-events acquisition belongs to CC-PDIS01; neither difference should be ignored when selecting a replacement.

Wiring & Installation Reference

Field power and input circuit

TB1 / TB2 · TB1 channels 1-16; TB2 channels 17-32 · Confirm individual screws against the complete OEM terminal map

TB3 internal power · Screw 1 internal 24 V; screw 2 internal return · Match the internal field-power arrangement

TB3 external power · Screw 3 external 24 V; screw 4 external return · Verify external supply and return before energizing

Open-wire detection · Specified 22-kilohm resistor in the field circuit · Use the OEM field diagram and enable the appropriate diagnostic

Mounting and commissioning

1. Isolate and inspect Turn off power for initial installation as required by the OEM procedure. Verify the exact IOM/IOTA, grounded enclosure, field-power selection and ESD precautions.

2. Mount the IOTA, then the IOM Attach the IOTA to its backplane before mating the module circuit board to the IOTA connector. Secure the module with the specified side screws and long front plastic screw.

3. Verify the input behavior Check each field point, direct/reverse indication and open-wire configuration before service. Confirm that configured failure handling is appropriate for the process.

Installation precautions

Hazardous-area work: Do not connect or disconnect cables or install/remove components while powered unless the location is known to be non-hazardous and the applicable OEM procedure permits the operation.

Plastic fixing screw: Use only a No. 2 Phillips hand screwdriver. A No. 1 tip or powered driver can damage the long gray plastic screw.

Power testing: Never insert a test probe into the 24 V screw hole of an unattached IOTA. The probe can touch the back channel and short the carrier supply; use the designated OEM test locations.

Open CC-TDIL01 TB3 and open-wire circuit (PDF page 5) · Open OEM mounting and power warnings (PDF pages 3-4)

Manufacturer reference 1 · Manufacturer reference 2

4.3 Mounting the I/O module on the IOTA

4.3.1 Prerequisites

It is recommended to attach the IOTA board to the Backplane prior to mounting the module to the IOTA. Ensure the following:

- IOTA is mounted on the Backplane.
- Power supply is installed.
- Control firewall is installed.
- All wiring and pre-fabricated cables are available and labeled as applicable.
- All power is turned off at the installation location.
- You have the mounting hardware supplied with the components.

4.3.2 Mounting the module

1. Insert the module onto the IOTA board making sure that the circuit board mates properly with the IOTA board connector.
2. Secure the module to the:
   - IOTA board - with two screws located on each side of the plastic cover.
   - Backplane - with the long gray plastic screw located on the module's face.

> **CAUTION**
> Use only a #2 Phillips screw-driver to carefully loosen or tighten the long gray plastic screw. Do not use either a #1 Phillips screw-driver or a battery-powered screw-driver to remove or install the plastic screw as this can damage the screw head.

4.4 Grounding and power considerations - IOTA boards

4.4.1 Attaching the IOTA board

The Series C cabinet allows mounted carriers that support the attachment of the IOTA boards. By making these connections, power, and chassis, grounding is provided to the IOTA board.

- Testing for power

4.4.2 Testing for power

> **CAUTION**

Extreme care must be taken when testing for power at the Series C bus bars. Improper testing can result in an electrical short circuit, which will impact all modules attached to the channel carrier assembly.

Never use a test probe at an unattached IOTA's 24V screw hole. The probe can potentially touch the back channel assembly causing a short circuit.

The following locations are recommended for testing power:

Preferred location if IOTAs are attached

- Center of the screw that attaches the IOTA to the 24V bus bar.

Preferred location if IOTAs are NOT attached.

- Center of the screw of top connection terminal for power cable.

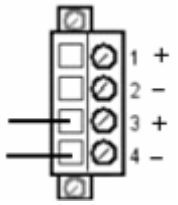
Testing for power at IOTA screw

1. Insert the test probe at the center of the screw that attaches the IOTA to the 24V power connection.
2. This concludes this procedure.

Testing for power at 24V bus bar top terminal

1. Carefully pull the red cap from the top of the terminal. It remains attached to the power cable.
   - Insert the test probe at the center of the screw to the 24V power terminal.
2. Carefully pull the black cap from the top of the terminal. It remains attached to the ground cable.

   Insert the test probe at the center of the screw to the COM ground terminal.
3. Replace the both caps.

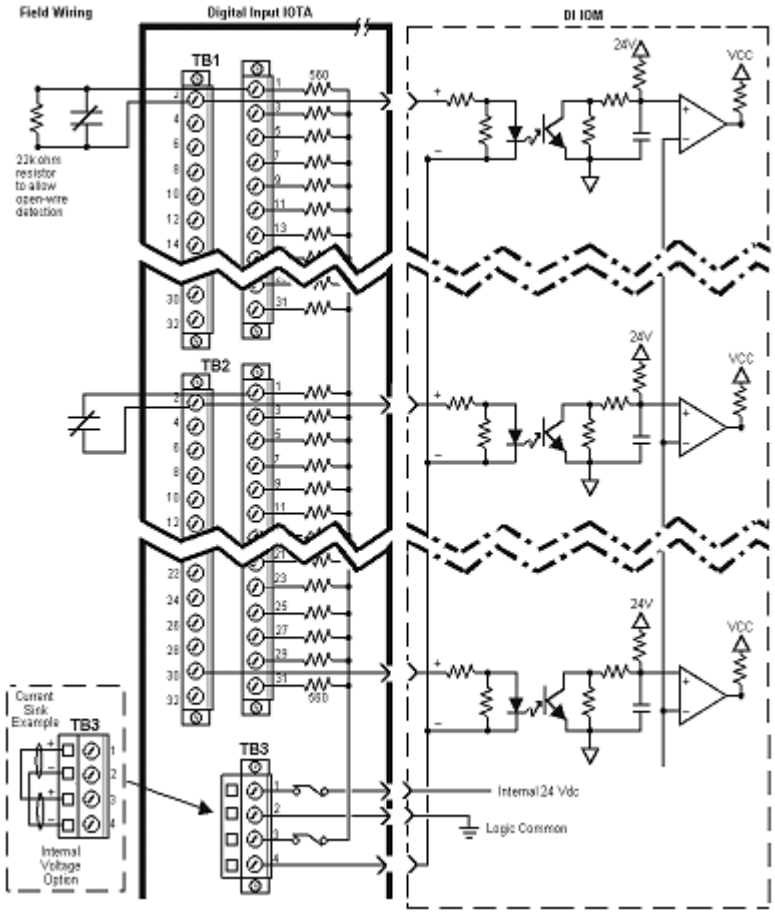
Terminal block 3	
Screw 1 - internal 24V	
Screw 2 - internal return	
Screw 3 - external 24V	
Screw 4 - external return	

Series C 24V Digital Input 9 inch, non-redundant IOTA and field wiring connection is displayed.

TIP

Optional open-wire detection can be instituted by attaching a 22k ohm resistor in the field wiring.

Figure 5.35 Series C 24V Digital Input 9 inch, non-redundant IOTA and field wiring connection



Series C 24V Digital Input 12 inch, redundant IOTA is displayed.