

4. Series C Field Connections



Series C field connections use a standard modular connector. The connector modularity allows for removal and insertion of the field wiring. This significantly reduces installation and maintenance procedures and can assist in field check out.

Series C field connectors accept up to 12ga AWG/2.5 mm stranded wire.

A mass termination cable (also known as the bulk cable) is available to support marshalling applications. Mass termination eliminates individual wiring to Series-C field connections. Series-C I/O installations do not require separate marshalling. However, when marshalling is desired, the mass termination cable provides an easy and efficient connection from the I/O to the marshalling cabinet. Mass termination also supports other atypical wiring needs. Cables can be ordered from various Honeywell partners. Contact your local account manager for specific partner information.

IOTA sizing is nominal (6 in = 152 mm, 9 in = 228 mm, 12 in = 304 mm, 18 in = 457 mm).

I/O modules are associated with their respective IOTAs in the table below. The I/O module is supported by one or more IOTAs.

5. I/O Module Sizes

I/O Module	IOTA	Description	Circuits	Size	Red.
CC-PSV201		Servo Valve Positioner, 2 valves (SVPM IOM)	2		
	CC-TSV211	Servo Valve Positioner IOTA Red, 2 valves (SVPM IOTA)		18	√
CC-PSP401		Speed Protection, 4 channels (SPM IOM)	4		
	CC-TSP411	Speed Protection IOTA Red, 4 channels (SPM IOTA)		18	√

6. Specifications

Specifications for the various Series C Turbomachinery I/O modules are given below.

For information on environmental specifications, please refer to the Series C Turbomachinery IO Platform Specification and Technical Data Sheet EP03-540-400.

7. Servo Valve Positioner Module (SVPM) – CC-PSV201

7.1. Function

This Series C I/O module provides an onboard PID positioning loop for positioning a servo valve typically used in a turbomachinery control application. It can accept LVDT/RVDT/4-20 mA position feed back signals from the control valve, receive a control valve demand remote set point from a C300-20msCEE controller and execute onboard PID positioning loop to issue current output to servo valve coil to control the control valve position.

7.2. Notable Features

- Onboard PID positioning loop execution with overall loop latency within 10 mS
- Onboard excitation supply for LVDT and support for various configurations of LVDT connections
- LVDT input channel can be optionally configured to accept 4-20 mA analog input signal
- Supports wide range of unidirectional/bidirectional current output to servo valve coil
- Servo valve output channel can optionally be configured for 4-20 mA analog output signal
- Accepts two digital inputs, which can be configured to drive servo valve output to safe value
- PID execution using the position measurement and remote set point received from the C300 20 ms controller
- Extensive module level diagnostics (PV qualification for AI & AO, LVDT excitation frequency drift check, internal reference check, power supply diagnostic, memory diagnostics, etc.)
- Extensive field level diagnostics (open wire detection for Servo, LVDT, AI [4-20 mA] and DI; LVDT core fallout; read back current diagnostics for Servo and AO [4-20 mA])
- Drive Servo output to safe value on detecting abnormal condition of control components
- Point processing at 2.5 mS period for "LVDT/RVDT signal" and PID execution
- Provides digital dither (current modulation) to compensate stiction in the controlled device (servo valve)
- Supports servo valve position calibration
- Supports redundant solution
- Supplies non-incendive field power

7.3. SVPM supports the following I/O interfaces

- LVDT/RVDT/analog input – 2 channels
- Digital input – 2 channels
- Servo/analog output – 2 channels
- 2 PID blocks

7.4. Detail Specifications – SVPM

Parameter	Specification
Input/Output Model	CC-PSV201 - Servo Valve Positioner Module
	CC-TSV211 Redundant 18"
<u>Servo Output</u>	
Output Type	Bipolar current (Ranges: 10, 20, 40, 80, 160, 320 mA) Unipolar current (Ranges: 50, 300 mA)
Output Channels	2
Dither	0-10% of FS, 25-60 Hz
Output Temperature Drift	300 ppm per deg C
Output Current Linearity	0.325%
Resolution	16-bit DAC
Maximum Resistive Load (24 V supply = 22 VDC through 28 VDC)	Maximum coil resistances allowed for different current ranges with this interface are available in Honeywell DFS document
Maximum Open Circuit Voltage	±14 V
Gap (0 mA) of Output to Field on Switchover	15 mS maximum
<u>LVDT Interface</u>	
Input/Feedback	3/4/5/6 wires LVDT feedback signals, 8 V RMS max., 2.5-3.2 KHz
Excitation	8 V RMS max, 2.5-3.2 KHz (max. internal excitation is 50 mA)
Frequency Stability	2.5-3.2 KHz ±5 Hz from set value
Channels	2
Galvanic Isolation (any input terminal voltage referenced to common)	±500 VDC
Isolation Technique	Isolation transformer
A/D Converter Resolution	16-bits
Input/Output Range ⁽¹⁾	8 V RMS max., 2.5-3.2 KHz
Input Impedance (voltage inputs)	Impedance > 25 Kohm (2.5 KHz to 3.2 KHz)
Input Scan Rate	2.5 mS
Hardware Accuracy (@ CMV = 0 V)	< 1%
<u>Analog Inputs</u>	
	* AI & LVDT signals are mutually exclusive
Input Type	Voltage, current (2-wire or self-powered transmitters)
Input Channels	2
Common Mode Voltage, DC to 60 Hz	-6 to +5 V peak
A/D Converter Resolution	16-bits
Input Range ⁽¹⁾	0 to 5 V, 1 to 5 V, 0.4 to 2 V, 4-20 mA (through 250 Ω)

Maximum Normal Mode Input (differential inputs, no damage)	±30 V
Input Impedance (voltage inputs)	> 10 M Ω powered
Maximum Input Voltage (any input referenced to common, no damage)	±30 V
Input Scan Rate	5 ms
Hardware Accuracy (@ CMV = 0 V)	± 0.075% of full scale (23.5°± 2°C) ± 0.15% of full scale (0 to 60°C)
<u>Analog Outputs</u>	* AO & Servo signals are mutually exclusive
Output Type	4-20 mA
Output Channels	2
Output Ripple	< 100 mV 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 (25°C) including linearity
Directly Settable Output Current Range	0 mA, 2.9 mA to 21.1 mA
Maximum Resistive Load (24 V supply = 22 VDC through 28 VDC)	760 ohms
Maximum Output Compliant Voltage (24 V supply = 22 VDC through 28 VDC)	16 V
Maximum Open Circuit Voltage	18 V
Response Time (DAC input code to output)	1 mS
Gap (0 mA) of Output to Field on Switchover	15 mS max.
<u>Digital Inputs</u>	
Input Channels	2
DI Power Voltage Range	22 to 28 VDC
ON Sense Voltage/Current	13 VDC (min.) or 6.12 mA (min.)
OFF Sense Voltage/Current	5 VDC (max.) or 2.1 mA (max.)
Input Impedance	4.6K
Absolute Delay Across Input Filter and Isolation	1.78 mS
Field Resistance for Guaranteed ON Condition	300 Ω max. @ 15 VDC
Field Resistance for Guaranteed OFF Condition	30 KΩ min. @ 30 VDC