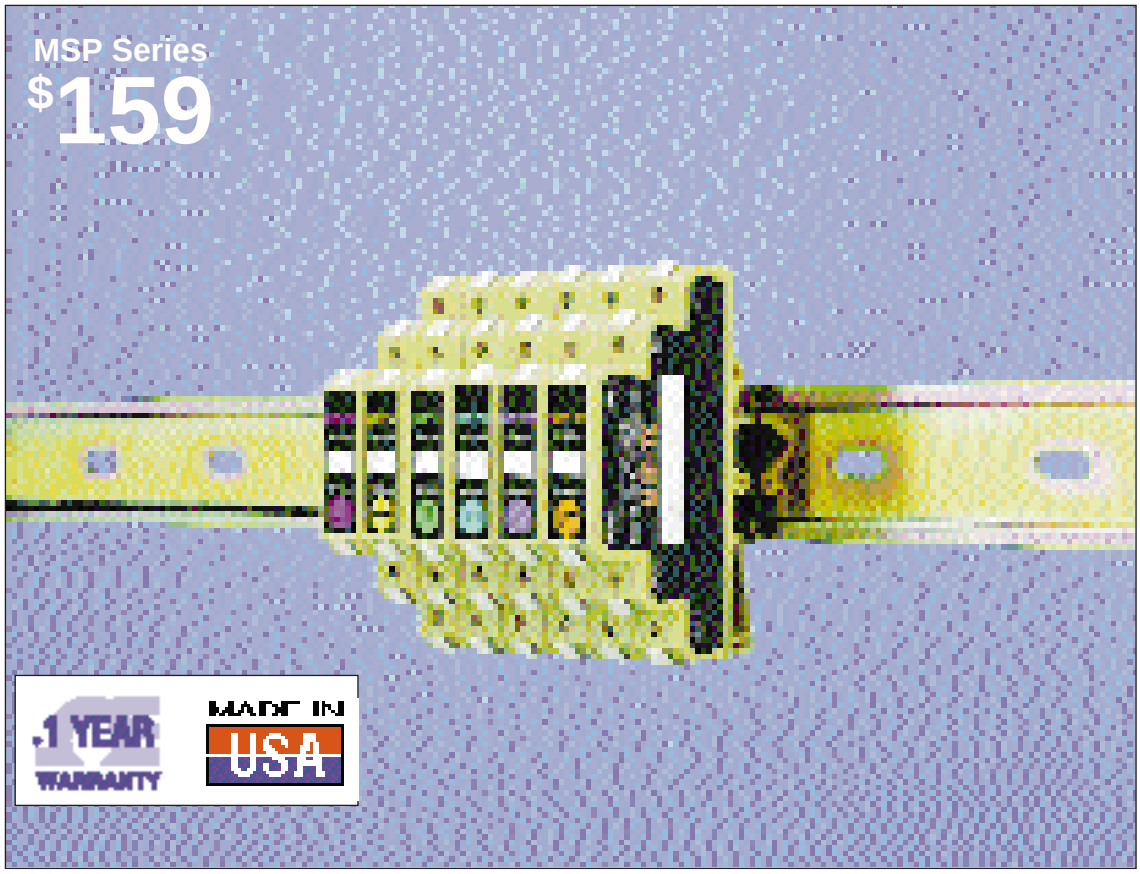
MSP Series Analog to Pulse I/O Modules



- **Add Conditioned Analog I/O to Almost Any PLC**
- **Models Available for Thermocouple**
- **RTD, Current, Voltage, Frequency, or Potentiometer**
- **0-5 V, 0-10 V, ±10 V, 4-20 mA or 0-20 mA Analog Output**
- **DIN Rail Terminal Module Tiny Package**
- **Computer and Palm Top Configurable**
- **Complete Digital Design for High Stability**

MSP family of analog I/O modules offers the freedom to use any analog sensor with most models of PLCs (even a PLC without analog capability). Each MSP family module provides one analog input interface or one analog output interface between the PLC and the analog world. Communications between MSP unit and PLC is via patented 'single-wire' communications. Each MSP model (input or output) supports a single analog signal-type. All MSP models are user configurable via Windows based configuration software ($49). All MSP models are field configurable to meet each user's unique requirements. Contact factory for pre-configured models.

Analog Input Signal

An analog input signal is isolated, filtered, amplified, scaled and/or linearized (if necessary) by the MSP unit's onboard microprocessor and converted to a 16-bit, binary weighted, digital word which is transmitted serially (one bit-at-a-time) at 24 Vdc, 120 Vac, or 240 Vac signal levels to the PLC's discrete I/O point. At the PLC, each binary-weighted bit presented on the discrete input is temporarily stored until all 16-bits have been received. Then the digital word is reassembled and its value placed in a working register of your choosing for decision making by the PLC program.

Analog Output Signal

A numerical value representing a desired analog output signal level is placed into a PLC working register of your choice by the PLC program. This value is transmitted serially (one bit at-a-time) at 24 Vdc, 120 Vac, or 220 Vac signal levels to the MSP unit via the PLC's discrete I/O point. At the MSP unit, the received value is scaled (as required) via onboard microprocessor and converted to an appropriate high-level analog voltage or current output signal (controlled by the value from the PLC).

Setting up a MSP unit is easy, provide an external 15-32 Vdc power source and use any low cost control wire to interface the unit to

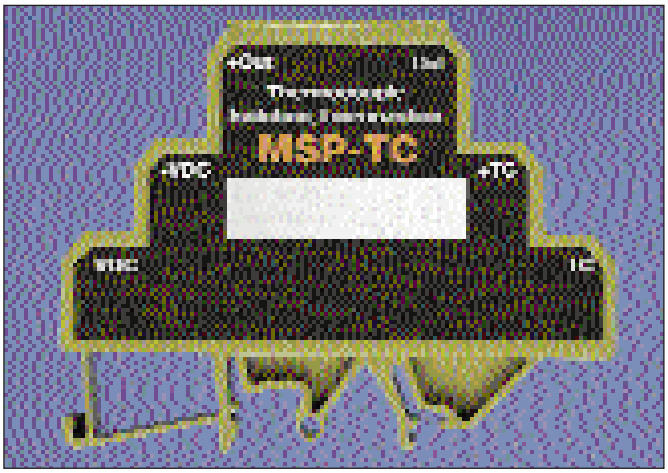
the PLC I/O. Each MSP module supports specific signal types like, TCs, RTDs, current, voltage, frequency, and potentiometer. The I/O modules can be configured for specific sensor types and ranges via the optional configuration software which runs in a Windows/PC or Windows/CE HPC (Handheld Personal Computer) environment and uses the PC's RS-232C communication port.

Select from supplied pre-written PLC drivers for your PLC and paste the required drivers into your PLC program. Each driver provides a single channel of communication capability between the MSP unit and a PLC discrete I/O port. Pre-written PLC I/O drivers for most major PLC manufacturers/ models are included with each MSP module.

The MSPs offer optical and transformer isolation, thus eliminating ground loops and noise. Designed to operate in the industrial arena short circuit, surge and reverse power protection is standard on all models.

Specifications

Input Power: 15-32 Vdc (30 mA/module)
Output (MSP-CV-OUT): 0-10 V @ 5 mA Max; 0 to 20 mA or 4 to 20 mA, 12 V compliance
Isolation: 3 way-input, output and power; 2 way-input to power/output 1500 V peak
Over Voltage: 240 VRMS continuous
Update Speed: 0.1 to 0.5 seconds (PLC dependent)
Operating Temperature: -40 to +75°C
Storage Temperature: -40 to +85 °C
Mounting: 32 and 35 mm DIN Rail & G Rail
Dimensions: 88 mm H X 12.1 mm W X 68 mm D (3.5" X 0.485" X 2.7"), 24 modules can be installed per linear foot of DIN Rail
Diagnostics LEDs: Active and alarm indications
Maximum Wire Size: 14 AWG



To Order *(Specify Model Number)*

Model Number	Price	Description
MSP-TC-IN	**$159**	Thermocouple input module
MSP-RTD-IN	**159**	RTD input module
MSP-C-IN	**159**	Current input module
MSP-V-IN	**159**	Voltage input module
MSP-POT-IN	**159**	Potentiometer input module
MSP-FRQ-IN	**159**	Frequency input module
MSP-CV-OUT	**159**	Current & voltage output module

Each MSP module includes a complete user's manual and drivers for most major PLCs.

Ordering Example: *MSP-TC-IN thermocouple input module, MSF-CC-A1 configuration software, DRN-PS-750 power supply, $159 + 49 + 130 =* ***$338****.*

Accessories

Model Number	Price	Description
MSF-CC-A1	**$49**	Configuration software and 9 Pin D-sub serial cable, 3.5" disks
DRN-PS-750	**130**	Power supply, 115/230 Vac input, 24 Vdc output @ 750mA

Input	Thermocouple IN	RTD IN	Current IN	Voltage IN	Potentiometer IN	Frequency IN	Current & Voltage OUT
Series	MSP-TC-IN	MSP-RTD-IN	MSP-C-IN	MSP-V-IN	MSP-POT-IN	MSC-FRQ-IN	MSP-CV-OUT
Input Type	Thermocouple Temperature Sensor or Millivolts	RTD Temperature Sensors; Platinum, Copper and Nickel	DC Current Milliamps	DC Voltage Millivolt or Volts Input	Potentiometer & Slide Wire Resistors	Pulse Input for Frequency Measurements	DC Current & Voltage Output
Input Range*	MSC-TC J, K, T, E, N Full Range Configurable 0-80 mV	Full Range of RTDs 2 or 3 Wire	4-20 mA 0-20 mA 0-10 mA 1-10 mA	0-5 Vdc 1-5 Vdc 0-10 Vdc 2-10 Vdc	100 Ohm to 1M Ohm	0-200 Hz 0-2 kHz 0-10 kHz 0-20 kHz 5 V TTL & 24 Vdc	Pulse Input from PLC Discrete Output Point
Accuracy	±0.05% FS	±0.05% FS	±0.05% FS	±0.05% FS	±0.05% FS	±0.05% FS	±0.05% FS
Resolution	0.05°C	0.05°C	15 to 16 Bit	15 to 16 Bit	15 to 16 Bit	15 to 16 Bit	13 to 16 Bit
Output	Pulse Output to PLC Discrete Input Point	Pulse Output to PLC Discrete Input Point	Pulse Output to PLC Discrete Input Point	Pulse Output to PLC Discrete Input Point	Pulse Output to PLC Discrete Input Point	Pulse Output to PLC Discrete Input Point	0-5 Vdc, 1-5 Vdc 0-10 Vdc 2-10 Vdc 4-20 mA ±0-20 mA
Isolation	2 Way	2 Way	2 Way	2 Way	2 Way	2 Way	2 Way

**The listed input ranges are nominal. With the configuration software, the user may adjust the actual range from 50% to 110% of the nominal range. The input range span and offset are both adjustable.*