10D-MV

Millivoltage Input, Analog-Sensor-to-Digital Front End Signal Conditioner

DESCRIPTION

10D-MV analog millivolt input modules are designed to interface with a wide range of sensors and equipment used in industrial test and measurement applications that output millivolt-level signals.

Each module provides a single channel of differential analog voltage input that is filtered, isolated, amplified, and converted into 24-bit digital data for precise measurement of millivolt signals.

Discrete output pins can be mapped to configurable low and high alarms to provide essential monitoring and warning functions to ensure optimum process flow and fail-safe operation.

Input-to-digital isolation is rated at a robust 1500Vrms and all field-side inputs are protected against accidental power-line connections up to 240Vrms. These features safeguard measurement and control equipment from the harmful effects of signal noise, transient surges, ground loops, and other industrial hazards.

Over-range and under-range up to 10% beyond specified input values are supported with accuracy guaranteed to ±full-scale. All 10D modules are housed in rugged thermoplastic packages and are specified to operate over the industrial temperature range of –40°C to +85°C.

FEATURES

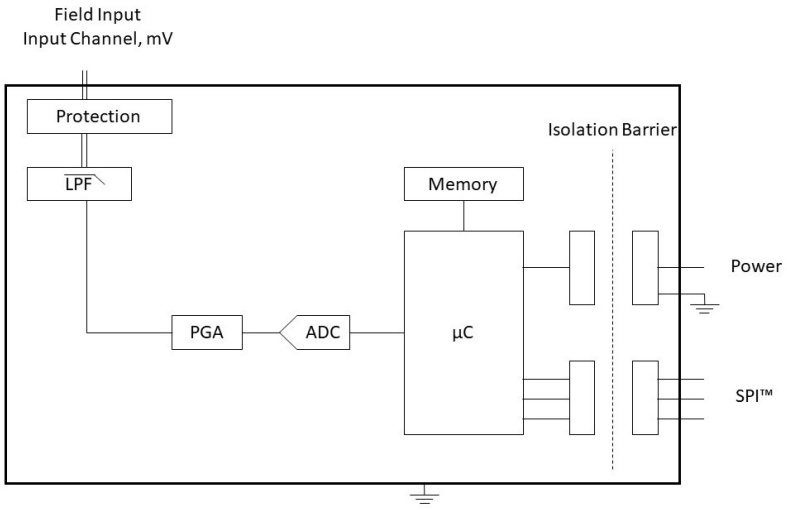
- Interface to Millivolt-Level Signals
- 1 Input Channel
- Configurable for Alarms and Averaging
- 1500Vrms Input-to-Digital Isolation
- Input Protected up to 240Vrms
- CE Compliant
- 24-Bit Resolution
- Operating Temperature: –40°C to +85°C

BENEFITS

- Small Footprint
- Simplifies Sensor Interface and Signal Conditioning Design
- Reduces System BOM
- Provides Isolation of External Sensors
- Protects Sensitive System Components
- Breaks Ground Loops
- Reduces EMC Concerns

APPLICATIONS

- Signal Conditioning
- Signal Isolation
- Signal Filtering
- Industrial Process Control
- Test and Measurement
- System and Signal Monitoring



10D-MV Block Diagram

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Preliminary

Specifications

Typical* at T_A = +25°C and +3.3VDC power

Module	10D-MV-xxx-xx
10D-MV-xxx-xx	1-channel Differential Millivolt Input
Input Range	See Ordering Information
Input Protection Continuous(1) Transient	 240Vrms (max) EN61000-6-2
CMV Input-to-Digital Transient CMR (50Hz or 60Hz) NMR	 1500Vrms (max) EN61000-6-2 120dB 40dB/decade
Accuracy(2) Linearity Stability Zero Span	±0.03% Span ±0.01% Span ±10 ppm/°C ±50 ppm/°C
Bandwidth, -3dB Sampling Rate Alarms	100Hz 4000 S/s Low, High
ADC Resolution Discrete Inputs Discrete Outputs Discrete Outputs Drive Current	24-bit 1 2 4mA
Interface Clock Input SPI Mode Bit Order	SPI(3) 1MHz (max) 1 MSB First
Power Supply Voltage Power Supply Current	+3.0 to +5.25VDC 46mA
Mechanical Dimensions (h)(w)(d)	0.350" x 2.00" x 1.00" (8.89mm x 50.8mm x 25.4mm)
Environmental Operating Temp. Range Storage Temp. Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT	 –40°C to +85°C –40°C to +85°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error Performance B

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) 240Vrms between +IN and -IN pins.
(2) Includes linearity/conformity, hysteresis, and repeatability.
(3) Refer to timing diagram in user manual.

Ordering Information

Model	Input Range	Output
10D-MV-1H1-01	±100mV	SPI
10D-MV-1H1-02	±50mV	SPI
10D-MV-1H1-04	±12.5mV	SPI

Primary

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