10D-MA

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

DESCRIPTION

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

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

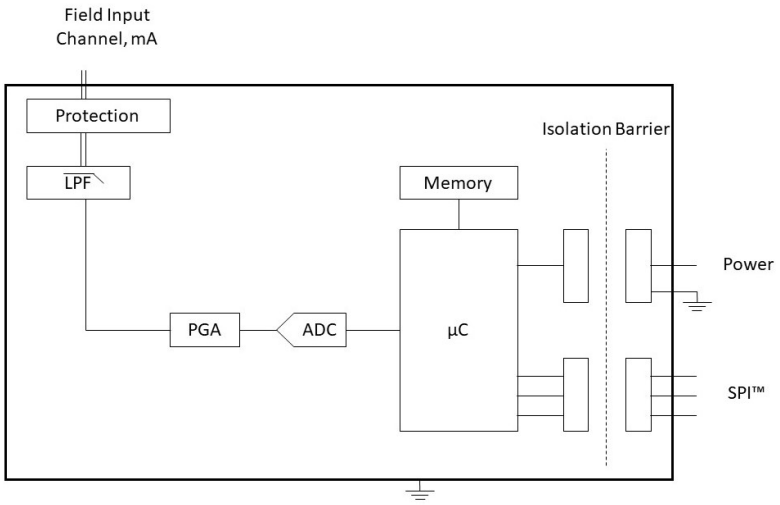
- Interface to Process Current Signals
- 1 Input Channel
- Configurable for Alarms and Averaging
- 1500Vrms Input-to-Digital Isolation
- Input Protected up to 240Vrms
- CE compliant
- 24-Bit Resolution
- Operating Temperature: –40°C to +85°C

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-MA Block Diagram

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Preliminary

Specifications

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

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

Ordering Information

Model	Input Range	Output
10D-MA-1H1-01	4mA to 20mA	SPI
10D-MA-1H1-02	0mA to 20mA	SPI

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.

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