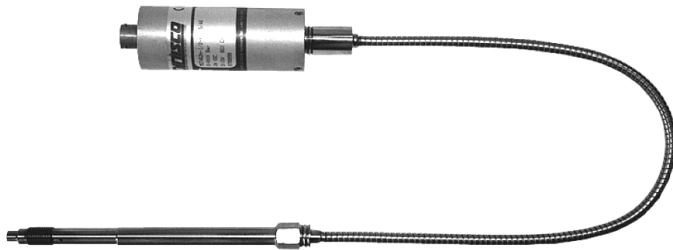


# MDT4X2F Series Pressure Sensors With SIL2

SIL2 and PL'c' rating with local and remote rezeroing capability



## Features

- Simple unshielded two-wire cable connection in high noise ambients
- Efficient rezero adjustments can be made locally or remotely to the sensor
- 4-20 mA two-wire signal output
- Installation for media temperatures up to 400°C
- Adjustable zero and span, via side-mounted pots
- Flexible capillary connection between stem with diaphragm and housing
- 3rd-party agency analysis (exida™) and self-certified based on FMEDA analysis and internal audit
- Meets Performance Level 'c' as defined by the Machinery Directive (Category 1)
- Meets the following compliance directives, when properly installed and used:
  - SIL2
  - Machinery Directive EN ISO 13849-1

## Description

The MDT4X2F Pressure Sensor Series provides special features for critical field applications in high noise surroundings. The utilization of unshielded cables is possible for long distance transmission free of noise interference for the converted process pressure signal 4-20 mA. The MDT4X2F comes equipped with adjustable zero and span side-mounted potentiometers. MDT4X2F Series mA sensors can be rezeroed in two ways: locally via the zero potentiometer, or remotely via shorting two pins together (contact closure). Optional thermocouple or RTD configurations are available to provide melt temperature.

The 4-20 mA output signal is rated PL'c' as described in the Machinery Directive EN ISO 13849-1. The MDT4X2F Series mA sensors are self-certified based on the evaluation reports of the respected third-party

agency, exida™. The MDT4X2F Series mA sensors have undergone extensive FMEDA analysis (Failure Mode Effects and Diagnostic Analysis). The FMEDA reports show that these sensors have been evaluated for random failure requirements and meet Performance Level 'c' (PL'c') as well as SIL2 (Safety Integrity Level 2). The information in the FMEDA report can be used by the customer's system designer as part of the overall qualification of the device in the system for PL'c' or SIL compliance. Additional safety compliance is available by adding a PL'c' / SIL2 rated relay that can be threshold activated to put a machine into a safe condition, as described in the Machinery Directive EN ISO 13849-1.

## Specifications

### PERFORMANCE CHARACTERISTICS

<b>Pressure Range:</b>	0-17 bar to 0-2000 bar
<b>Accuracy:</b>	MDT422F $\pm 0.5\%$ FSO (up to 50 bar $\pm 1\%$ FSO); MDT462F $\pm 1\%$ FSO
<b>Repeatability:</b>	MDT422F $\pm 0.1\%$ FSO (up to 50 bar $\pm 0.2\%$ FSO); MDT462F $\pm 0.2\%$ FSO
<b>Resolution:</b>	Infinite
<b>Maximum Overload (without influencing operating data):</b>	2x pressure range for range 1000 and 1400 bar max. 1750 bar and max. 2400 bar for range 2000 bar
<b>Burst Pressure:</b>	6x pressure range max. 3000 bar
<b>Material in Contact with Media:</b>	15-5 PH SST (Mat. No. 1.4545) DyMax <sup>®</sup> coated

### ELECTRICAL CHARACTERISTICS

<b>Configuration:</b>	4-arm Wheatstone bridge strain gage
<b>Internal Shunt Calibration:</b>	80% of full scale $\pm 1\%$
<b>Output Signal:</b>	2-wire 4-20 mA
<b>Supply Voltage:</b>	12-36 Vdc
<b>Zero Balance:</b>	$\pm 1\%$
<b>Rezero Initiation:</b>	Locally via zero potentiometer, or remotely via short circuit between pins "D" and "F"
<b>Range Calibration 80% FSO:</b>	"Short circuit" between connections pins "E" and "F" at the sensor or externally from the control room
<b>Load Resistance:</b>	Maximum 1200 $\Omega$ at 36 Vdc Maximum 500 $\Omega$ at 24 Vdc
<b>Isolation Resistance:</b>	1000M $\Omega$ at 50 Vdc

### TEMPERATURE INFLUENCE

<b>Diaphragm</b>	
<b>Max. Temperature:</b>	400°C
<b>Zero Shift Due to Temperature Change:</b>	MDT422F <0.2 bar / 10°C MDT462F <0.4 bar / 10°C
<b>Housing</b>	
<b>Max. Temperature:</b>	85°C
<b>Zero Shift Due to Temperature Change:</b>	$\pm 0.2\%$ FSO / 10°C
<b>Sensitivity Shift Due to Temperature Change:</b>	MDT422F <0.1% FSO/10°C (up to 50 bar $\pm 0.2\%$ FSO/10°C); MDT462F $\pm 0.3\%$ FSO/10°C

### APPROVALS & SELF CERTIFICATIONS

<b>CE:</b>	Directive 2004/108/EC
<b>ISO:</b>	ISO 9001:2008 production environment
<b>PL'c':</b>	EN ISO 13849-1 meeting the performance requirements of a safety-related part of a control system for Performance Level 'c' (PL'c') safety system when installed per Category 1
<b>SIL2 :</b>	Safety Integrity Level 2

## Ordering Guide

<u>XDT4XXF-XX-XXX-XX/XX-XXX</u>	
<b>Temperature</b> M = No temperature sensor T = J type thermocouple	<b>Safety &amp; Compliance</b> SIL2 = Safety Integrity Level 2 GCx = Guardian safety relay option
<b>Transducer Configuration</b> 60 = Rigid stem 62 = Rigid stem with flexible capillary 63 = Rigid stem with flexible capillary and temperature sensor 20 = Rigid stem (+0.5% FSO) 22 = Rigid stem with flexible capillary (+0.5% FSO) 32 = Rigid stem with flexible capillary and temperature sensor (+0.5% FSO)	<b>Flexible Capillary Length</b> Blank = None 46 = 45.7 cm 76 = 76.2 cm
<b>Mounting Thread</b> 1/2 = 1/2 inch 20 UNF M18 = M18 x 1.5 M10 = M10	<b>Rigid Stem Length</b> 7.6 = 7.6 cm 15 = 15.2 cm 23 = 23.9 cm 32 = 32 cm 46 = 46 cm
<b>Pressure Range</b> 17 <sup>1)2)</sup> = 0-17 bar 35 <sup>1)</sup> = 0-35 bar 50 <sup>1)</sup> = 0-50 bar 1C = 0-100 bar 2C = 0-200 bar 3.5C = 0-350 bar 5C = 0-500 bar 7C = 0-700 bar 1M = 0-1000 bar 1.4M = 0-1400 bar 2M = 0-2000 bar <sup>1)</sup> only MDT422F <sup>2)</sup> only M18	<b>Accessories and other Options</b> Cleaning Tool Kit, Machining Tool Kit, Guardian (Machinery Directive) Safety Relay—see Guardian Data Sheet for details; NaK Fill; UPR Process Indicator, ATC Process Controller. For additional options please contact the factory.

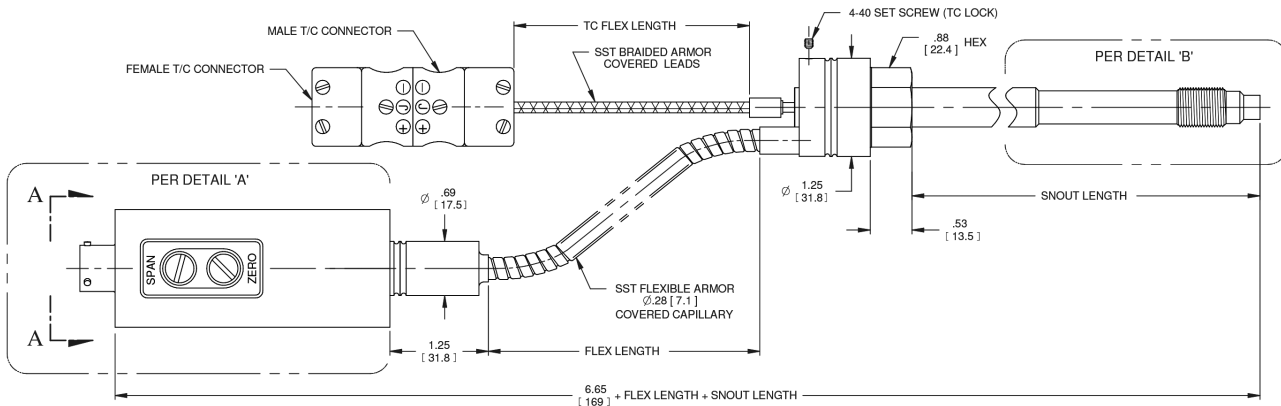
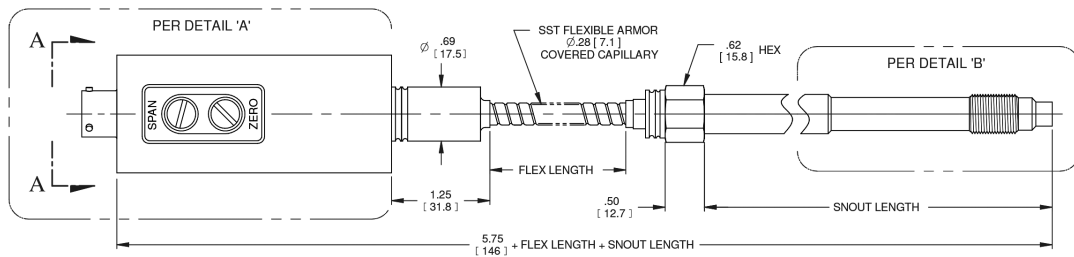
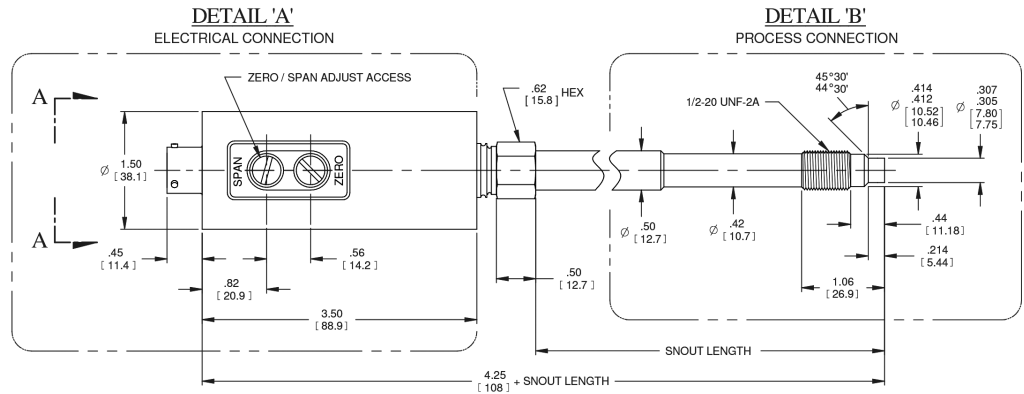
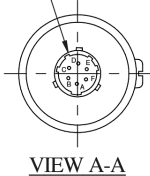
Standard mating connector Dynisco P/N 711600 or 6-pin mating connector cable assembly.  
 Shaded sections refer to standard configurations. Accuracy may be affected if non-standard configurations are used. For additional options please consult factory.

## Dimensions

CONNECTOR WIRING	
PIN	FUNCTION
A	SIGNAL + / EXCITATION +
B	SIGNAL - / EXCITATION -
C	NO CONNECTION
D	REZERO +
E	RCAL +
F	RCAL - / REZERO -

ZERO AND SPAN ADJUST ACCESS  
PROTECTED BY SEAL SCREWS

BENDIX CONNECTOR PT02A-10-6P  
OR EQUIVALENT  
MATING CONNECTOR PT06A-10-6S (SR)  
OR EQUIVALENT



NOTES:

1. DIMENSIONS ARE IN INCHES [ MILLIMETERS ].
2. DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY.
3. NOT ALL CONFIGURATIONS & OPTIONS ARE SHOWN, CONSULT FACTORY.