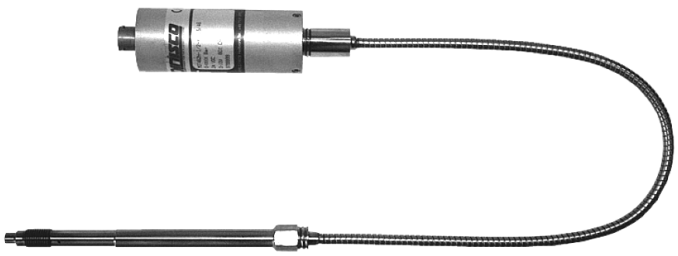
MDT4X2F Series Pressure Sensors With SIL2

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.

CE ISO International Organization for Standardization PL'c'

www.dynisco.com

Dynisco
38 Forge Parkway
Franklin, MA 02038
USA
Hotline 1-800-Dynisco
www.dynisco.com
Phone +1 508 541 9400
Fax +1-508 541 6206
Email infoinst@dynisco.com

Dynisco Europe, GmbH
Pfaffenstr. 21
74078 Heilbronn
Germany
Phone +49 7131 297 0
Fax +49 7131 297 166
Email dynisco europe@dynisco.com

Dynisco Shanghai
Bldg. 2, No. 800, Shenfu Rd.
Minghang District
Shanghai, 201108, China
Phone +86-21-34074072-819
Fax +86-21-34074025
Email: infoinst@dynisco.com

Specifications

PERFORMANCE CHARACTERISTICS

Pressure Range: 0-17 bar to 0-2000 bar

Accuracy: MDT422F ±0.5% FSO (up to 50 bar ±1% FSO); MDT462F ±1% FSO

Repeatability: MDT422F ±0.1% FSO (up to 50 bar ±0.2% FSO); MDT462F ±0.2% FSO

Resolution: Infinite

Maximum Overload (without influencing operating data): 2x pressure range for range 1000 and 1400 bar max. 1750 bar and max. 2400 bar for range 2000 bar

Burst Pressure: 6x pressure range max. 3000 bar

Material in Contact with Media: 15-5 PH SST (Mat. No. 1.4545) DyMax® coated

ELECTRICAL CHARACTERISTICS

Configuration: 4-arm Wheatstone bridge strain gage

Internal Shunt Calibration: 80% of full scale ±1%

Output Signal: 2-wire 4-20 mA

Supply Voltage: 12-36 Vdc

Zero Balance: ±1%

Rezero Initiation: Locally via zero potentiometer, or remotely via short circuit between pins "D" and "F"

Range Calibration 80% FSO: "Short circuit" between connections pins "E" and "F" at the sensor or externally from the control room

Load Resistance: Maximum 1200Ω at 36 Vdc
Maximum 500Ω at 24 Vdc

Isolation Resistance: 1000MΩ at 50 Vdc

TEMPERATURE INFLUENCE

Diaphragm

Max. Temperature: 400˚C

Zero Shift Due to Temperature Change: MDT422F <0.2 bar / 10˚C
MDT462F <0.4 bar / 10˚C

Housing

Max. Temperature: 85˚C

Zero Shift Due to Temperature Change: ±0.2% FSO / 10˚C

Sensitivity Shift Due to Temperature Change: MDT422F <0.1% FSO/10˚C (up to 50 bar ±0.2% FSO/10˚C); MDT462F ±0.3% FSO/10˚C

APPROVALS & SELF CERTIFICATIONS

CE: Directive 2004/108/EC

ISO: ISO 9001:2008 production environment

PL'c': 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

SIL2 : Safety Integrity Level 2

Ordering Guide

XDT4XXF-XX-XXX-XX/XX-XXX

Temperature	
M	= No temperature sensor
T	= J type thermocouple

Transducer Configuration	
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)

Mounting Thread			
½	= ½ inch 20 UNF	M10	= M10
M18	= M18 x 1.5		

Pressure Range			
17[1)2)]	= 0-17 bar	7C	= 0-700 bar
35[1)]	= 0-35 bar	1M	= 0-1000 bar
50[1)]	= 0-50 bar	1.4M	= 0-1400 bar
1C	= 0-100 bar	2M	= 0-2000 bar
2C	= 0-200 bar	[1)] only MDT422F	
3.5C	= 0-350 bar	[2)] only M18	
5C	= 0-500 bar		

Safety & Compliance	
SIL2	= Safety Integrity Level 2
GCx	= Guardian safety relay option

Flexible Capillary Length	
Blank	= None
46	= 45.7 cm
76	= 76.2 cm

Rigid Stem Length	
7.6	= 7.6 cm
15	= 15.2 cm
23	= 23.9 cm
32	= 32 cm
46	= 46 cm

Accessories and other Options

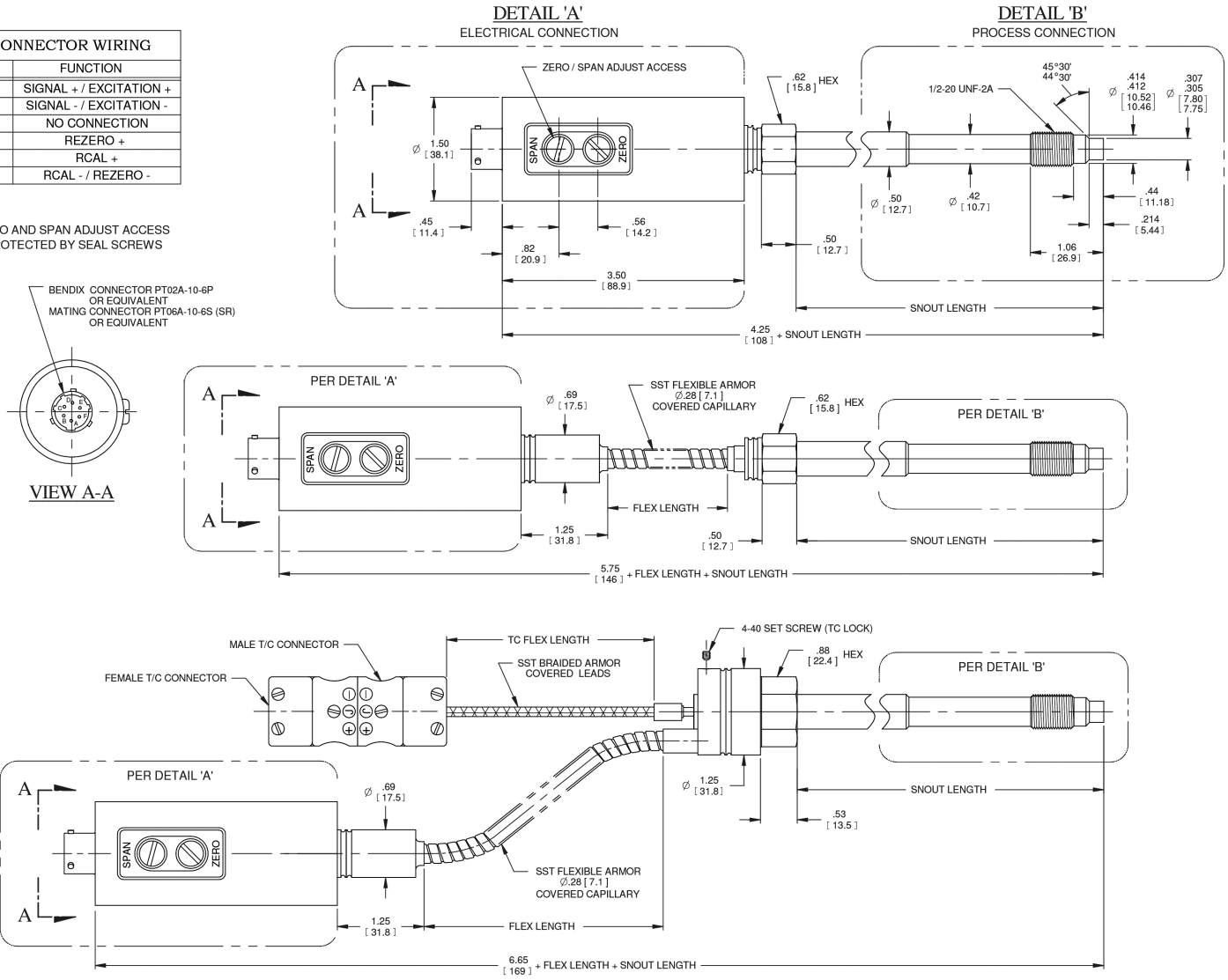
Cleaning Tool Kit, Machining Tool Kit, Guardian (Machinery Directive) Safety Relay—see Guardian Data Sheet for details; NaK Fill; UPR Process Indicator, ATC Process Controller. For additional options please contact the factory.

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



NOTES:

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

For Guardian drawings and 8-pin wiring diagrams see "Guardian" at www.Dynisco.com.

All dimensions are inches (mm) unless otherwise specified.

Refer to www.dynisco.com for access to Operator Manual and other support documentation.