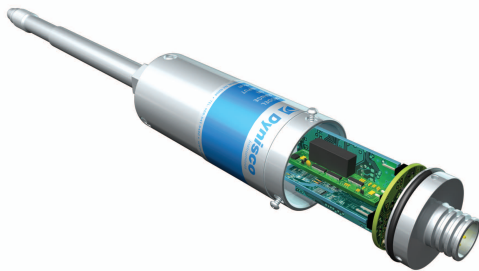


# Guardian Series Pressure Sensors for Safety Assurance

*MEET THE EN ISO 13849-1 MACHINE DIRECTIVE PL'c' COMPLIANCE AND NFPA 79 CLAUSES FOR PRESSURE SENSORS WITHOUT THE NEED FOR REDUNDANT SENSORS OR A SEPARATE RELAY MODULE*



## Description

Machinery Directive standard EN ISO 13849-1 is a European safety regulation. This is a standard defining the requirements for the safety-related parts of control systems. A pressure sensor is a machinery component that is expected to comply under the directive, when it is used in a safety function on a machine. Dynisco offers its popular pressure sensors with an internal relay switch that serves as a safety backup as well as being compliant to the directive through an extension of the line called Guardian Series. Guardian meets the directive without the expense and complication of redundant sensors and external relay modules. Guardian also complies with NFPA 79 clauses A.9.2, A.9.4.1, A.9.4.3.2 as a way of evaluating safety-related aspects of control functions. Select the relay switch threshold among ten different choices from 10-100% of full scale of the pressure range.

Guardian Series sensors are self-certified based on the evaluation reports of the respected third-party agency, exida™. Guardian Series sensors have undergone extensive FMEDA analysis (Failure Mode Effects and Diagnostic Analysis). The FMEDA reports show that products have

## Features

- Integral safety relay
- 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 Performance Level 'd' as defined by the Machinery Directive (Category 3)
- Meets the following compliance directives, when properly installed and used:
  - Machinery Directive 2006/42/EC
  - SIL1 or 2 (output dependent)
  - NFPA 79 clauses A.9.2, A.9.4.1, A.9.4.3.2
  - EMC Directive 2004/108/EC
- Available on all popular Dynisco pressure sensors

been evaluated for random failure requirements and meets Performance Level 'c' (PL'c') for all identified sensors and SIL1 (mV/V and HART-mA sensors) or SIL2 (mA output sensors). 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. Each single sensor will meet Performance Level 'c' (PL'c') as defined in the Machinery Directive, without the need for redundant sensors, a comparator module, or extra wiring and installation costs. Performance Level 'd' (PL'd') can be achieved by installing two sensors in a configuration per Category 3.

Dynisco branded sensor families that can be ordered as a Guardian sensor include: SPX Series 2xxx, 3xxx, 4xxx, 5xxx (8-pin screw type, non-approved, no secondary 4-20mA output for temperature), MDA410, MDA420, MDA460, TDA412, TDA432, TDA463, MDT420F, MDT460F, TDT412F, TDT432F, TDT463F, PT410, PT415, PT418, PT420, PT435A, PT450, PT460E, PT460XL, PT462E-M10, PT465XL, PT467E, PT467E-M10, PT467XL, TPT420A, TPT463E, PT4604, PT4624, TPT4634.

## Performance Characteristics

Specifications are particular to the Guardian Series option. Refer to the specific sensor data sheet (via [www.Dynisco.com](http://www.Dynisco.com)) for specifications related to the sensor

Guardian requires use of an 8-pin connector for wiring (screw-type, not bayonet). A relay, closed under normal operating conditions, is provided.	Relay Specs: Max. switching voltage: 200 VDC; 200 peak AC Max. switching current: 0.5 Amp Max. DC current: 1.0 Amp Relay Protection: 250mA fuse with current limiting resistor
The relay contacts will open under the following fault conditions:	An open bridge is detected Loss of power to the sensor Pressure exceeds the relay threshold selected by customer at time of order (see Order Guide for selections)

## 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
PL'd':	EN ISO 13849-1 meeting the performance requirements of a safety-related part of a control system for Performance Level 'd' (PL'd') safety system, if installed in a configuration per Category 3
NFPA 79:	NFPA 79 clauses A.9.2, A.9.4.1, A.9.4.3.2
SIL1 :	Applicable mV/V and mA-HART sensors
SIL2 :	Applicable mA sensors

### Note

It is the user's responsibility to wire this relay into the machine in such a way that when the relay opens it returns the machine to a safe condition.

### Note

It is the user's responsibility to comply with Directive's "Proof in Use" requirements and recalibrate the sensor on an annual basis.

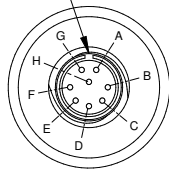
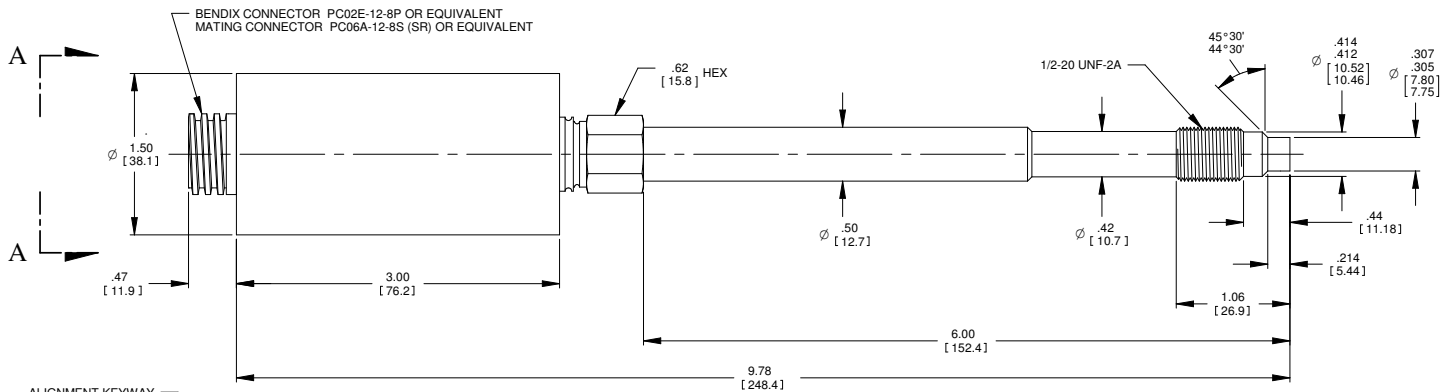
## Ordering Guide for Guardian Series

Order Guardian features as an option code at the end of the product model code. For example,

XDT4XXF XX XXX XX/XX XXX

**Guardian Series**  
 GCx = Performance Level 'c' to EN ISO 13849-1 Machinery Directive, where "x" is the relay threshold as a % of full scale for the pressure range. Select "x" as a number from 10% to 100% in ten percent increments, expressed as a single digit — "1"=10%; "2"=20%; "3"=30% and so on to "0"=100%. Values between 10% increments are not acceptable (e.g. 73%)  
 Example: GC9 = PL'c' with a relay switch threshold of 90% of full scale

## Dimensions



VIEW A-A

CONNECTOR WIRING mV	
PIN	FUNCTION
A	EXCITATION +
B	SIGNAL +
C	EXCITATION -
D	SIGNAL -
E	INTERNAL CALIBRATION RESISTOR
F	RELAY CONTACT
G	RELAY CONTACT
H	RELAY CONTACT

CONNECTOR WIRING 4-20mA	
PIN	FUNCTION
A	POWER +
B	SIGNAL -
C	POWER -
D	REZERO +
E	RCAL +
F	RCAL - / REZERO -
G	RELAY CONTACT
H	RELAY CONTACT

CONNECTOR WIRING mA-HART	
PIN	FUNCTION
A	POWER +
B	SIGNAL -
C	POWER -
D	NO CONNECTION
E	RCAL +
F	RCAL -
G	RELAY CONTACT
H	RELAY CONTACT

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

All dimensions are inches (mm) unless otherwise specified.  
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 Refer to [www.dynisco.com](http://www.dynisco.com) for access to Operator Manual and other support documentation.  
 DSGUARDSERIES  
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