



FM Approvals  
1151 Boston Providence Turnpike  
P.O. Box 9102 Norwood, MA 02062 USA  
T: 781 762 4300 F: 781-762-9375 www.fmapprovals.com

Member of the FM Global Group

# CERTIFICATE OF COMPLIANCE

## HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

***PR-23. Process Refractometer Sensor Series.***

IS/I/1/ABCD/T4;  $-20\text{ °C} \leq T_a \leq +45\text{ °C}$ ; WRG-478; Type 4X; IP67  
I/0/AEx ia/IIC/T4;  $-20\text{ °C} \leq T_a \leq +45\text{ °C}$ ; WRG-478; Type 4X; IP67

See Control Drawing For FISCO Parameters.

***PR-23-AC-a-bc-d-e. Sanitary Compact Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62.
- b = Process Connection: E, H or N.
- c = Sensor Wetted Parts Material: SS.
- d = Electrical Classification: FM or GP.
- e = Sensor Housing: AA or SC.

***PR-23-AP-a-bc-d-e. Sanitary Compact Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62.
- b = Process Connection: B, I, P, R, S, T or V.
- c = Sensor Wetted Parts Material: SS.
- d = Electrical Classification: FM or GP.
- e = Sensor Housing: AA or SC.

***PR-23-GP-a-bc-d-e. General Probe Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62.
- b = Process Connection: A, D, J, K, L, M, N or U.
- c = Sensor Wetted Parts Material: HA, HC, NI, SS or TI.
- d = Electrical Classification: FM or GP.
- e = Prism Wash: NC, SN, WN, WP or YC.



Member of the FM Global Group

***PR-23-GR-a-bc-d-e. Aggressive Valve Body Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62 or 74.
- b = Process Connection: A, D, J, K, L, M, N or U.
- c = Sensor Wetted Parts Material: HA, HS, NI, SS or TI.
- d = Electrical Classification: FM or GP.
- e = Sensor Cover: AA or SC.

***PR-23-SD-a-bc-d-e. Safe-Drive® Retractable Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62.
- b = Isolation Valve Connection: F.
- c = Sensor Wetted Parts Material: XS.
- d = Electrical Classification: FM or GP.
- e = Sensor Housing: AA or SC.

***PR-23-Ma-bc-d-e-f. Teflon Body Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62 or 74.
- b = Process Line Connection: N or R.
- c = Line Size Connection Diameter: 50.
- d = Flowcell Wetted Parts Material: PV or TF.
- e = Electrical Classification: FM or GP.
- f = Sensor Housing: SC.

***PR-23-MS-a-bc-d-e-f. Semicon Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62 or 74.
- b = Process Line Connection: F or P.
- c = Line Size Connection Diameter: 025, 050, 075 or 100.
- d = Flowcell Wetted Parts Material: TM.
- e = Electrical Classification: FM or GP.
- f = Sensor Housing: EC.

***PR-23-Wa-bc-d-e. Aggressive Valve Body Process Refractometer Sensor.***

- a = Refractive Index Range Limits: 62 or 74.
- b = Sensor Wetted Parts Material: TF.
- c = Sensor / Diaphragm Valve Body Connection: 2, 3 or 4.
- d = Electrical Classification: FM or GP.
- e = Sensor Cover: SC.

**Equipment Ratings:**

Intrinsically Safe for use in Class I, Division 1, Groups A, B, C & D, in accordance with manufacturer's Control Drawing No. WRG-478; Intrinsically Safe AEx ia T4 for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's Control Drawing No. WRG-478 Hazardous (Classified) (Type 4X & IP67) Locations

FM Approved for:

K-Patents Oy  
Elannontie 5  
01510 Vantaa  
Finland



Member of the FM Global Group

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3610	2007
Class 3810	2005
ANSI/ISA-12.00.01	1999
ANSI/ISA-12.02.01	2002
ANSI/ISA-82.02.01	2004
ANSI/NEMA 250	1991
ANSI/IEC 60529	2004

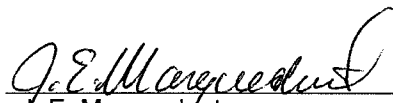
Original Project ID: 3036400

Approval Granted: *January 29, 2010*

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
---------------	------	---------------	------

FM Approvals LLC

  
\_\_\_\_\_  
J. E. Marquedant  
Group Manager, Electrical

*29 January 2010*  
\_\_\_\_\_  
Date