



FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS

This certificate is issued for the following equipment:

PR-23. Process Refractometer Sensor Series.

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



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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 Ex ia T4 for use in Class I, Zone 0, Group IIC, in accordance with manufacturer's Control Drawing No. WRG-478 Hazardous (Type 4X & IP67) Locations



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FM Approved for:

K-Patents Oy
Elannontie 5
01510 Vantaa
Finland



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

CSA C22.2 No. 94	1999
CSA C22.2 No. 142	2004
CSA C22.2 No. 157	2006
CSA C22.2 No. 60529	2005
CSA C22.2 No. 61010.1-1	2004
CSA E60079-0	2007
CSA E60079-11	2002

Original Project ID: 3036400

Approval Granted: *January 29, 2010*

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
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FM Approvals LLC

J. E. Marquedant

J. E. Marquedant
Group Manager, Electrical

29 January 2010
Date