



Certificate of Compliance

Certificate: 1906363

Master Contract: 221788

Project: 2122839

Date Issued: 2009/01/06

Issued to: KROHNE, Ltd.
Rutherford Dr
Park Farm S.
Wellingborough, NN8 6AE
United Kingdom
Attention: Mr. Rick Loiselle

The products listed below are eligible to bear the CSA Mark shown



Issued by: Andrew Sargent

Authorized by: Patricia Pasemko, Operations
Manager

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For
Hazardous Locations

Class I, Division 1 and 2; Groups A, B, C and D; Class II, Division 1 and 2, Groups E, F and G; Class III:

Intrinsically Safe Mass Flow Sensor - Optimass a000 bc VEd4efghijklmnop-q.



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Intrinsically safe when installed with model MFC 300F Mass Flow Converter, per submitter's drawings 8.85517.23.00 or 8.85517.54.01. Maximum operating ambient 60C. Temperature code T4. Enclosure type 4X. DUAL SEAL.

Where:

a = Sensor series;

1, indicating MWP 10 MPa (100 barg)

3, indicating MWP 15 MPa (150 barg)

7, indicating MWP 10 MPa (100 barg)

8, indicating MWP 10.9 MPa (109 bar)

9, indicating MWP 10.9 MPa (109 bar)

b = Measuring tube material; T, S, H, or A.

c = Sensor size / Flow area; 01, 03, 04, 06, 10, 15, 25, 40, 50, 80, or 100.

d = Sensor base model; 01, 03, 04, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 32, 33, 34, 35, 36, 37, 43, 44, 45, 46, 47, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 83, 84, 85, or 86.

e = Measuring tube material; T, S, H, or A.

f = Tube surface finish (any alphanumeric character).

g = Process connection size (any alphanumeric character).

h = Sealing face (any alphanumeric character).

i = Secondary containment material (any alphanumeric character).

j = Heating jacket options; 0, 1, 2, 3, or 4.

k = Hazardous locations approvals; 3.

l = Hygienic / sanitary approvals (any alphanumeric character).

m = Configuration; 0, 1, or 2.

n = Calibration (any alphanumeric character).

o = Cleaning / degreasing (any alphanumeric character).

p = Extended options (any alphanumeric character).



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q = "LIQUID", or "GAS", indicating process media type.

Intrinsically Safe Mass Flow Sensor - Optigas 5000 bc VEd4efghijklmnop.

Intrinsically safe when installed with model MFC 300F Mass Flow Converter, per submittor's drawings 8.85517.23.00 or 8.85517.54.01. Maximum operating ambient 60C. Temperature code T4. Enclosure type 4X. DUAL SEAL; MWP = 35 MPa (350 barg).

Where:

b = Measuring tube material; S.

c = Sensor size / Flow area; 15 or 25.

d = Sensor base model; 05 or 06.

e = Measuring tube material; S.

f = Tube surface finish (any alphanumeric character).

g = Process connection size (any alphanumeric character).

h = Sealing face (any alphanumeric character).

i = Secondary containment material (any alphanumeric character).

j = Heating jacket options; 0.

k = Hazardous locations approvals; 3.

l = Hygienic / sanitary approvals (any alphanumeric character).

m = Configuration; 0 or 1.

n = Calibration (any alphanumeric character).

o = Cleaning / degreasing (any alphanumeric character).

p = Extended options (any alphanumeric character).

Class I, Division 1 and 2; Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III:



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Intrinsically Safe Mass Flow Sensor - Optimass 2000 bc VEd4efghijklmnopq-r.

Intrinsically safe when installed with model MFC 300F Mass Flow Converter, per submitter's drawings 8.85517.23.00 or 8.85517.54.01. Maximum operating ambient 60C. Temperature code T4. Enclosure type 4X. DUAL SEAL; MWP = 14 MPa (140 barg).

Where:

b = Measuring tube material; S.

c = Sensor size / Flow area; 100, 150, or 250.

d = Sensor base model; 87, 88, or 89.

e = Measuring tube material; S.

f = Tube surface finish (any alphanumeric character).

g = Process connection size (any alphanumeric character).

h = Sealing face (any alphanumeric character).

i = Secondary containment material (any alphanumeric character).

j = Heating jacket options; 0, 1, 2, 3, or 4.

k = Hazardous locations approvals; 3.

l = Hygienic / sanitary approvals (any alphanumeric character).

m = Configuration; 0, 1, or 2.

n = Calibration (any alphanumeric character).

o = Cleaning / degreasing (any alphanumeric character).

p = Custody transfer (not verified by CSA - any alphanumeric character).

q = Converter Type; C, or D.

r = "LIQUID", or "GAS", indicating process media type.



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Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class III:

Explosionproof Mass Flow Converter - MFC 300a VE524bcdefghi0jklmno.

Provides intrinsically safe signal inputs/outputs as well as I.S. outputs to Optimass 1000, 2000, 3000, 7000, 8000, or 9000, and Optigas 5000 Mass Flow Sensor, when connected per submitter's drawing 8.85517.53.01. Rated 12 – 24 Vdc, 24Vac/Vdc or 100 – 230 Vac; maximum power consumption 12 W or 22 VA. Maximum operating ambient 40C. Temperature code T4. Enclosure type 4X.

Where:

a = Converter configuration; F

b = Converter type; 4, H, or S.

c = Power supply; 1, 4, or A.

d = Hazardous location approvals; 4.

e = Cable connections; 4, 5, or 6.

f = Instruction manual language (any alphanumeric character).

g = Custody transfer (not verified by CSA - any alphanumeric character).

h = Process diagnostics (any alphanumeric character).

i = Converter housing; 1, 2, or 3.

j = Outputs (base module) 1, 2, 3, 4, 6, 7, 8, B, C, D, E, F, G, or H.

k = Outputs (first I/O module); 0, 1, 2, 8, A, B, C, E, F, G, H, or K.

l = Outputs (second I/O module); 0, 8, A, B, C, E, F, G, H, or K.

m = Measuring function (any alphanumeric character).

n = Manuals (any alphanumeric character).

o = Remote option signal cable; 0, 1, 2, or 3

Notes:



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1. Non-intrinsically safe I/O options shall not be used in the MFC300 when intrinsically safe I/O options are installed.
2. MFC300 electronics must be installed in explosionproof MH300 housing.
3. The Mass Flow Converter is configured with Entity Parameters and Nonincendive Field Wiring parameters only when option j = 2, 3, D, or E, and/or option k = 1 or 2.

Explosionproof Compact Mass Flowmeter - Optimass a300 bc-d.

Consists of the Optimass 1000, 3000, 7000, 8000, or 9000 Mass Flow Sensor, with the MFC300 Mass Flow Converter. Provides I.S. inputs and outputs when connected per submittor's drawing 8.85517.53.01. Rated 12 – 24 Vdc, 24Vac/Vdc or 100 – 230 Vac; maximum power consumption 12 W or 22 VA. Maximum operating ambient 40C. Temperature code T4. Enclosure type 4X. DUAL SEAL.

Where:

a = Sensor series;

1, indicating MWP 10 MPa (100 barg)

3, indicating MWP 15 MPa (150 barg)

7, indicating MWP 10 MPa (100 barg)

8, indicating MWP 10.9 MPa (109 bar)

9, indicating MWP 10.9 MPa (109 bar)

b = Measuring tube material; T, S, or H.

c = Sensor size / flow area; 01, 03, 04, 06, 10, 15, 25, 40, 50, 80, or 100.

d = "LIQUID", or "GAS", indicating process media type.

Explosionproof Compact Mass Flowmeter - Optimass 2300 bc-d.

Consists of the Optimass 2000 Mass Flow Sensor, with the MFC300 Mass Flow Converter. Provides I.S. inputs and



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outputs when connected per submittor's drawing 8.85517.53.01. Rated 12 – 24 Vdc, 24Vac/Vdc or 100 – 230 Vac; maximum power consumption 12 W or 22 VA. Maximum operating ambient 40C. Temperature code T4. Enclosure type 4X. DUAL SEAL; MWP = 14 MPa (140 barg).

Where:

b = Measuring tube material; S.

c = Sensor size / flow area; 100, 150, or 250.

d = "LIQUID", or "GAS", indicating process media type.

Explosionproof Compact Mass Flowmeter - Optigas 5300 ab.

Consists of the Optigas 5000 series Mass Flow Sensor, with the MFC300 Mass Flow Converter. Provides I.S. inputs and outputs when connected per submittor's drawing 8.85517.53.01. Rated 12 – 24 Vdc, 24Vac/Vdc or 100 – 230 Vac; maximum power consumption 12 W or 22 VA. Maximum operating ambient 40C. Temperature code T4. Enclosure type 4X. DUAL SEAL; MWP 35 MPa (350 barg).

Where:

a = Measuring tube material; S.

b = Sensor size / flow area; 15 or 25.

APPLICABLE REQUIREMENTS

CAN/CSA Standard C22.2 No. 0-M91 (Reaffirmed 2001) - General Requirements - Canadian Electrical Code, Part II

CAN/CSA Standard C22.2 No. 94-M94 (Reaffirmed 2001) - Special Purpose Enclosures

CSA Standard C22.2 No. 142-M1987 (Reaffirmed 2000) - Process Control Equipment

CSA Standard C22.2 No. 25-1966 (Reaffirmed 2000) - Enclosures for Use in Class II Groups E, F, and G Hazardous Locations

CSA Standard C22.2 No. 30-M1986 (Reaffirmed 2003) - Explosion-Proof Enclosures for Use in Class I Hazardous Locations



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CSA Standard C22.2 No. 157-92 (Including update No. 2, June, 2003) - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations.

CSA Standard C22.2 No. 213-M1987 (Reaffirmed 1999) - Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

ANSI/ISA 12.27.01-2003 - Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids

MARKINGS

The following markings are provided on CSA Certified (Class 7921 01) adhesive label/ribbon combination, rated for Indoor and Outdoor use on metal, at maximum temperature of 150C. Type B435, manufactured by Brady Worldwide. Adhesive label stock and adhesive have been evaluated for use in Cl. I, Div, 1 hazardous locations under CSA report 1633756.

- Manufacturers name "Krohne", or CSA Master Contract number, 221788, adjacent to the CSA mark.
- Model designation, as specified in the PRODUCTS section of this report.
- Electrical ratings, as specified in the PRODUCTS section of this report.
- Manufacturing date in MM/YY format, or serial number / date code traceable to month and year of manufacture.
- Maximum ambient temperature rating, as specified in the PRODUCTS section of this report.
- Enclosure type rating "Type 4X".
- The CSA Mark.
- Hazardous location designation(s), as specified in the PRODUCTS section of this report.
- Temperature code, as specified in the PRODUCTS section of this report.
- The maximum working pressure (MWP) rating (in Pascals) as specified in the PRODUCTS section of this report.
- Reference to the Intrinsically Safe or Nonincendive Field Wiring control drawing, as specified in the PRODUCTS section of this report.

On models marked as certified for Intrinsically Safe, the following shall be marked on the nameplate:

- The words "WARNING - EXPLOSION HAZARD. Substitution of components may impair suitability for Intrinsic Safety".

On models marked as certified for Division 2, the following shall be permanently marked on the housing:

- The words "WARNING - EXPLOSION HAZARD. Substitution of components may impair suitability for Class I, Division 2".

On models marked as certified for Explosionproof, the following shall be permanently marked on the housing:

- The words "OPEN CIRCUIT BEFORE REMOVING COVER", or equivalent.

Terminals in wiring compartment shall be permanently marked with their intended function, or designation that corresponds to the appropriate installation drawing(s).



CSA INTERNATIONAL

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Note - Jurisdictions in Canada may require these markings to also be provided in French language. It is the responsibility of the manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the manufacturer to determine this requirement and have bilingual wording added to the "Markings".