



FM Approvals  
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# CERTIFICATE OF COMPLIANCE

## HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

**Va43bcdefghijklmnAB. TRIO-WIRL Flowmeters.**

XP / I / 1 / BCD; DIP / II, III / 1 / EFG / T4 Ta = 70°C; Type 4X

IS / I, II, III / 1 / ABCDEFG / T4 Ta = 70°C; Entity; Type 4X

NI / I / 2 / ABCD; S / II, III / 2 / F, G / T4 Ta = 70°C; Type 4X

Entity Parameters:

V Max = 28 V, I Max = 110 mA, P i = 0.77 W, C i = 14.6 nF, L i = 0.27 mH.

a = Instrument Design T or R.

b = Process Connections 1, 2, 3 or 9.

c = Fluid 1, 2, 3, 6 or 7.

d = Materials (Housing, Shedder, Sensor) 1, 2, 3, or 4.

e = Meter Size 15, 25, 40, 50, 80, 1H, 1F, 2H, 2F or 3H.

f = Pressure Rating A, B, C, D, E, F, Q, R, S, V or Z.

g = Roughness of sealing surface A, B, C, D, E, or Z.

h = Sensor Design 1 or 2.

i = Temperature Range Fluid/Gaskets 1, 2, 3, 4 or 5.

j = Certifications A, C or Z.

k = Communication 1 or 2.

l = Instrument Tag Language G, E or F.

m = Design Level C or D.

n = Accessories 0, 1, 2 or 3.

**Sa43bcdefghijklmnAB. TRIO-WIRL Flowmeters.**

XP / I / 1 / BCD; DIP / II, III / 1 / EFG / T4 Ta = 70°C; Type 4X

IS / I, II, III / 1 / ABCDEFG / T4 Ta = 70 °C; Entity; Type 4X

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Entity Parameters:

V Max = 28 V, I Max = 110 mA, P i = 0.77 W, C i = 14.6 nF, L i = 0.27 mH.

a = Instrument Design T or R.

b = Process Connections 1, 2 or 9.

c = Fluid 1, 2, 3, 6 or 7.

d = Materials (Housing, In-/Outlet Body, Sensor) 1, 2, 3 or 4.

e = Meter Size 15, 20, 25, 32, 40, 50, 80, 1H, 1F, 2H, 3H or 4H.

f = Pressure Rating A, B, C, D, E, F, Q, R, S, V or Z.

g = Roughness of sealing surface A, B, C, D, E, or Z.

h = Sensor Design 1 or 2.

i = Temperature Range Fluid/Gaskets 1, 3, 4 or 5.  
j = Certifications A, C or Z.  
k = Communication 1 or 2.  
l = Instrument Tag Language G, E or F.  
m = Design Level C.  
n = Accessories 0, 1, 2 or 3.

## Equipment Ratings:

Explosionproof for Class I, Division 1, Groups B, C and D hazardous (classified ) locations for use in a maximum ambient temperature of 70°C with a temperature code of T4.

Dust-Ignitionproof for Class II, III, Division 1, Groups E, F and G hazardous (classified ) locations for use in a maximum ambient temperature of 70°C with a temperature code of T4.

Suitable for Class II, III, Division 2, Groups F and G hazardous (classified ) locations for use in a maximum ambient temperature of 70°C with a temperature code of T4.

Non-Incendive for Class I, Division 2, Groups A, B, C and D hazardous (classified ) locations for use in a maximum ambient temperature of 70°C with a temperature code of T4.

Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F and G, temperature code T4 in accordance with Entity requirements and Control Drawing SD-50-2651 hazardous (classified) locations.

Enclosure for the VT, VR, ST and SR Series are rated for use in Type 4X applications Indoors/Outdoors.

## Approved for:

ABB Automation Products GmbH  
Dransfelder Strasse 2  
37070 Gottingen, Germany

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

Class 3600	1998
Class 3610	1999
Class 3611	2004
Class 3615	1989
Class 3810	1989
Supplement 1	1995
Nema 250	1991

Original Project ID: 3007647

FM Approval Granted: June 6, 2001

Subsequent Revision Reports / Date FM Approval Amended

Report Number	Date	Report Number	Date
3017975	July 22, 2003		
050206	<i>JUNE 16, 2005</i>		

FM Global Technologies LLC



Roger J. Allard  
Assistant Vice President  
FM Approvals

*JUNE 16, 2005*  
Date

INTRINSIC SAFETY  
CLASS I, DIV 1, GROUPS A, B, C, D

REV	AUTHORITY	REVISION DESCRIPTION	DWN BY	CHKD BY	APVD BY

FACTORY MUTUAL APPROVED  
ENTITY PARAMETERS

INTRINSIC SAFETY 31/32				
V MAX 28 V	I MAX 110 mA	Pi 770 mW	Ci 14.6 nF	Li 0.27 mH
INTRINSIC SAFETY 41/42				
V MAX 15 V	I MAX 30 mA	Pi 115 mW	Ci 11 nF	Li 0.14 mH



NOTES:

1. THE INTRINSIC SAFETY ENTITY CONCEPT ALLOWS THE INTERCONNECTION OF TWO FM APPROVED INTRINSICALLY SAFE DEVICES WITH ENTITY PARAMETERS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM WHEN:  
 $U_o$  OR  $V_{oc}$  OR  $V_t < V_{MAX}$ ,  $I_o$  OR  $I_{sc}$  OR  $I_t < I_{MAX}$ ,  $C_a$  OR  $C_o > C_i + C_{cable}$ ,  $L_a$  OR  $L_o > L_i + L_{cable}$ ,  $P_o < P_i$ .
2. DUST-TIGHT CONDUIT SEAL MUST BE USED WHEN INSTALLED IN CLASS II AND CLASS III ENVIRONMENTS.
3. CONTROL EQUIPMENT CONNECTED TO THE ASSOCIATED APPARATUS MUST NOT USE OR GENERATE MORE THAN 250 Vrms OR Vdc.
4. INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSI/ISA RP12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) SECTIONS 504 AND 505.
5. THE CONFIGURATION OF ASSOCIATED APPARATUS MUST BE FACTORY MUTUAL RESEARCH APPROVED UNDER ENTITY CONCEPT.
6. ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.

THIS DOCUMENT IS CONTROLLED  
FOR PRODUCT SAFETY  
**DO NOT CHANGE**  
WITHOUT PRIOR APPROVAL OF  
THE CERTIFICATIONS  
ADMINISTRATOR, DEPT. 265

TRIO-WIRL  
CONTROL DRAWING

**ABB**  
WARMINSTER, PA 18974 USA

DWN	J. D. WELDE 16 JAN 2001	ENGR	D. W. MADDEN 09 MAY 03	Q/E	PART NUMBER	REV
CHKD		MOD	VT/VR/ST/SR/M/E		SD-50-2681	0
SUPV		AUTH	DP1200-35-03			
REF DWG		B/M		SCALE-	DRAWING NUMBER	