FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

I. PROWIRL Vortex Flowmeter

PROWIRL 7abcc-defghiklmnop. Vortex Flowmeter.
IS/I,II,III/1/ABCDEFG/T* – FES0068, FES0068-0001, FES0068-0003, Entity; FES0068-0002, FISCO; Type 4X
I/0/AEx ia/IIC/T* – FES0068, FES0068-0001, FES0068-0003, Entity; FES0068-0002, FISCO; Type 4X
NI/I/2/ABCD/T* – FES0068-0004; Type 4X
NI/I/2/IIC/T* – FES0068-0004; Type 4X
DIP/II,III/1/EFG/T*; Type 4X

Entity Parameters:

I/O option A (4-20mA, HART Pulse, Entity) or W (4-20mA, HART, Entity):
Terminals 1and 2: Vmax = 30 V, Imax = 300 mA, Pi = 1 W, Ci = 5.3 nF, Li = 0 µH
Terminals 3and 4: Vmax = 30 V, Imax = 300 mA, Pi = 1 W, Ci = 0 nF, Li = 0 µH

I/O Option H (Profibus PA, FISCO) or K (Foundation Fieldbus, FISCO):
Vmax = 17.5 V, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF, Li = 10 µH

I/O Option H (Profibus PA, Entity) or K (Foundation Fieldbus, Entity):
Vmax = 17.5 V, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF, Li = 10 µH
or
Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH

a = Type of electronic: 2 or 3.
b = Type of sensor: F, W or X.
cc = Size: any double number or letter.
d = Material: any single number or letter.
e = Process connection: any single number or letter.

f = Sensor: 0, 1, 2, 3, 4, 5, 6, 7, B, C, F, G, H, or X.
g = Sealing of sensor: any single number or letter.
h = Calibration: any single number or letter.
i = Certificates: any single number or letter.
k = Approvals: N.
l = Version: A, E, F, J, K or L.
m = Cable gland: any single number or letter.
n = Display: any single number or letter.
o = Software: any single number or letter.
p = I/O's: A, H, K, W or X.

Special conditions of use:
1. *For installation instructions and the Temperature Class (*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to Control Drawing FES0068.*

II. PROWIRL Vortex Flowmeter

PROWIRL 7abcc-defghiklmnop
XP-AIS-DIP/I,II,III/1/ABCDEFG/T* – FES0077, FES0077-0001; Type 4X
XP-AIS/I/1/IIC/T* – FES0077, FES0077-0001; Type 4X

a = Type of electronic: 2 or 3.
b = Type of sensor: F, W or X.
cc = Size: any double number or letter.
d = Material: any single number or letter.
e = Process connection: any single number or letter.
f = Sensor: 0, 1, 2, 3, 4, 5, 6, 7, B, C, F, G, H, or X.
g = Sealing of sensor: any single number or letter.
h = Calibration: any single number or letter.
i = Certificates: any single number or letter.
k = Approvals: P.
l = Version: A, E, F, J, K or L.
m = Cable gland: B.
n = Display: any single number or letter.
o = Software: any single number or letter.
p = I/O's: A, H, K, W or X.

Special conditions of use:
1. For installation instructions and the Temperature Class (*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to Control Drawing FES0077.

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Equipment Ratings:

I. Compact and Remote Versions

Intrinsically Safe for use in Class I, II & III, Division 1, Groups A, B, C, D, E, F & G; Class I, Zone 0, AEx ia IIC in accordance with Entity requirements when installed per FM Control Drawings FES0068, FES0068-0001, FES0068-0003, FES0068-0004 or in accordance with FISCO requirements when installed per FM Control Drawing FES0068-0002; Nonincendive for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC; Dust-Ignitionproof for use in Class II & III Division 1, Groups E, F & G Hazardous (Classified) indoor/outdoor (Type 4X) Locations

II. Compact and Remote Versions

Explosionproof Apparatus with Intrinsically Safe electronic compartment for Class I, Division 1, Groups A, B, C & D, when installed per FM Control Drawings FES0077 and FES0077-0001; Dust-Ignitionproof for Class II & III, Division 1, Groups E, F & G Hazardous (Classified) indoor/outdoor (Type 4X & IP67) Locations

FM Approved for:

Endress + Hauser Flowtec AG
Kaegenstrasse 7
CH-4153 Reinach
Switzerland

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

Class 3600	1998
Class 3610	2010
Class 3611	2004
Class 3615	2006
Class 3810	2005
ANSI/ISA-82.02.01	2004
NEMA 250	1991

Original Project ID: 3015769 Approval Granted: December 5, 2002

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3017442	May 1, 2003		
3018695	November 24, 2003		
3020410	June 3, 2004		
100406	July 28, 2010		
100805	September 9, 2010		

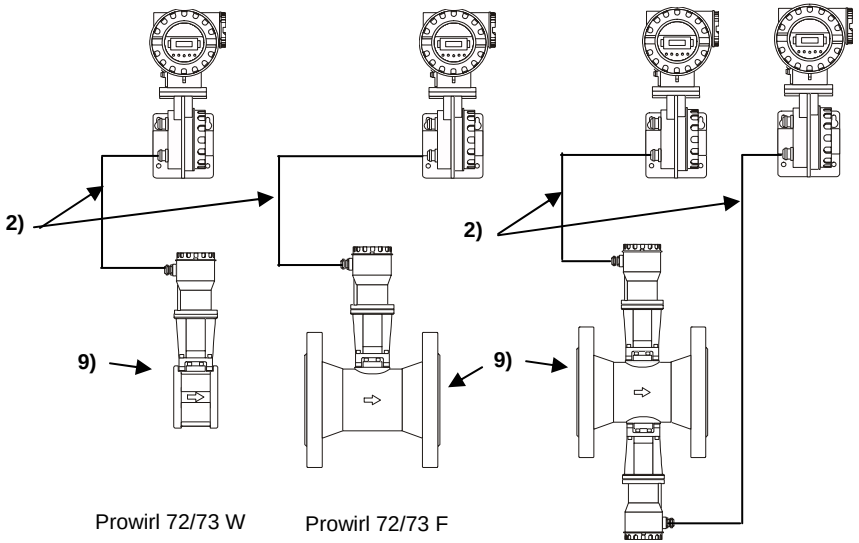
FM Approvals LLC

J. E. Marquedant
Group Manager, Electrical

9 September 2010
Date

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 1 Group IIC
Class II Division 1 Groups EFG
Class III

Remote version



Prowirl 72/73 W Prowirl 72/73 F Prowirl 72/73 F (Dualsensor)

Sensor:

PROWIRL 7** **-**1***N*****, PROWIRL 7** **-**2***N*****, PROWIRL 7** **-**3***N*****,
PROWIRL 7** **-**4***N*****, PROWIRL 7** **-**6***N*****, PROWIRL 7** **-**7***N*****,
PROWIRL 7** **-**C***N*****, PROWIRL 7** **-**F***N*****, PROWIRL 7** **-**H***N*****:

	Max. medium temperature					
	T6 **2)**	T5 **2)**	T4	T3	T2	T1
Ta = 104°F	176°F	203°F	266°F	374°F	554°F	824°F
Ta = 140°F	---	203°F	266°F	374°F	554°F	824°F
Ta = 185°F	---	---	266°F	374°F	554°F	824°F

PROWIRL 7** **-**0***P*****, PROWIRL 7** **-**5***P*****,
PROWIRL 7** **-**B***P*****, PROWIRL 7** **-**G***P*****:

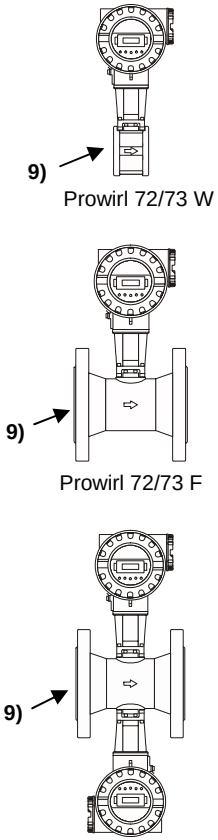
	Max. medium temperature				
	T6 **2)**	T5 **2)**	T4	T3	T2
Ta = 104°F	176°F	203°F	266°F	374°F	536°F
Ta = 140°F	---	203°F	266°F	374°F	536°F
Ta = 185°F	---	---	266°F	374°F	536°F

Transmitter:

PROWIRL 7** **-******P*****:

	T6 **2)**	T5 **2)**	T4 - T1
Ta =	104°F	140°F	140°F

Compact version



Prowirl 72/73 W Prowirl 72/73 F Prowirl 72/73 F (Dualsensor)

PROWIRL 7** **-**1***N*****, PROWIRL 7** **-**2***N*****, PROWIRL 7** **-**3***N*****,
PROWIRL 7** **-**4***N*****, PROWIRL 7** **-**6***N*****, PROWIRL 7** **-**7***N*****,
PROWIRL 7** **-**C***N*****, PROWIRL 7** **-**F***N*****, PROWIRL 7** **-**H***N*****:

	Max. medium temperature					
	T6 **2)**	T5 **2)**	T4	T3	T2	T1
Ta = 104°F	176°F	203°F	266°F	374°F	554°F	824°F
Ta = 140°F	---	203°F	266°F	374°F	554°F	824°F

PROWIRL 7** **-**0***P*****, PROWIRL 7** **-**5***P*****, PROWIRL 7** **-**B***P*****
PROWIRL 7** **-**G***P*****:

	Max. medium temperature				
	T6 **2)**	T5 **2)**	T4	T3	T2
Ta = 104°F	176°F	203°F	266°F	374°F	536°F
Ta = 140°F	---	203°F	266°F	374°F	536°F

Notes:

1) Assignment of Control Drawings:

Drawing-No.	**Model Codes:**
FES0077 A	Prowirl 7** **-******P*****
FES0077-0001 A	Prowirl 7** **-******P****A, Prowirl 7** **-******P****W, Prowirl 7** **-******P****H, Prowirl 7** **-******P****K

2) Max. cable length for intrinsically safe installation 100m for using cable parameters L_{Cable} = 1mH/km / 0.3µH/ft and C_{Cable} = 1µF/km / 300µF/ft
3) Temperature class T6 and T5 is not allowed for versions of Profibus PA and Fieldbus Foundation
(not for PROWIRL 7** **-******P****H and PROWIRL 7** **-******P****K)
4) Caution: Use supply wires suitable for 50°F above maximum ambient temperature
5) Caution: Surface temperature of transmitter enclosure can exceed 158°F depending on ambient temperature or medium temperature
Dust tight seals must be used at conduit entries for Class II and III installation
6) The Prowirl 72/73 is Factory Sealed. This means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
7) The Prowirl 72/73 is a Dual Seal Device in accordance to ANSI/ISA-12.27.01-2003
8) Prowirl 72 and Prowirl 73 transmitter is intended for installation to Service Interface FXA 193 when using the PROLINE EX-ZWEILEITER-KABEL (blue cable)
9) Sensor of remote version and interior of measuring tube of remote and compact versions are permissible for use in Zone 0

Aenderungen:						**Mat. Nr.: 71040753**
	A	10.12.03 / Bn	F			
	B		G			Ersatz für:
	C		H			Ersteller: FES/Bn
	D		J			File: M:\ZEICHNG\...\031210c.doc **ID 1112**
	E		K			

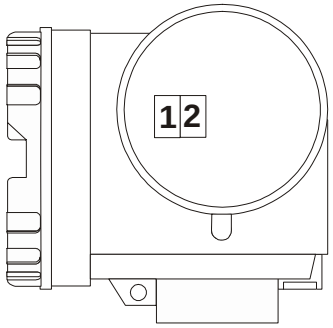
FM CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (XP-version)
Compact Version, Remote version

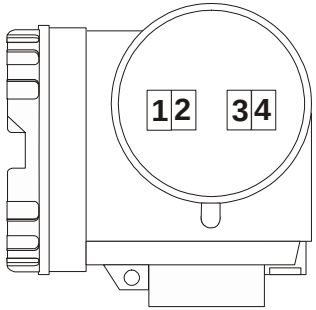
Massstab			
	Gezeichnet	08.09.03	Bn
	Geprüft		
	Ex-geprüft	10.12.03	Bn
	Gesehen		

Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0077 A

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 1 Group IIC
Class II Division 1 Groups EFG
Class III





Prowirl 7* **-*****P****A**

Division 1 and Division 2 installation

1) Terminal 1 and 2
Supply voltage: U ≤ 36 Vdc
U_{max} = 250 Vdc
Signal current: 4 ... 20 mA (max. 25 mA)

Prowirl 7* **-*****P****H and Prowirl 7* **-*******P****K**

Division 1 and Division 2 installation

2) Terminal 1 and 2
Supply voltage: U ≤ 36 Vdc
U_{max} = 250 Vdc

Prowirl 7* **-*****P****W**

Division 1 and Division 2 installation

3) Terminal 1 and 2
Supply voltage: U ≤ 36 Vdc
U_{max} = 250 Vdc
Signal current: 4 ... 20 mA (max. 25 mA)
4) Terminal 3 and 4
Pulse Output: U ≤ 30 V
U_{max} = 250 Vdc
Signal current: ≤ 30 mA

Class II, III installation

5) Transmitter circuit wiring in conduit in accordance with the NEC ANSI/NFPA 70

Note:

6) Installation of transmitter circuit wiring according to National Electrical Code using threaded conduit.
7) **WARNING** Terminal compartment:
KEEP COVER TIGHT WHEN CIRCUITS ARE ALIVE
OR THE AREA IS KNOWN TO BE HAZARDOUS
8) Control room equipment may not use or generate over 250Vrms.
9) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INSTRINSIC SAFETY.

Aenderungen:						**Mat. Nr.: 71040753**
	A	10.12.03 / Bn	F			
	B		G			Ersatz für:
	C		H			Ersteller: FES/Bn
	D		J			File: M:\ZEICHNG\...\031210c.doc **ID 1112**
	E		K			

FM CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (XP-version)

Massstab

Gezeichnet	08.09.03	Bn
Geprüft		
Ex-geprüft	10.12.03	Bn
Gesehen		

Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0077-0001 A