XA070D/06/en/12.03
50104719
FM+SGML 6.0

PROline prowirl 72 / prowirl 73
Ex-i Intrinsically safe version (IS)
Division 1









Ex documentation for the BA 084D (Prowirl 72) / BA 094D (Prowirl 73) operating instruction according to FACTORY MUTUAL standards

Ex documentation for the BA 084D (Prowirl 72) / BA 094D (Prowirl 73) operating instruction according to CANADIAN STANDARDS ASSOCIATION

Endress + Hauser

The Power of Know How

XA070D/06/en/12.03
50104719
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PROline prowirl 72 / prowirl 73
Ex-i Intrinsically safe version (IS)
Division 1

(en)

Ex documentation for the BA 084D (Prowirl 72) and BA 094D (Prowirl 73) operating instruction

according to FACTORY MUTUAL standards

Example: **XP / I / 1 / ABCD**

Factory Mutual

Type of Protection

XP	Explosionproof
IS	Intrinsically Safe Apparatus
AIS	Associated Apparatus with Intrinsically Safe Connections
ANI	Nonincendive Field Wiring Circuit
PX,PY,PZ	Pressurized
APX,APY,APZ	Associated Pressurization Systems/Components
NI	Nonincendive
DIP	Dust-Ignitionproof
S	Special Protection

Class

I	Class I (Gas)
II	Class II (Dust)
III	Class III (Fibre)

Division

1	Division 1
2	Division 2

Group

FM / NEC	Gases, vapours and dusts (Examples)	Min. ignition temperature [µJ]
A	Acetylene, carbon disulfide (Class I)	0.02
B	Hydrogen, ethyl nitrate (Class I)	0.02
C	Ethylene, isoprene (Class I)	0.06
D	Acetone, ethane, benzene, ethanoic acid, gasolines, diesel oil, aircraft fuel, methane, heating oil,crude oil, hexane, ether (Class I)	0.18
E	Metallic powder (Class II)	
F	Coal dust (Class II)	
G	Mill dust (Class II)	
	Textile fibres (Class III)	

Temperature Class

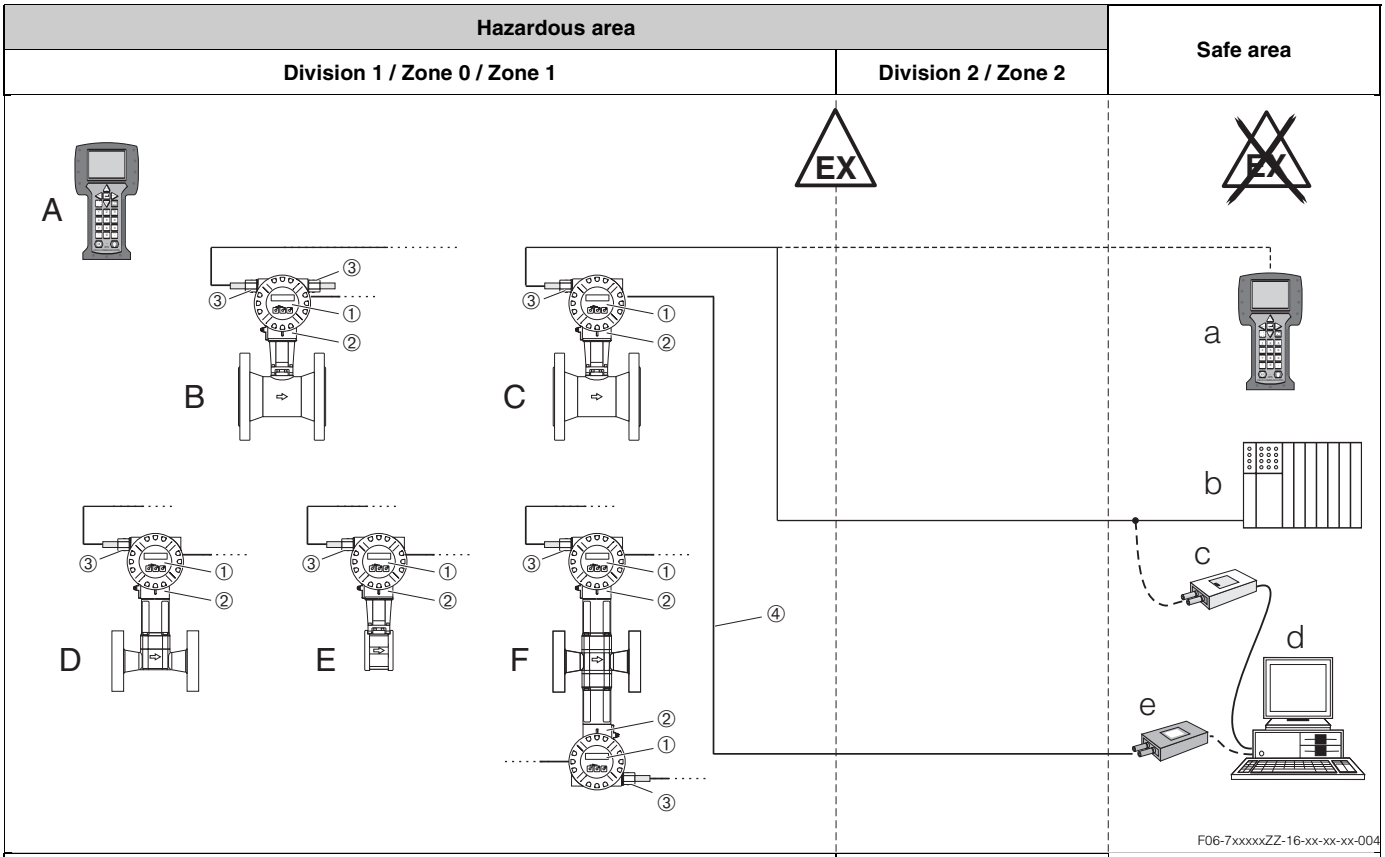
FM 3611	Maximum surface temperature	
T1	842 °F	450 °C
T2	572 °F	300 °C
T2A	536 °F	280 °C
T2B	500 °F	260 °C
T2C	446 °F	230 °C
T2D	419 °F	215 °C
T3	392 °F	200 °C
T3A	356 °F	180 °C
T3B	329 °F	165 °C
T3C	320 °F	160 °C
T4	275 °F	135 °C
T4A	248 °F	120 °C
T5	212 °F	100 °C
T6	185 °F	85 °C

FM

Endress+Hauser

The Power of Know How

Measuring system Prowirl 72 / Prowirl 73 compact version



A = HART handheld DXR 275***I5*
(Ex-version for Class I, Div. 1, ABCD)
DXR 375****KL*
(Ex-version for Class I, Div. 1, ABCD)

Prowirl 73:

B = Sensor F (DN 1/2"...12")
Standard version
PN 10...40; Cl 150...300; JIS 10...20K

E = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K

Prowirl 72:

C = Sensor F (DN 1/2"...12");
Standard version
PN 10...40; Cl 150...300; JIS 10...20K

D = Sensor F (DN 1/2"...6");
High pressure version
PN 64...160; Cl 600; JIS 40K

E = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K

F = Sensor F (DN 1/2"...6");
Dualsens
PN 10...160; Cl 150...600; JIS 10...40K

① Transmitter electronics Prowirl 72 resp. 73 in:
Cl. I Div. 1 Groups ABCD
Cl. I Div. 1 Zone 0 AEx ia IIC
Cl. II Div. 1 Groups EFG
Cl. III

② Prowirl 72 resp. 73 standard housing

③ Cable entries:
Choice of thread for cable entries, M20x1.5 or ½" NPT or G ½" thread.

④ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect a Prowirl 72 or 73 to the Service Interface FXA 193.

✎ Note!
For ambient and fluid temperature ranges, and temperature class, see Page 5.

a = HART handheld
DXR 275 resp. DXR 375

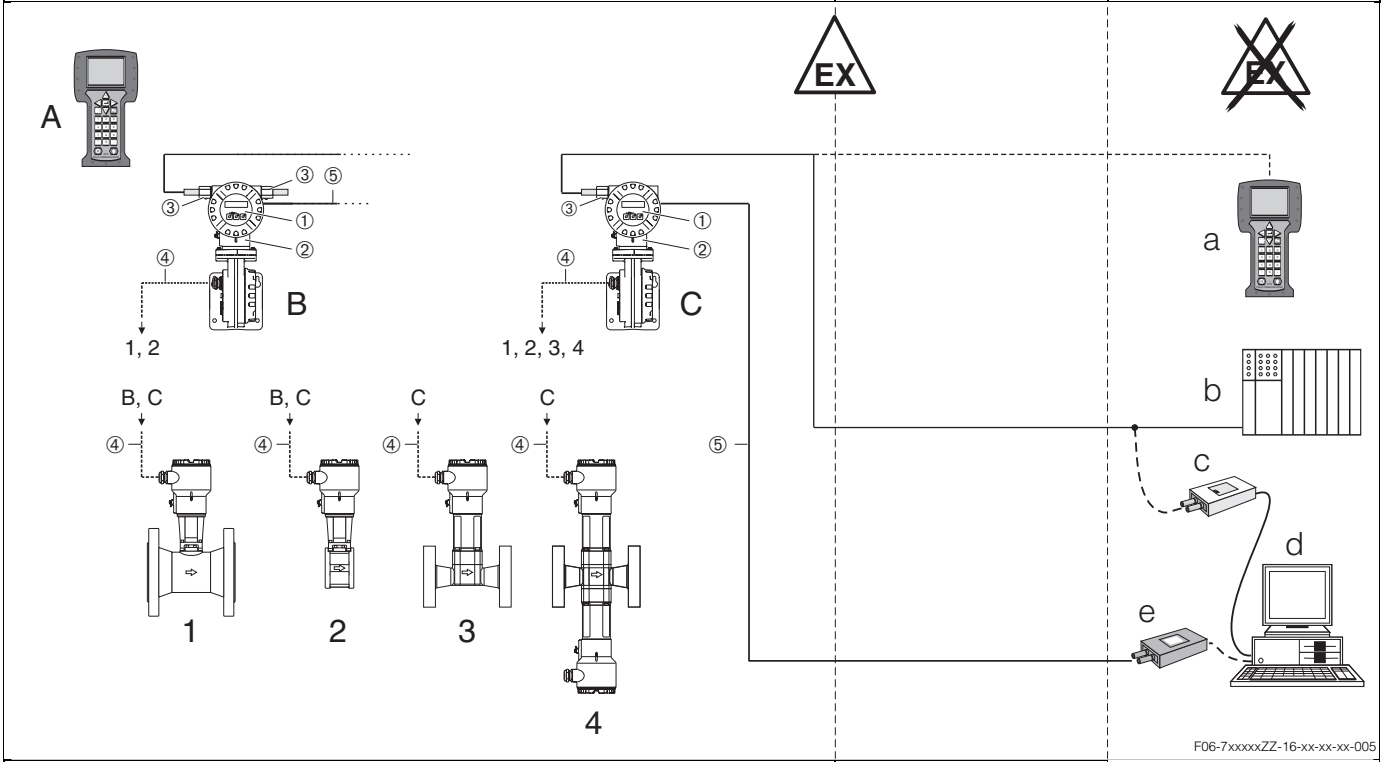
b = PLS/DCS or other devices with active input

c = HART modem, e.g. Commubox FXA191

d = PC with configuration tool

e = Service Interface FXA 193 (see Page 11)

Measuring system Prowirl 72 / Prowirl 73 remote version



A = HART handheld DXR 275***I5*
(Ex-version for Class I, Div. 1, ABCD)
DXR 375****KL*
(Ex-version for Class I, Div. 1, ABCD)

Prowirl 73:
B = Transmitter Prowirl 73
1 = Sensor F (DN 1/2"...12")
Standard version
PN 10...40; Cl 150...300; JIS 10...20K
2 = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K

Prowirl 72:
C = Transmitter Prowirl 72
1 = Sensor F (DN 1/2"...12");
Standard version
PN 10...40; Cl 150...300; JIS 10...20K
2 = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K
3 = Sensor F (DN 1/2"...6");
High pressure version
PN 64...160; Cl 600; JIS 40K
4 = Sensor F (DN 1/2"...6");
Dualsens
PN 10...160; Cl 150...600; JIS 10...40K

① Transmitter electronics Prowirl 72 resp. 73 in:
Cl. I Div. 1 Groups ABCD
Cl. I Div. 1 Zone 0 AEx ia IIC
Cl. II Div. 1 Groups EFG
Cl. III

② Prowirl 72 resp. 73 standard housing

③ Cable entries:
Choice of thread for cable entries, M20x1.5 or ½" NPT or G ½" thread.

④ Connecting cable remote version: see Page 11.

⑤ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect a Prowirl 72 or 73 to the Service Interface FXA 193.

✎ Note!
For ambient and fluid temperature ranges, and temperature class, see Page 6.

a = HART handheld DXR 275 resp. DXR 375

b = PLS/DCS or other devices with active input

c = HART modem, e.g. Commubox FXA191

d = PC with configuration tool

e = Service Interface FXA 193 (see Page 11)

Temperature tables compact version

Measuring system Prowirl 72 (compact version)

- Sensor standard temperature version:
  Prowirl 72*-**0********A/W**

Prowirl F/W	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °F ... +104 °F	176	203	266	374	536	536
at T_a = -40 °F ... +140 °F	–	203	266	374	536	536
at T_a = -40 °F ... +158 °F	–	–	266	374	536	536

The minimum medium temperature is –40 °F.

- High/low temperature sensor version, high pressure version and Dualsens version:
  Prowirl 72*-**1********A/W, Prowirl 72***-**2********A/W, Prowirl 72***-**3********A/W**

Prowirl F/W	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °F ... +104 °F	176	203	266	374	554	824
at T_a = -40 °F ... +140 °F	–	203	266	374	554	824
at T_a = -40 °F ... +158 °F	–	–	266	374	554	824

The minimum medium temperature is –328 °F.

Measuring system Prowirl 73 (compact version)

- Sensor standard temperature version:
  Prowirl 73*-**0********A/W**

Prowirl F/W	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °F ... +104 °F	176	203	266	374	554	824
at T_a = -40 °F ... +140 °F	–	203	266	374	554	824
at T_a = -40 °F ... +158 °F	–	–	266	374	554	824

The minimum medium temperature is –40 °F.

Temperature tables remote version

Measuring system Prowirl 72 (remote version)

- Sensor standard temperature version:
  Prowirl 72*-**0********A/W**

Prowirl F/W	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °F ... +104 °F	176	203	266	374	536	536
at T_a = -40 °F ... +140 °F	–	203	266	374	536	536
at T_a = -40 °F ... +185 °F	–	–	266	374	536	536

The minimum medium temperature is –40 °F.

- High/low temperature sensor version, high pressure version and Dualsens version:
  Prowirl 72*-**1********A/W, Prowirl 72***-**2********A/W, Prowirl 72***-**3********A/W**

Prowirl F/W	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °F ... +104 °F	176	203	266	374	554	824
at T_a = -40 °F ... +140 °F	–	203	266	374	554	824
at T_a = -40 °F ... +185 °F	–	–	266	374	554	824

The minimum medium temperature is –328 °F.

- Transmitter Prowirl 72:
  Prowirl 72*-********A/W**

	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
Prowirl 72	104	140	176	176	176	176

The minimum ambient temperature is –40 °F.

Measuring system Prowirl 73 (remote version)

- Sensor standard temperature version:
  Prowirl 73*-**0********A/W**

Prowirl F/W	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °F ... +104 °F	176	203	266	374	554	824
at T_a = -40 °F ... +140 °F	–	203	266	374	554	824
at T_a = -40 °F ... +185 °F	–	–	266	374	554	824

The minimum medium temperature is –40 °F.

- Transmitter Prowirl 73:
  Prowirl 73*-********A/W**

	Max. medium temperature [°F] in					
	T6	T5	T4	T3	T2	T1
Prowirl 73	104	140	176	176	176	176

The minimum ambient temperature is –40 °F.

Approvals

No. / approval type	Description
I.D. 3015769 (see Page 9 for notes on special conditions)	for the electric flow measuring system Prowirl 72 resp. 73 **Identification:** see below

Measuring system Prowirl 72, intrinsically safe version IS (compact version)

P r o w i r l 7 2 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, pulse
		W = 4...20 mA HART
		N = Cl. I, Div. 1
Prowirl 72 F	DN 1/2"...12"	Cl. I, Div. 1 Groups ABCD
		Cl. II, Div. 1 Groups EFG
		Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 72 W	DN 1/2"...6"	Cl. I, Div. 1 Groups ABCD
		Cl. II, Div. 1 Groups EFG
		Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia

Measuring system Prowirl 72, intrinsically safe version IS (remote version)

P r o w i r l 7 2 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, pulse
		W = 4...20 mA HART
		N = Cl. I, Div. 1
Transmitter Prowirl 72 (remote version)		
Prowirl 72		Cl. I, Div. 1 Groups ABCD
		Cl. II, Div. 1 Groups EFG
		Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia
Sensor Prowirl F/W (remote version)		
Prowirl 72 F	DN 1/2"...12"	Cl. I, Div. 1 Groups ABCD
		Cl. II, Div. 1 Groups EFG
		Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 72 W	DN 1/2"...6"	Cl. I, Div. 1 Groups ABCD
		Cl. II, Div. 1 Groups EFG
		Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia

Measuring system Prowirl 73, intrinsically safe version IS (compact version)

Prowirl 73 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, frequency
		W = 4...20 mA HART
		N = Cl. I, Div. 1
Prowirl 73 F	DN 1/2"...12"	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 73 W	DN 1/2"...6"	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia

Measuring system Prowirl 73, intrinsically safe version IS (remote version)

Prowirl 73 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, frequency
		W = 4...20 mA HART
		N = Cl. I, Div. 1
Transmitter Prowirl 73 (remote version)		
Prowirl 73		Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia
Sensor Prowirl F/W (remote version)		
Prowirl 73 F	DN 1/2"...12"	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 73 W	DN 1/2"...6"	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG
		Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia

Notified body

The Prowirl measuring system was tested for approval by the following named entity:
FM: Factory Mutual Research

Special conditions

1. Control room equipment shall not use or generate more than 250 V rms.

Caution!

2. Use supply wires suitable for +50 °F above maximum ambient temperature.
3. The specified temperature class in conjunction with the ambient temperature and the medium temperature must be in compliance with the tables on Page 4 and 5.
4. It is not permissible to connect the service adapter in explosive atmospheres.
5. Install per National Electrical Code. Install intrinsically safe circuits per NEC ANSI/ NFPA 70 and ISA RP 12.6 respecting the explosionproof integrity of the enclosure.

Warning!

6. Substitution of components may impair intrinsic safety.
7. The flowmeter must be integrated into the potential equalisation system (see Fig. 1).

General warnings

Warning!

- Installation, connection to the electricity supply, commissioning and maintenance of the devices must be carried out by qualified specialists trained to work on Ex-rated devices.
- Compliance with national regulations relating to the installation of devices in potentially explosive atmospheres is mandatory, if such regulations exist.
- The manufacturer's guidelines for all devices connected to the intrinsically safe circuits must be observed.
- To rotate the transmitter housing, use the same procedure as for safe area versions. The transmitter housing may also be rotated during operation.

Electrical connections

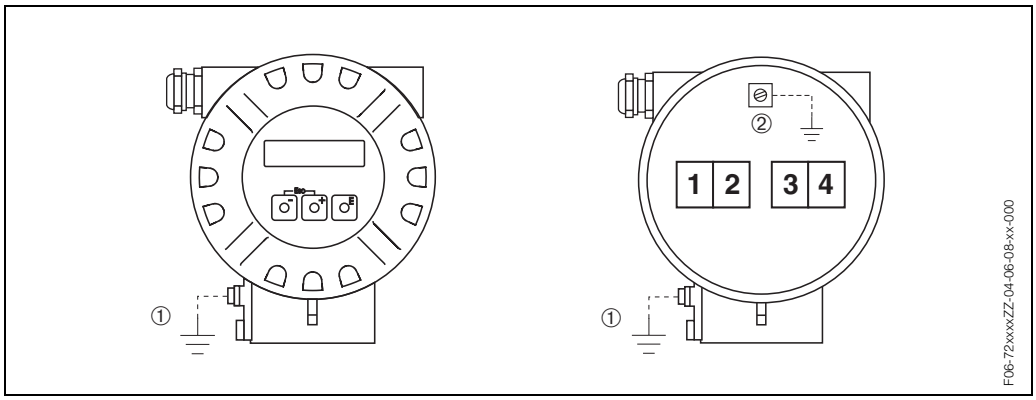


Fig. 1: Electrical connections Prowirl 72 resp. Prowirl 73

① = Ground terminal for potential equalisation
② = Ground terminal in the wiring compartment

Caution!
- Ground potential equalisation must exist between the safe and hazardous area.
- The transmitter has to be securely connected to the potential equalization system using either the transmitter's external screw terminal ①, or the ground terminal ② in thewiring compartment.
- Alternatively, the sensor and the transmitter (compact version) or the connection housing can be connected to the potential equalization system via the pipeline when a ground connection according to regulations can be assured.

The table below contains the values that are identical for all versions, irrespective of the type code.

Transmitter Prowirl 72*-******N****W; Prowirl 73***-******N****W**

Terminals	**1 (+)**	**2 (–)**
Designation	Power supply / 4...20 mA HART	
Intrinsically safe circuit	yes	
U_i	30 V	
I_i	300 mA	
P_i	1 W	
L_i	0	
C_i	5,3 nF	

Transmitter Prowirl 72*-******N****A; Prowirl 73***-******N****A**

Terminals	**1 (+)**	**2 (–)**	**3 (+)**	**4 (–)**
Designation	Power supply / 4...20 mA HART		Optional Pulse/status output	
Intrinsically safe circuit	yes		yes	
U_i	30 V		30 V	
I_i	300 mA		300 mA	
P_i	1 W		1 W	
L_i	0		0	
C_i	5,3 nF		0	

Service adapter

The service connector is only used to connect the Service Interface FXA 193 approved by Endress+Hauser.

⚠ Warning!
It is not permissible to connect the service adapter in explosive atmospheres.

Cable entries

Choice of thread for cable entries, M20x1.5 or ½" NPT or G ½" thread (see also the figures on Pages 2 and 3, number ③).

Cable specifications

The sensor cable connection between sensor and transmitter has an IS type of protection rating (see also the figures on Pages 2 and 3, number ④).
The max. cable length is 320 ft (100 m) for instrinsically safe use. Functionally the cable length is limited to 98 ft (30 m).
The max. capacitance of the cable is 300 µF/ft (1 µF/km).
The max. cable inductivity is 0.30 µH/ft (1 mH/km).
The cable delivered by E+H (max. 98 ft (30 m)) fulfils these requirements.

Device identification

Transmitter Prowirl 72 and F/W sensor resp. Prowirl 73 and F/W sensor.

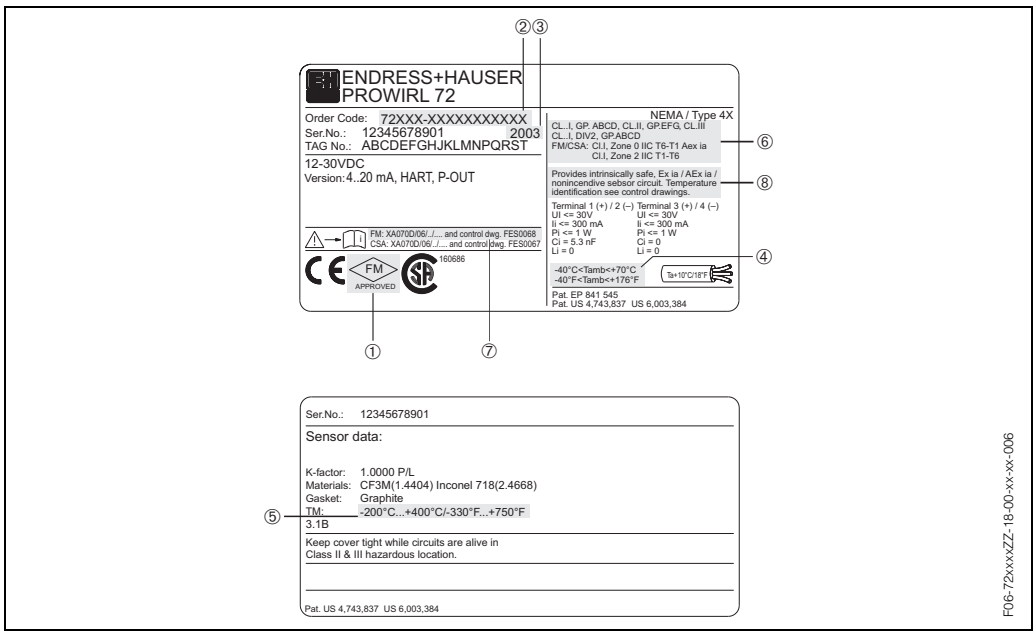


Fig. 2: Nameplate of transmitter and nameplate of sensor (example)

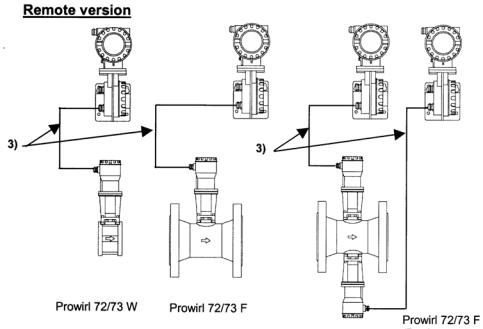
No.	Meaning
①	Label of the notified body: Factory Mutual Research
②	Type code
③	Year of manufacture
④	Ambient temperature range
⑤	Maximum medium temperature
⑥	Type of protection and explosion group for the measuring system
⑦	Applicable Ex documentation
⑧	Warning

Control drawings

Endress+Hauser Reinach hereby declares that the product is in conformity with the requirements of the FACTORY MUTUAL standards.

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 0 Group IIC
and Class II and III Division 1 Groups EFG

Remote version



Sensor:

PROWIRL 7** **-**1***N*****, PROWIRL 7** **-**2***N*****,
PROWIRL 7** **-**3***N*****, PROWIRL 7** **-**4***N***** and
PROWIRL 7** **-**6***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***N*****:

	Max. medium temperature				
	T6 2)	T5 2)	T4	T3	T2 - T1
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

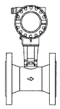
Transmitter:

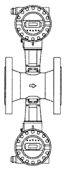
PROWIRL 7** **-**0***N*****, PROWIRL 7** ***-**1***N*****,
PROWIRL 7** **-**2***N*****, PROWIRL 7** ***-**3***N*****,
PROWIRL 7** **-**4***N***** and PROWIRL 7** **-**6***N*****:

	T6 2)	T5 2)	T4 - T1
Ta =	104°F	140°F	176°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***** and
PROWIRL 7** **-**6***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 = 158°F	---	---	266°F	374°F	554°F	824°F

PROWIRL 7** **-**0***N*****:

	Max. medium temperature				
	T6 2)	T5 2)	T4	T3	T2 - T1
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 = 158°F	---	---	266°F	374°F	536°F

Notes:

1) Assignment of Drawings:

Drawing-No.	Model Codes:
FES0068 B	Prowirl 7* **-******N*****
FES0068-0001 B	Prowirl 7* **-******N****A and Prowirl 7* **-******N****W
FES0068-0002 B	Prowirl 7* **-******N****H and Prowirl 7* **-******N****K
FES0068-0003 B	Prowirl 7* **-******N****H and Prowirl 7* **-******N****K
FES0068-0004 B	Prowirl 7* **-******N***** with Fieldbus Cable Connector

2) Temperature class T6 and T5 is not allowed for versions of Profibus PA and Fieldbus Foundation
(not for PROWIRL 7** **-******N****H and PROWIRL 7** **-******N****K)
3) Max. cable length for intrinsically safe installation 100m / 320ft for using cable parameters L_{Cable} = 1mH/km / 0.3µH/ft and C_{Cable} = 1µF/km / 300µF/ft
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
6) Dust tight seals must be used at conduit entries for Class II and III installation
7) Fieldbus cable connectors are suitable for Class I, Div. 2, Groups ABCD if non-incendive circuits are connected (see FES0068-0004 B)
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)

Aenderungen:						Ersetzt durch:
	A	24.03.03 / Bn	F		Alle gesetzlichen Urheberrechte vorbehalten.	
	B	08.09.03 / Bn	G		Diese Zeichnung darf ohne unsere	
	C		H		Genehmigung weder vervielfältigt werden	Ersatz für:
	D		J		noch dritten Personen und Konkurrenzfirmen	Ersteller: FES/Bn
	E		K		zugängig gemacht werden.	File: M:\ZEICHNG\...\030908c.doc **ID 1113**

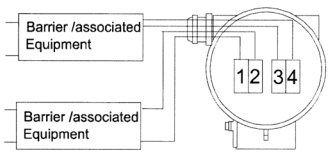
FM CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (IS and NI)
Compact Version, Remote version

Massstab			
Gezeichnet	23.09.02	Bn	
Geprüft			
Ex-geprüft	08.09.03	Bn	
Gesehen			

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

FES0068 B

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 0 Group IIC
and Class II and III Division 1 Groups EFG



Instrinsically safe installation

1) Control room equipment may not use or generate over 250 Vrms.
2) Wire all circuits for power supply per NEC ANSI/NFPA 70 and ISA RP 12.6.
3) Use entity approved safety barrier or other associated equipment that satisfy the following conditions:
$V_{oc} \leq V_{max}$, $I_{sc} \leq I_{max}$, $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$ transmitter entity parameters are as follows:
Terminals 1 and 2 (Hart, current output)

V_{max}	I_{max}	P_i	C_i	L_i
30 V	300 mA	1 W	5.3 nF	0

Terminals 3 and 4 (Pulse)

V_{max}	I_{max}	P_i	C_i	L_i
30 V	300 mA	1 W	0	0

4) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INSTRINSIC SAFETY.
5) Ex ia is defined as Intrinsically Safe

Notes:

This page applies to model code:
Prowirl 7* **-*****N****A, Prowirl 7* **-*******N****W**

Division 2 installation (without barrier)

6) Installation of transmitter circuit wiring according to NEC using threaded conduit.
7) **WARNING**: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
8) Terminal 1 and 2
Supply voltage: HART 12 ... 30 V
Signal current: 4 ... 20 mA (max. 25 mA)
9) Terminal 3 and 4
Pulse Output: max. 30 V, max. 30 mA

Class II, III installation (without barrier)

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

Aenderungen:						Ersetzt durch:
	A	24.03.03 / Bn	F		Alle gesetzlichen Urheberrechte vorbehalten.	
	B	08.09.03 / Bn	G		Diese Zeichnung darf ohne unsere	
	C		H		Genehmigung weder vervielfältigt werden	Ersatz für:
	D		J		noch dritten Personen und Konkurrenzfirmen	Ersteller: FES/Bn
	E		K		zugängig gemacht werden.	File: M:\ZEICHNG\...\030908c.doc **ID 1113**

FM CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (IS and NI)
Current output, Hart, Pulse
ENTITY INSTALLATION

Massstab			
Gezeichnet	23.09.02	Bn	
Geprüft			
Ex-geprüft	08.09.03	Bn	
Gesehen			

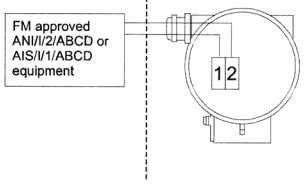
Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

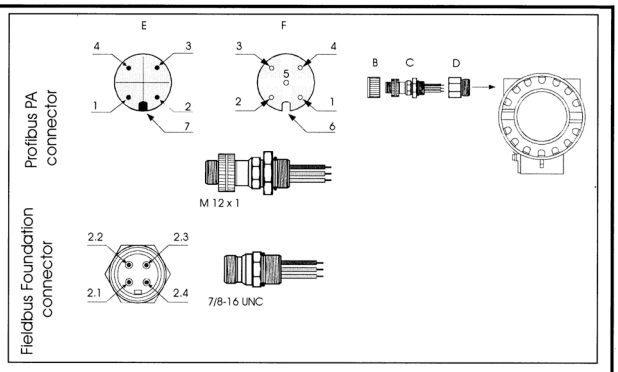
FES0068-0001 B

This page applies to model code: **Prowirl 7* **-******N***** with Fieldbus Cable Connector**

Non Hazardous Locations

Hazardous Locations
Class I Division 2 Groups ABCD or
Class I Zone 2 Groups IIC,





B = Protection cap for connector, C = Fieldbus connector, D = Thread adapter
E = Connector on housing (male), F = Connector (female)

Pin assignment:

Profibus PA
1 = Brown wire, PA+ (terminal 26)
2 = Not connected
3 = Blue wire, PA- (terminal 27)
4 = Black wire, ground
5 = Female connector not assigned
6 = Positioning groove
7 = Positioning key

Fieldbus Foundation
2.1 = Brown wire, FF+ (terminal 26)
2.2 = Blue wire, FF- (terminal 27)
2.3 = Not connected
2.4 = Yellow/green wire, ground

Notes:
1) Install per National Electrical Code
2) Fieldbus cable connectors are suitable for Class I, Div. 2, Groups ABCD if non-incendive circuits are connected
3) For nonincendive wiring of fieldbus communication circuit, make shure that
Ccable ≤ Ca and Lcable ≤ La

Aenderungen:						Ersetzt durch:
	A	24.03.03 / Bn	F		Alle gesetzlichen Urheberrechte vorbehalten.	
	B	08.09.03 / Bn	G		Diese Zeichnung darf ohne unsere	Ersatz für:
	C		H		Genehmigung weder vervielfältigt werden	Ersteller: FES/Bn
	D		J		noch dritten Personen und Konkurrenzfirmen	File: M:\ZEICHNG\...\030908c.doc ID 1113
	E		K		zugängig gemacht werden.	

FM CONTROL DRAWING
PROWIRL 72, PROWIRL 73
Fieldbus Cable Connector
NI installation

Massstab

Gezeichnet	23.09.02	Bn
Geprüft		
Ex-geprüft	08.09.03	Bn
Gesehen		

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

FES0068-0004 B

Supplementary documentation
Prowirl 72:
TI 062D/06/
BA 084D/06/

Prowirl 73
TI 064D/06/
BA 094D/06/

USA
Endress+Hauser Inc.
Greenwood, Indiana
Tel. (317) 535-7138
Fax. (317) 535-8498

Canada
Endress+Hauser Ltd.
Burlington, Ontario
Tel. (905) 681 92 92
Fax. (905) 681 94 44

Instruments International
Endress+Hauser GmbH+Co.
Weil am Rhein
Germany
Tel. (07621) 975-02
Fax. (07621) 975 345

XA070D/06/en/12.03
50104719
FM+SGML 6.0

PROline prowirl 72 / prowirl 73
Ex-i Intrinsically safe version (IS)
Division 1

(en)

Ex documentation for the BA 084D (Prowirl 72) and BA 094D (Prowirl 73) operating instruction

according to CANADIAN STANDARDS ASSOCIATION

Example: **Class I, Division 1, Groups ABCD**

Canadian Standards Association

Class

I	Class I (Gas)
II	Class II (Dust)
III	Class III (Fibre)

Division

1	Division 1
2	Division 2

Group

CSC / NEC	Gases, vapours and dusts (Examples)	Min. ignition temperature [µJ]
A	Acetylene, carbon disulfide (Class I)	0.02
B	Hydrogen, ethyl nitrate (Class I)	0.02
C	Ethylene, isoprene (Class I)	0.06
D	Acetone, ethane, benzene (Class I)	0.18
E	Metallic powder (Class II)	
F	Coal dust (Class II)	
G	Grain dust (Class II)	
	Textile fibres (Class III)	

Type of Protection

	Explosionproof
	Intrinsically Safe Apparatus
	Associated Apparatus with Intrinsically Safe Connections
	Nonincendive Field Wiring Circuit
	Pressurized
	Associated Pressurization Systems/Components
	Nonincendive
	Dust-Ignitionproof
	Special Protection

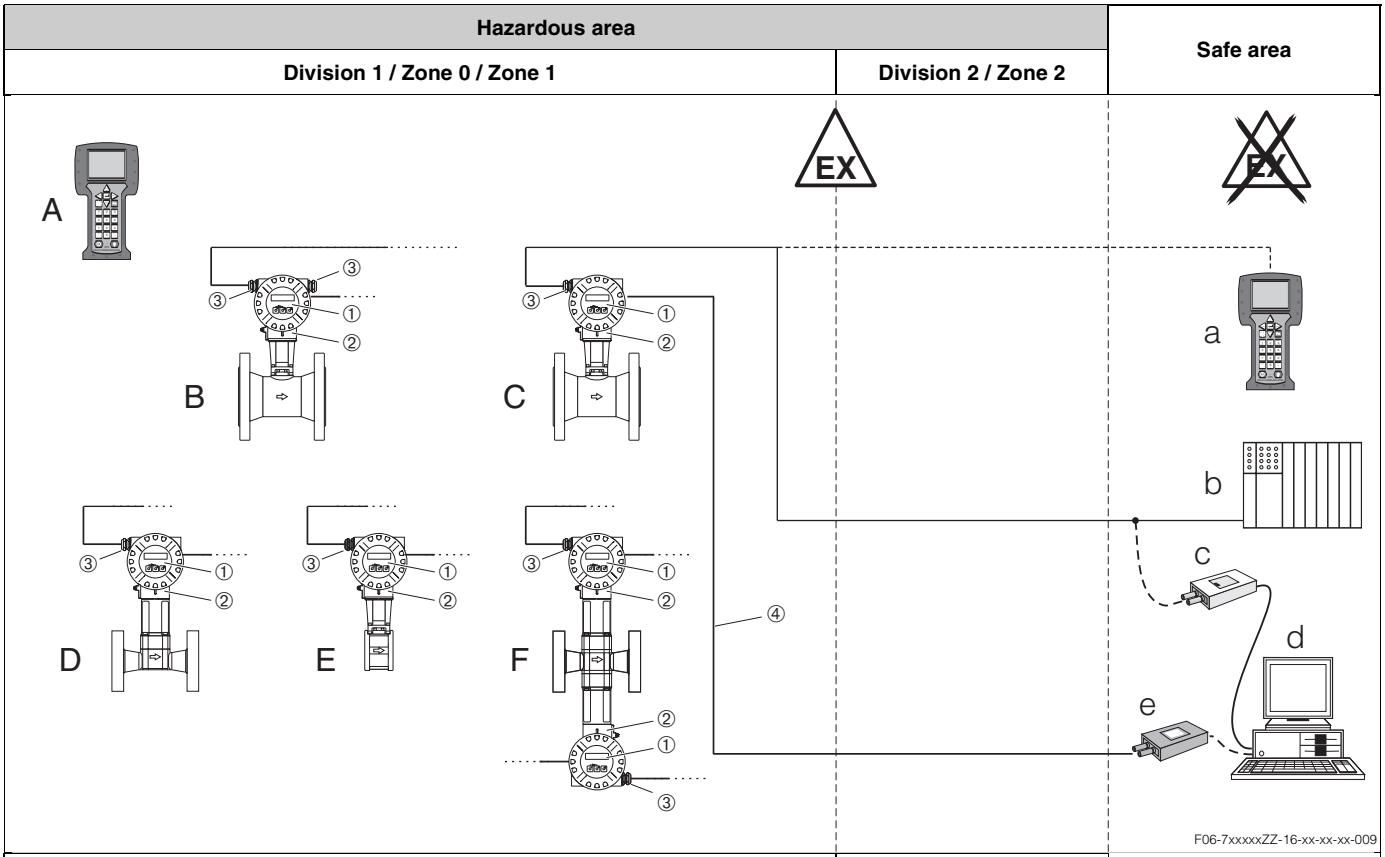
Temperature Class

CSA	Maximum surface temperature	
T1	450 °C	842 °F
T2	300 °C	572 °F
T2A	280 °C	536 °F
T2B	260 °C	500 °F
T2C	230 °C	446 °F
T2D	215 °C	419 °F
T3	200 °C	392 °F
T3A	180 °C	356 °F
T3B	165 °C	329 °F
T3C	160 °C	320 °F
T4	135 °C	275 °F
T4A	120 °C	248 °F
T5	100 °C	212 °F
T6	85 °C	185 °F

Endress + Hauser

The Power of Know How

Measuring system Prowirl 72 / Prowirl 73 compact version



A = HART handheld DXR 275***I6*
(Ex-version for Class I, Div. 1, ABCD)
DXR 375****KL*
(Ex-version for Class I, Div. 1, ABCD)

Prowirl 73:
B = Sensor F (DN 1/2"...12")
Standard version
PN 10...40; Cl 150...300; JIS 10...20K
E = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K

Prowirl 72:
C = Sensor F (DN 1/2"...12");
Standard version
PN 10...40; Cl 150...300; JIS 10...20K
D = Sensor F (DN 1/2"...6");
High pressure version
PN 64...160; Cl 600; JIS 40K
E = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K
F = Sensor F (DN 1/2"...6");
Dualsens
PN 10...160; Cl 150...600; JIS 10...40K

① Transmitter electronics Prowirl 72 resp. 73 in:
Cl. I Div. 1 Groups ABCD
Cl. I Div. 1 Zone 0 AEx ia IIC
Cl. II Div. 1 Groups EFG
Cl. III

② Prowirl 72 resp. 73 standard housing

③ Cable entries:
Choice of thread for cable entries, M20x1.5 or ½" NPT or G ½" thread.

④ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect a Prowirl 72 or 73 to the Service Interface FXA 193.

✎ Note!
For ambient and fluid temperature ranges, and temperature class, see Page 5.

a = HART handheld
DXR 275 resp. DXR 375

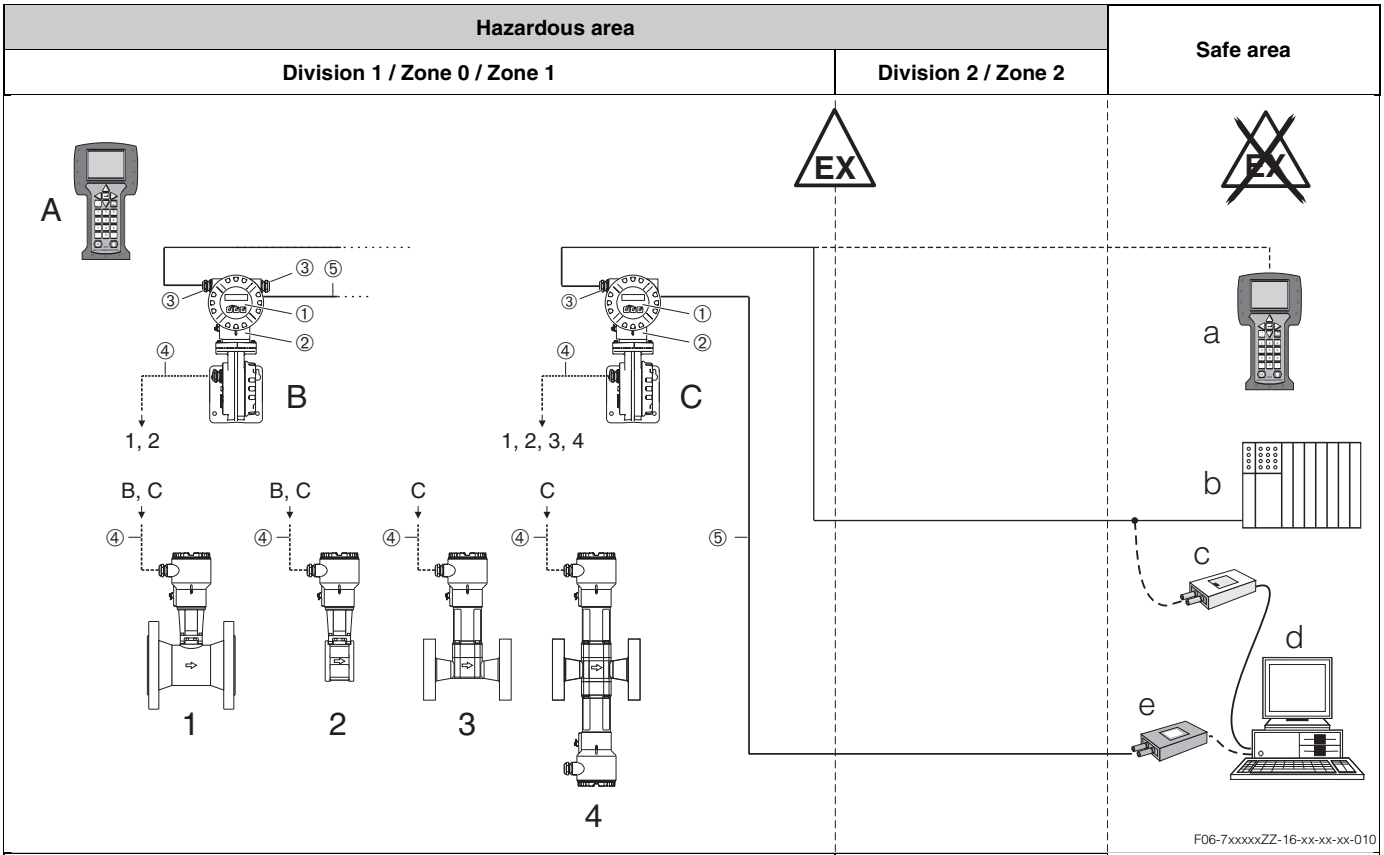
b = PLS/DCS or other devices with active input

c = HART modem, e.g. Commubox FXA191

d = PC with configuration tool

e = Service Interface FXA 193 (see Page 11)

Measuring system Prowirl 72 / Prowirl 73 remote version



A = HART handheld
DXR 275***I6*
(Ex-version for Class I, Div. 1, ABCD)
DXR 375****KL*
(Ex-version for Class I, Div. 1, ABCD)

Prowirl 73:
B = Transmitter Prowirl 73
1 = Sensor F (DN 1/2"...12")
Standard version
PN 10...40; Cl 150...300; JIS 10...20K
2 = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K

Prowirl 72:
C = Transmitter Prowirl 72
1 = Sensor F (DN 1/2"...12");
Standard version
PN 10...40; Cl 150...300; JIS 10...20K
2 = Sensor W (DN 1/2"...6");
Wafer
PN 10...40; Cl 150...300; JIS 10...20K
3 = Sensor F (DN 1/2"...6");
High pressure version
PN 64...160; Cl 600; JIS 40K
4 = Sensor F (DN 1/2"...6");
Dualsens
PN 10...160; Cl 150...600; JIS 10...40K

① Transmitter electronics Prowirl 72 resp. 73 in:
Cl. I Div. 1 Groups ABCD
Cl. I Div. 1 Zone 0 AEx ia IIC
Cl. II Div. 1 Groups EFG
Cl. III

② Prowirl 72 resp. 73 standard housing

③ Cable entries:
Choice of thread for cable entries, M20x1.5 or ½" NPT or G ½" thread.

④ Connecting cable remote version: see Page 11.

⑤ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect a Prowirl 72 or 73 to the Service Interface FXA 193.

✎ Note!
For ambient and fluid temperature ranges, and temperature class, see Page 6.

a = HART handheld
DXR 275 resp. DXR 375

b = PLS/DCS or other devices with active input

c = HART modem, e.g. Commubox FXA191

d = PC with configuration tool

e = Service Interface FXA 193 (see Page 11)

Temperature tables compact version

Measuring system Prowirl 72 (compact version)

- Sensor standard temperature version:
  Prowirl 72*-**0********A/W**

Prowirl F/W	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °C ... +40 °C	80	95	130	190	280	280
at T_a = -40 °C ... +60 °C	–	95	130	190	280	280
at T_a = -40 °C ... +70 °C	–	–	130	190	280	280

The minimum medium temperature is –40 °C.

- High/low temperature sensor version, high pressure version and Dualsens version:
  Prowirl 72*-**1********A/W, Prowirl 72***-**2********A/W, Prowirl 72***-**3********A/W**

Prowirl F/W	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °C ... +40 °C	80	95	130	190	290	440
at T_a = -40 °C ... +60 °C	–	95	130	190	290	440
at T_a = -40 °C ... +70 °C	–	–	130	190	290	440

The minimum medium temperature is –200 °C.

Measuring system Prowirl 73 (compact version)

- Sensor standard temperature version:
  Prowirl 73*-**0********A/W**

Prowirl F/W	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °C ... +40 °C	80	95	130	190	290	440
at T_a = -40 °C ... +60 °C	–	95	130	190	290	440
at T_a = -40 °C ... +70 °C	–	–	130	190	290	440

The minimum medium temperature is –40 °C.

Temperature tables remote version

Measuring system Prowirl 72 (remote version)

- Sensor standard temperature version:
  Prowirl 72*-**0********A/W**

Prowirl F/W	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °C ... +40 °C	80	95	130	190	280	280
at T_a = -40 °C ... +60 °C	–	95	130	190	280	280
at T_a = -40 °C ... +70 °C	–	–	130	190	280	280

The minimum medium temperature is –40 °C.

- High/low temperature sensor version, high pressure version and Dualsens version:
  Prowirl 72*-**1********A/W, Prowirl 72***-**2********A/W, Prowirl 72***-**3********A/W**

Prowirl F/W	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °C ... +40 °C	80	95	130	190	290	440
at T_a = -40 °C ... +60 °C	–	95	130	190	290	440
at T_a = -40 °C ... +70 °C	–	–	130	190	290	440

The minimum medium temperature is –328 °C.

- Transmitter Prowirl 72:
  Prowirl 72*-********A/W**

	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
Prowirl 72	40	60	80	80	80	80

The minimum ambient temperature is –40 °C.

Measuring system Prowirl 73 (remote version)

- Sensor standard temperature version:
  Prowirl 73*-**0********A/W**

Prowirl F/W	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
at T_a = -40 °C ... +40 °C	80	95	130	190	290	440
at T_a = -40 °C ... +60 °C	–	95	130	190	290	440
at T_a = -40 °C ... +70 °C	–	–	130	190	290	440

The minimum medium temperature is –40 °C.

- Transmitter Prowirl 73:
  Prowirl 73*-********A/W**

	Max. medium temperature [°C] in					
	T6	T5	T4	T3	T2	T1
Prowirl 73	40	60	80	80	80	80

The minimum ambient temperature is –40 °C.

Approvals

No. / approval type	Description
160686-135901 (see Page 9 for notes on special conditions)	for the electric flow measuring system Prowirl 72 resp. 73 **Identification:** see below

Measuring system Prowirl 72, intrinsically safe version IS (compact version)

P r o w i r l 7 2 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, pulse W = 4...20 mA HART
		N = Cl. I, Div. 1
Prowirl 72 F	DN 15...300	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 72 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia

Measuring system Prowirl 72, intrinsically safe version IS (remote version)

P r o w i r l 7 2 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, pulse W = 4...20 mA HART
		N = Cl. I, Div. 1
Transmitter Prowirl 72 (remote version)		
Prowirl 72		Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Sensor Prowirl F/W (remote version)		
Prowirl 72 F	DN 15...300	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 72 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia

Measuring system Prowirl 73, intrinsically safe version IS (compact version)

Prowirl 73 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, frequency
		W = 4...20 mA HART
		N = Cl. I, Div. 1
Prowirl 73 F	DN 15...300	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 73 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia

Measuring system Prowirl 73, intrinsically safe version IS (remote version)

Prowirl 73 * * * _ * * * * * * . * * * * .		
		A = 4...20 mA HART, frequency
		W = 4...20 mA HART
		N = Cl. I, Div. 1
Transmitter Prowirl 73 (remote version)		
Prowirl 73		Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III
		Cl. I, Zone 0 IIC T6-T1 AEx ia
Sensor Prowirl F/W (remote version)		
Prowirl 73 F	DN 15...300	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia
Prowirl 73 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG
		Cl. III Cl. I, Zone 0 IIC T6-T1 AEx ia

Notified body

The Prowirl measuring system was tested for approval by the following named entity:
CSA: Canadian Standards Association

Special conditions

1. Control room equipment shall not use or generate more than 250 V rms.

Caution!

2. Use supply wires suitable for +10 °C above maximum ambient temperature.
3. The specified temperature class in conjunction with the ambient temperature and the medium temperature must be in compliance with the tables on Page 4 and 5.
4. It is not permissible to connect the service adapter in explosive atmospheres.
5. Install per National Electrical Code. Install intrinsically safe circuits per CEC and ISA RP 12.6 respecting the explosionproof integrity of the enclosure.

Warning!

6. Substitution of components may impair intrinsic safety.
7. The flowmeter must be integrated into the potential equalisation system (see Fig. 1).

General warnings

Warning!

- Installation, connection to the electricity supply, commissioning and maintenance of the devices must be carried out by qualified specialists trained to work on Ex-rated devices.
- Compliance with national regulations relating to the installation of devices in potentially explosive atmospheres is mandatory, if such regulations exist.
- The manufacturer's guidelines for all devices connected to the intrinsically safe circuits must be observed.
- To rotate the transmitter housing, use the same procedure as for safe area versions. The transmitter housing may also be rotated during operation.

Electrical connections

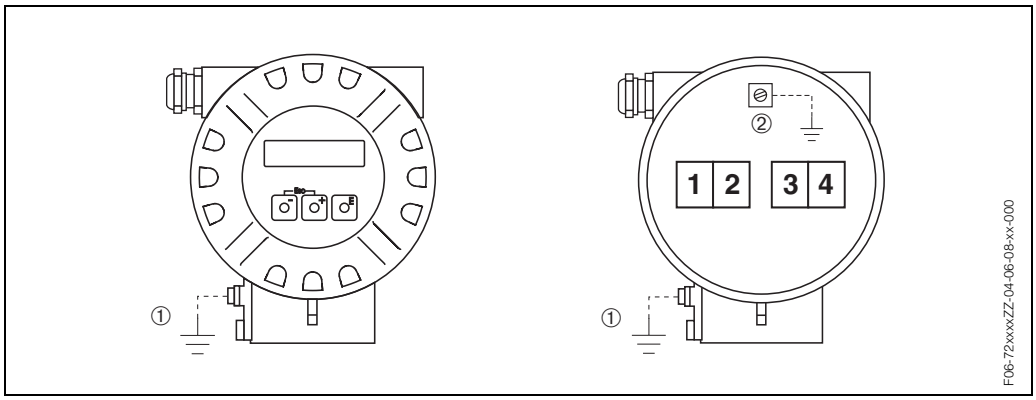


Fig. 3: Electrical connections Prowirl 72 resp. Prowirl 73

① = Ground terminal for potential equalisation
② = Ground terminal in the wiring compartment

Caution!
- Ground potential equalisation must exist between the safe and hazardous area.
- The transmitter has to be securely connected to the potential equalization system using either the transmitter's external screw terminal ①, or the ground terminal ② in the wiring compartment.
- Alternatively, the sensor and the transmitter (compact version) or the connection housing can be connected to the potential equalization system via the pipeline when a ground connection according to regulations can be assured.

The table below contains the values that are identical for all versions, irrespective of the type code.

Transmitter Prowirl 72*-******N****W; Prowirl 73***-******N****W**

Terminals	**1 (+)**	**2 (–)**
Designation	Power supply / 4...20 mA HART	
Intrinsically safe circuit	yes	
U_i	30 V	
I_i	300 mA	
P_i	1 W	
L_i	0	
C_i	5,3 nF	

Transmitter Prowirl 72*-******N****A; Prowirl 73***-******N****A**

Terminals	**1 (+)**	**2 (–)**	**3 (+)**	**4 (–)**
Designation	Power supply / 4...20 mA HART		Optional Pulse/status output	
Intrinsically safe circuit	yes		yes	
U_i	30 V		30 V	
I_i	300 mA		300 mA	
P_i	1 W		1 W	
L_i	0		0	
C_i	5,3 nF		0	

Service adapter

The service connector is only used to connect the Service Interface FXA 193 approved by Endress+Hauser.

⚠ Warning!
It is not permissible to connect the service adapter in explosive atmospheres.

Cable entries

Choice of thread for cable entries, M20x1.5 or ½" NPT or G ½" thread (see also the figures on Pages 2 and 3, number ③).

Cable specifications

The sensor cable connection between sensor and transmitter has an IS type of protection rating (see also the figures on Pages 2 and 3, number ④).
The max. cable length is 100 m for instrinsically safe use. Functionally the cable length is limited to 30 m.
The max. capacitance of the cable is 1 µF/km.
The max. cable inductivity is 1 mH/km.
The cable delivered by E+H (max. 30 m) fulfils these requirements.

Device identification

Transmitter Prowirl 72 and F/W sensor resp. Prowirl 73 and F/W sensor.

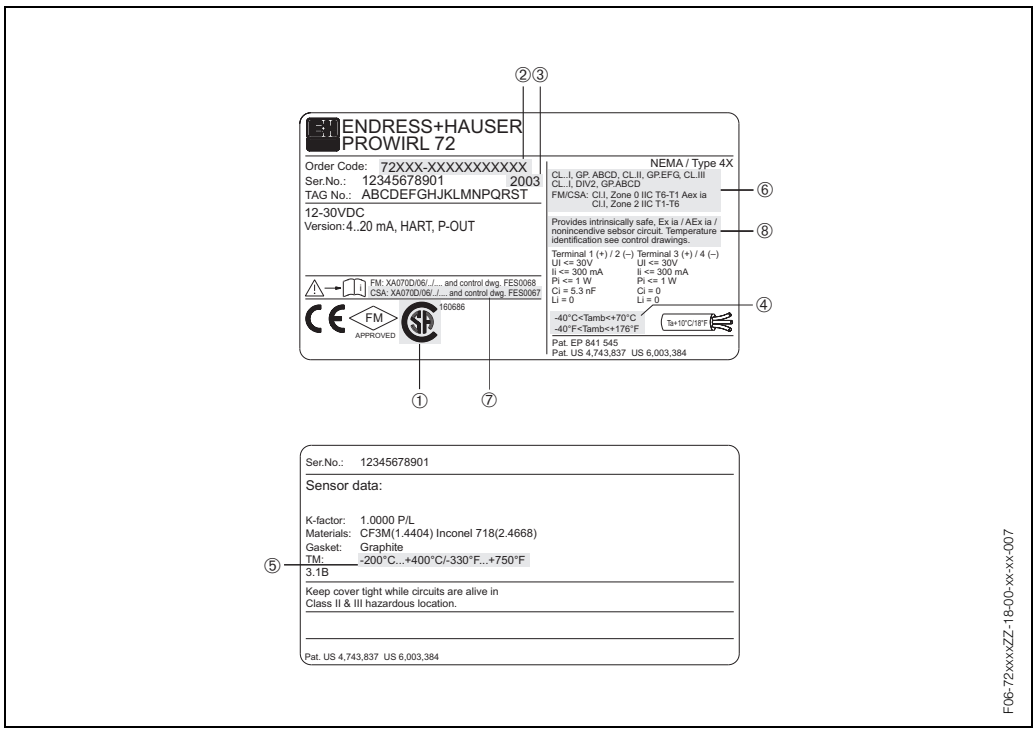


Fig. 4: Nameplate of transmitter and nameplate of sensor (example)

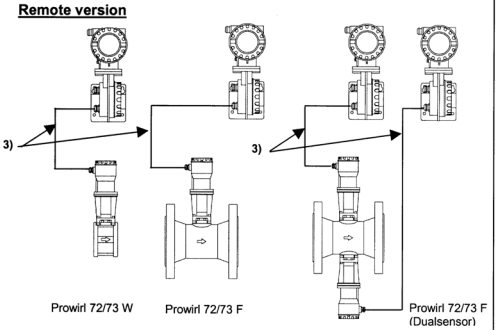
No.	Meaning
①	Label of the notified body: Canadian Standards Association
②	Type code
③	Year of manufacture
④	Ambient temperature range
⑤	Maximum medium temperature
⑥	Type of protection and explosion group for the Prowirl 72 measuring system
⑦	Applicable Ex documentation
⑧	Warning

Control drawings

Endress+Hauser Reinach hereby declares that the product is in conformity with the requirements of the CANADIAN STANDARDS ASSOCIATION.

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 0 Group IIC
and Class II and III Division 1 Groups EFG

Remote version



Sensor:

PROWIRL 7** **-**1***N*****, PROWIRL 7** **-**2***N*****,
PROWIRL 7** **-**3***N*****, PROWIRL 7** **-**4***N***** and
PROWIRL 7** **-**6***N*****:

	Max. medium temperature					
	T6 2)	T5 2)	T4	T3	T2	T1
Ta = 40°C	80°C	95°C	130°C	190°C	290°C	440°C
Ta = 60°C	---	95°C	130°C	190°C	290°C	440°C
Ta = 85°C	---	---	130°C	190°C	290°C	440°C

PROWIRL 7** **-**0***N*****:

	Max. medium temperature				
	T6 2)	T5 2)	T4	T3	T2 - T1
Ta = 40°C	80°C	95°C	130°C	190°C	280°C
Ta = 60°C	---	95°C	130°C	190°C	280°C
Ta = 85°C	---	---	130°C	190°C	280°C

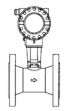
Transmitter:

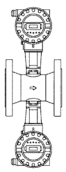
PROWIRL 7** **-**0***N*****, PROWIRL 7** **-**1***N*****,
PROWIRL 7** **-**2***N*****, PROWIRL 7** **-**3***N*****,
PROWIRL 7** **-**4***N***** and PROWIRL 7** **-**6***N*****:

	T6 2)	T5 2)	T4 - T1
Ta =	40°C	60°C	80°C

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***** and PROWIRL 7** **-**4***N***** and
PROWIRL 7** **-**6***N*****:

	Max. medium temperature					
	T6 2)	T5 2)	T4	T3	T2	T1
Ta = 40°C	80°C	95°C	130°C	190°C	290°C	440°C
Ta = 60°C	---	95°C	130°C	190°C	290°C	440°C
Ta = 70°C	---	---	130°C	190°C	290°C	440°C

PROWIRL 7** **-**0***N*****:

	Max. medium temperature				
	T6 2)	T5 2)	T4	T3	T2 - T1
Ta = 40°C	80°C	95°C	130°C	190°C	280°C
Ta = 60°C	---	95°C	130°C	190°C	280°C

Notes:

1) Assignment of Drawings:

Drawing-No.	Model Codes:
FES0067 B	Prowirl 7* **-******N*****
FES0067-0001 B	Prowirl 7* **-******N****A and Prowirl 7* **-******N****W
FES0067-0002 B	Prowirl 7* **-******N****H and Prowirl 7* **-******N****K
FES0067-0003 B	Prowirl 7* **-******N****H and Prowirl 7* **-******N****K
FES0067-0004 B	Prowirl 7* **-******N***** with Fieldbus Cable Connector

2) Temperature class T6 and T5 is not allowed for versions of Profibus PA and Fieldbus Foundation
(not for PROWIRL 7** **-******N****H and PROWIRL 7** **-******N****K)
3) Max. cable length for intrinsically safe installation 100m for using cable parameters L_{Cable} = 1mH/km and C_{Cable} = 1µF/km
4) Caution: Use supply wires suitable for 10°C above maximum ambient temperature
5) Caution: Surface temperature of transmitter enclosure can exceed 70°C depending on ambient temperature or medium temperature
6) Dust tight seals must be used at conduit entries for Class II and III installation
7) Fieldbus cable connectors are suitable for Class I, Div. 2, Groups A,B,C,D if non-incendive circuits are connected (see FES0067-0004 B)
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)

Aenderungen:						Ersetzt durch:
	A	24.03.03 / Bn	F		Alle gesetzlichen Urheberrechte vorbehalten.	
	B	08.09.03 / Bn	G		Diese Zeichnung darf ohne unsere	
	C		H		Genehmigung weder vervielfältigt werden	Ersatz für:
	D		J		noch dritten Personen und Konkurrenzfirmen	Ersteller: FES/Bn
	E		K		zugängig gemacht werden.	File: M:\ZEICHNG\...\030908c.doc **ID 1113**

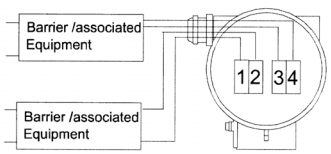
CSA CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (IS and NI)
Compact Version, Remote version

Massstab			
	Gezeichnet	23.09.02	Bn
	Geprüft		
	Ex-geprüft	08.09.03	Bn
	Gesehen		

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

FES0067 B

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 0 Group IIC
and Class II and III Division 1 Groups EFG



Instrinsically safe installation

1) Control room equipment may not use or generate over 250 Vrms.
2) Wire all circuits for power supply per ISA RP 12.06.01
3) Use entity approved safety barrier or other associated equipment that satisfy the following conditions:
$V_{oc} \leq V_{max}$, $I_{sc} \leq I_{max}$, $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$ transmitter entity parameters are as follows:
Terminals 1 and 2 (Hart, current output)

V_{max}	I_{max}	P_i	C_i	L_i
30 V	300 mA	1 W	5.3 nF	0

Terminals 3 and 4 (Pulse)

V_{max}	I_{max}	P_i	C_i	L_i
30 V	300 mA	1 W	0	0

4) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INSTRINSIC SAFETY.
5) Ex ia is defined as Intrinsically Safe

Notes:

This page applies to model code:
Prowirl 7* **-*****N****A, Prowirl 7* **-*******N****W**

Division 2 installation (without barrier)

6) Installation of transmitter circuit wiring according to Canadian Electrical Code using threaded conduit.
7) **WARNING**: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
8) Terminal 1 and 2
Supply voltage: HART 12 ... 30 V
Signal current: 4 ... 20 mA (max. 25 mA)
9) Terminal 3 and 4
Pulse Output: max. 30 V, max. 30 mA

Class II, III installation (without barrier)

10) Transmitter circuit wiring in conduit in accordance with the Canadian Electrical Code.

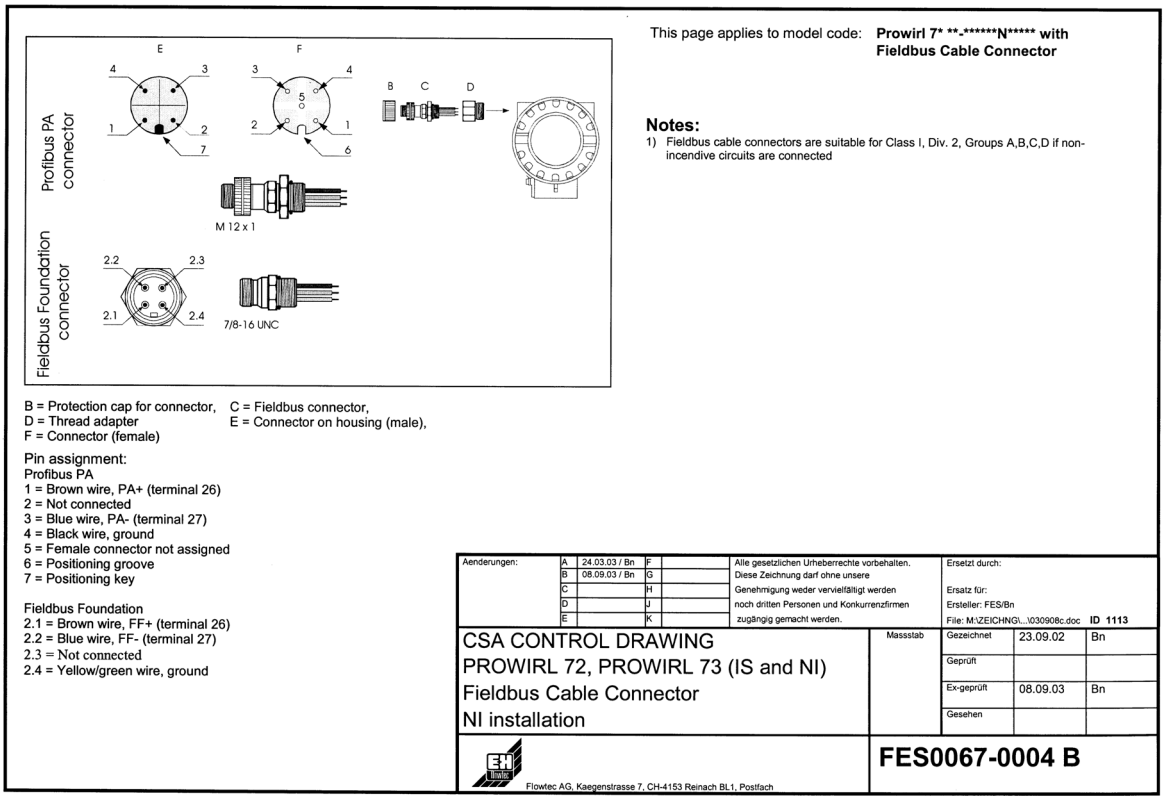
Aenderungen:						Ersetzt durch:
	A	24.03.03 / Bn	F		Alle gesetzlichen Urheberrechte vorbehalten.	
	B	08.09.03 / Bn	G		Diese Zeichnung darf ohne unsere	
	C		H		Genehmigung weder vervielfältigt werden	Ersatz für:
	D		J		noch dritten Personen und Konkurrenzfirmen	Ersteller: FES/Bn
	E		K		zugängig gemacht werden.	File: M:\ZEICHNG\...\030908c.doc **ID 1113**

CSA CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (IS and NI)
Current output, Hart, Pulse
ENTITY INSTALLATION

Massstab			
	Gezeichnet	23.09.02	Bn
	Geprüft		
	Ex-geprüft	08.09.03	Bn
	Gesehen		

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

FES0067-0001 B



Supplementary documentation

Prowirl 72:
TI 062D/06/
BA 084D/06/

Prowirl 73
TI 064D/06/
BA 094D/06/

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