

Proline Prowirl 72 / Prowirl 73

FOUNDATION Fieldbus

Ex-d explosion proof version (XP)

Division 1



Ex documentation for the BA095D (Prowirl 72 FOUNDATION Fieldbus) / BA096D (Prowirl 73 FOUNDATION Fieldbus) operating instruction according to FACTORY MUTUAL standards



Ex documentation for the BA095D (Prowirl 72 FOUNDATION Fieldbus) / BA096D (Prowirl 73 FOUNDATION Fieldbus) operating instruction according to CANADIAN STANDARDS ASSOCIATION



Endress + Hauser

The Power of Know How



Proline Prowirl 72 / Prowirl 73 FOUNDATION Fieldbus, Ex d explosion proof version (XP) Division 1

Ex documentation for the operating instruction:
BA095D (Prowirl 72 FOUNDATION Fieldbus) and
BA096D (Prowirl 73 FOUNDATION Fieldbus)

according to FACTORY MUTUAL standards

Example: XP / I / 1 / ABCD



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

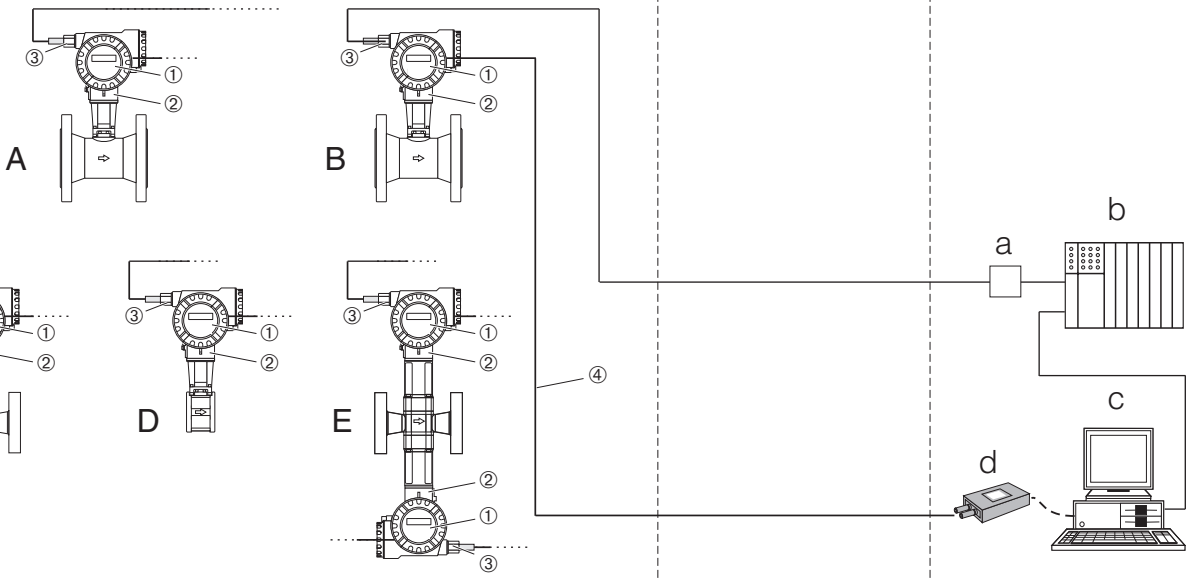
Factory Mutual



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The Power of Know How



Prowirl 72 / Prowirl 73 FOUNDATION Fieldbus, compact version

Hazardous area		Safe area
Division 1 / Zone 1	Division 2 / Zone 2	
		
F06-7xxxxxZZ-16-xx-xx-xx-011		
Division 1 / Zone 1	Division 2 / Zone 2	Safe area
Hazardous area		
Prowirl 73 FOUNDATION Fieldbus: A = Sensor F (DN 1/2"...12"); Standard version PN 10...40; CI 150...300; JIS 10...20K D = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K Prowirl 72 FOUNDATION Fieldbus: B = Sensor F (DN 1/2"...12"); Standard version PN 10...40; CI 150...300; JIS 10...20K C = Sensor F (DN 1/2"...6"); High pressure version PN 64...160; CI 600; JIS 40K D = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K E = Sensor F (DN 1/2"...6"); Dualsens PN 10...160; CI 150...600; JIS 10...40K	① Transmitter electronics Prowirl 72 FOUNDATION Fieldbus resp. Prowirl 73 FOUNDATION Fieldbus in: Cl. I Div. 1 Groups ABCD Cl. I Div. 1 Zone 1 IIC Cl. II Div. 1 Groups EFG Cl. III ② Prowirl 72 resp. 73 standard housing ③ Cable entries: 1/2" NPT only ④ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect to the Service Interface FXA 193. This connecting cable is contained in the scope of delivery for the Service Interface FXA 193.  Note! For ambient and fluid temperature ranges, and temperature class, see Page 4.	a = Segment coupler b = PLC/DCS c = PC with configuration tool d = Service Interface FXA 193 (see Page 7)

Prowirl 72 / Prowirl 73 FOUNDATION Fieldbus, remote version

Hazardous area		Safe area
Division 1 / Zone 1	Division 2 / Zone 2	
F06-7xxxxZZ-16-xc-xc-xc-012		
Division 1 / Zone 1	Division 2 / Zone 2	Safe area
Hazardous area		
Prowirl 73 FOUNDATION Fieldbus: A = Transmitter Prowirl 73 FOUNDATION Fieldbus 1 = Sensor F (DN 1/2"...12") Standard version PN 10...40; CI 150...300; JIS 10...20K 2 = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K Prowirl 72 FOUNDATION Fieldbus: B = Transmitter Prowirl 72 FOUNDATION Fieldbus 1 = Sensor F (DN 1/2"...12"); Standard version PN 10...40; CI 150...300; JIS 10...20K 2 = Sensor F (DN 1/2"...6"); High pressure version PN 64...160; CI 600; JIS 40K 3 = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K 4 = Sensor F (DN 1/2"...6"); Dualsens PN 10...160; CI 150...600; JIS 10...40K	① Transmitter electronics Prowirl 72 FOUNDATION Fieldbus resp. Prowirl 73 FOUNDATION Fieldbus in: CI. I Div. 1 Groups ABCD CI. I Div. 1 Zone 1 IIC CI. II Div. 1 Groups EFG CI. III ② Prowirl 72 resp. 73 standard housing ③ Cable entries: 1/2" NPT only ④ Connecting cable remote version: see Page 7. ⑤ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect to the Service Interface FXA 193. This connecting cable is contained in the scope of delivery for the Service Interface FXA 193. Note! For ambient and fluid temperature ranges, and temperature class, see Page 4.	a = Segment coupler b = PLC/DCS c = PC with configuration tool d = Service Interface FXA 193 (see Page 7)

Temperature tables compact version

Measuring system Prowirl 72 FOUNDATION Fieldbus (compact version)

- Sensor standard temperature version:

Prowirl 72*_**0*****K**

Prowirl F/W	Max. medium temperature [°F] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °F} \dots +140\text{ °F}$	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*****K, Prowirl 72***_**2*****K, Prowirl 72***_**3*****K**

Prowirl F/W	Max. medium temperature [°F] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °F} \dots +140\text{ °F}$	266	374	554	824

The minimum medium temperature is -328 °F.

Measuring system Prowirl 73 FOUNDATION Fieldbus (compact version)

- Sensor standard temperature version:

Prowirl 73*_**4*****K**

Prowirl F	Max. medium temperature [°F] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °F} \dots +140\text{ °F}$	266	374	554	824

The minimum medium temperature is -328 °F.

Temperature tables remote version

Measuring system Prowirl 72 FOUNDATION Fieldbus (remote version)

- Sensor standard temperature version:

Prowirl 72*_**0*****K**

Prowirl F/W	Max. medium temperature [°F] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °F} \dots +185\text{ °F}$	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*****K, Prowirl 72***_**2*****K, Prowirl 72***_**3*****K**

Prowirl F/W	Max. medium temperature [°F] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °F} \dots +185\text{ °F}$	266	374	554	824

The minimum medium temperature is -328 °F.

- Transmitter Prowirl 72 FOUNDATION Fieldbus:

Prowirl 72*_*****K**

	Max. ambient temperature [°F] in			
	T4	T3	T2	T1
Prowirl 72 FOUNDATION Fieldbus	140	140	140	140

The minimum ambient temperature is -40 °F.

Measuring system Prowirl 73 FOUNDATION Fieldbus (remote version)

- Sensor standard temperature version:

Prowirl 73*_**4*****K**

Prowirl F/W	Max. medium temperature [°F] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °F} \dots +185\text{ °F}$	266	374	554	824

The minimum medium temperature is -328 °F.

- Transmitter Prowirl 73 FOUNDATION Fieldbus:

Prowirl 73*_*****K**

	Max. ambient temperature [°F] in			
	T4	T3	T2	T1
Prowirl 73 FOUNDATION Fieldbus	140	140	140	140

The minimum ambient temperature is -40 °F.

Approvals

No. / approval type	Description
I.D. 3018695 (see Page 6 for notes on special conditions)	for the electric flow measuring system Prowirl 72 resp. 73 Identification: see below

Prowirl 72 FOUNDATION Fieldbus, XP (compact version)

P r o w i r l 7 2 * * * _ * * * * * * * . * * * * * .		K = FOUNDATION Fieldbus P = 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 1 IIC
Prowirl 72 W	DN 1/2"...6"	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 1 IIC

Prowirl 72 FOUNDATION Fieldbus, XP (remote version)

Prowirl 72 FOUNDATION Fieldbus (remote version)

Prowirl 72 FOUNDATION Fieldbus

Cl. I, Div. 1 Groups ABCD

Cl. II, Div. 1 Groups EFG

Cl. III

Cl. I, Zone 1 IIC

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 1 IIC

Prowirl 72 W DN 1/2"...6"

Cl. I, Div. 1 Groups ABCD

Cl. II, Div. 1 Groups EFG

Cl. III

Cl. I, Zone 1 IIC

Prowirl 73 FOUNDATION Fieldbus, XP (compact version)

P r o w i r l 7 3 * * * _ * * * * * * * . * * * * *		
		K = FOUNDATION Fieldbus
		P = 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 1 IIC
Prowirl 73 W	DN 1/2"...6"	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 1 IIC

Prowirl 73 FOUNDATION Fieldbus, XP (remote version)

P r o w i r l 7 3 * * * _ * * * * * . * * * * *		
		K = FOUNDATION Fieldbus
		P = Cl. I, Div. 1
Transmitter Prowirl 73 FOUNDATION Fieldbus (remote version)		
Prowirl 73 FOUNDATION Fieldbus		Cl. I, Div. 1 Groups ABCD
		Cl. II, Div. 1 Groups EFG
		Cl. III
		Cl. I, Zone 1 IIC
Sensor Prowirl 73 F (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 T4-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 1 IIC

Notified body

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

Special conditions

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



Caution!

- Use supply wires suitable for +18 °F above maximum ambient temperature.
- 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.
- It is not permissible to connect the service adapter in explosive atmospheres.
- Install per National Electrical Code. Install intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6.



Warning!

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

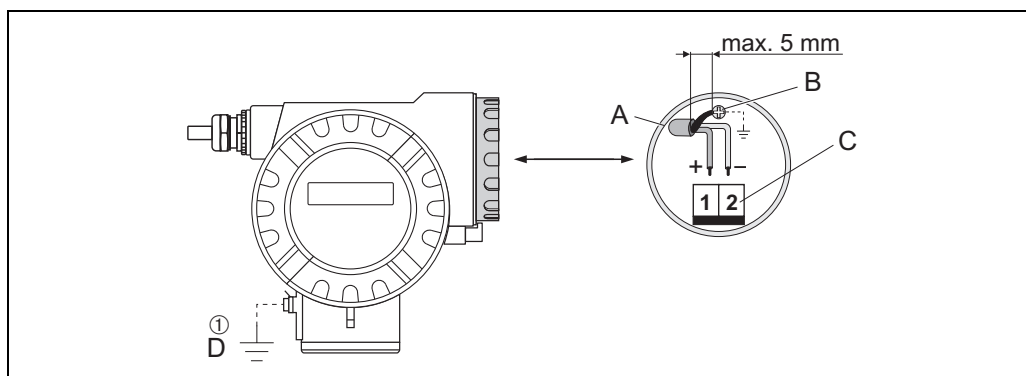
General warnings



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



F06-73PBxxxx-11-00-00-xx-000

Fig. 1. Electrical connections Prowirl 72 resp. Prowirl 73 FOUNDATION Fieldbus

A = FOUNDATION Fieldbus cable

B = Ground terminal in the wiring compartment (between the stripped FOUNDATION Fieldbus cable and the ground terminal, the cable shielding should not exceed a length of 5 mm)

C = Terminal connector (1 = FF +; 2 = FF -)

D = Ground terminal for potential equalisation (external, only relevant for remote version)



Caution!

- Ground potential equalisation must exist between the safe and hazardous area.
- The transmitter is to be securely connected to the potential equalization system using either the transmitter's external screw terminal (D), or the ground terminal (B) in the wiring compartment.
- Between the stripped FOUNDATION Fieldbus cable and the ground terminal, the cable shielding should not exceed a length of 5 mm.
- 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***_*****P***K; Prowirl 73***_*****P***K

Terminals	1 (+)	2 (-)
Designation	FOUNDATION Fieldbus	
Safety-related values	U = 36 V DC ($U_{\max} = 250$ V)	

Service adapter

The service adapter is exclusively for connection to Endress+Hauser approved service interfaces FXA 193.



Warning!

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

Cable entries

Choice ½" NPT thread for cable entries only
(see also the figures on Page 2 and Page 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 intrinsically safe use. Functionally the cable length is limited to 98 ft (30 m).

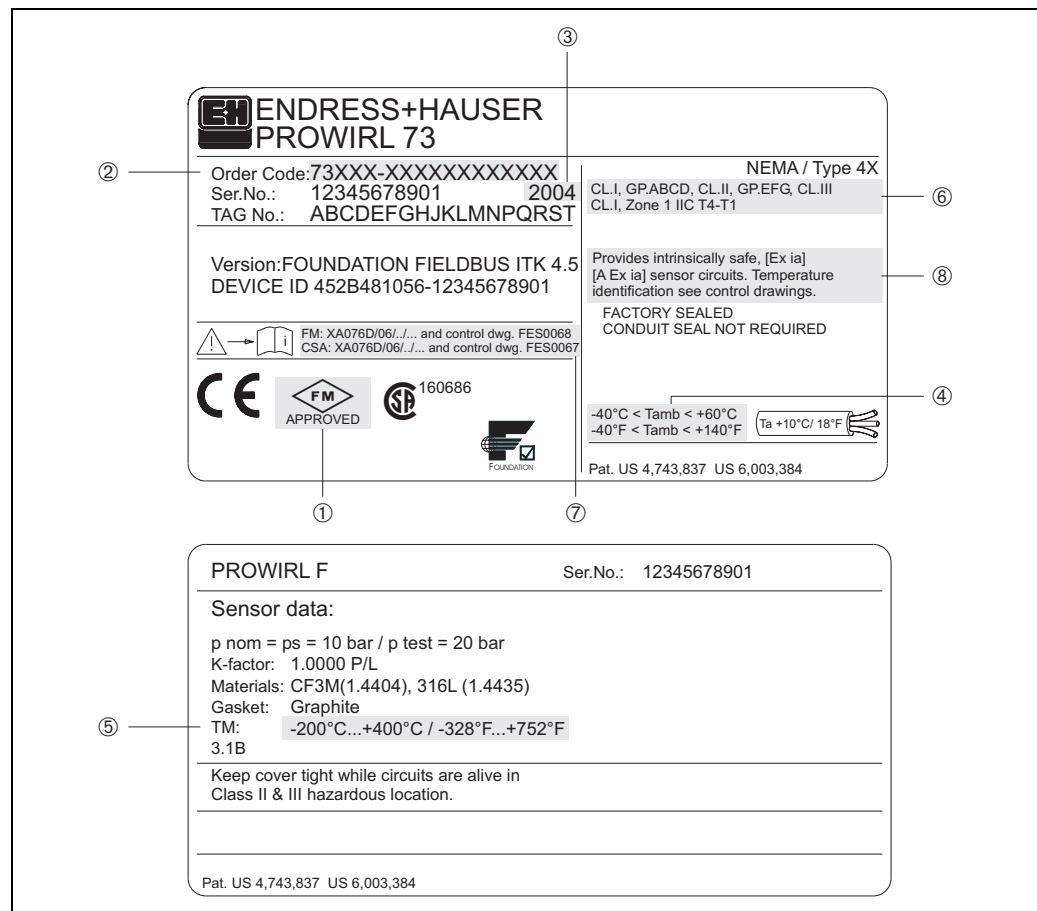
The max. capacitance of the cable is 300 µF/ft (1 µF/km).

The max. cable inductivity is 0.30 µH/ft (1 mH/km).

The cable delivered by Endress+Hauser (max. 98 ft (30 m)) fulfils these requirements.

Device identification

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



F06-7xFFxxxx-18-06-xx-xx-005

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 1 Group IIC
Class II Division 1 Groups EFG
Class III

Remote version

Sensor:

PROWIRL 7** ..**1**P**** PROWIRL 7** ..**2**P****
PROWIRL 7** ..**3**P**** PROWIRL 7** ..**4**P**** and
PROWIRL 7** ..**6**P****

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

PROWIRL 7** ..**0**P****

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**P**** PROWIRL 7** ..**1**P****
PROWIRL 7** ..**2**P**** PROWIRL 7** ..**3**P****
PROWIRL 7** ..**4**P**** and PROWIRL 7** ..**6**P****

T6 2)	T5 2)	T4 - T1
104°F	140°F	140°F

Compact version

Sensor:

PROWIRL 7** ..**1**P**** PROWIRL 7** ..**2**P****
PROWIRL 7** ..**3**P**** PROWIRL 7** ..**4**P**** and
PROWIRL 7** ..**6**P****

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

PROWIRL 7** ..**0**P****

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**P**** PROWIRL 7** ..**1**P****
PROWIRL 7** ..**2**P**** PROWIRL 7** ..**3**P****
PROWIRL 7** ..**4**P**** and PROWIRL 7** ..**6**P****

T6 2)	T5 2)	T4 - T1
104°F	140°F	140°F

Notes:

- 1) Applicable Control Drawings
- 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 / 300pF/ft
- 3) Temperature class T6 and T5 is not allowed for versions of Profibus PA and Fieldbus Foundation (not for PROWIRL 7** ..**0**P****H and PROWIRL 7** ..**0**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
- 6) Dust tight seals must be used at conduit entries for Class II and III installation
- 7) The Prowirl 72/73 is Factory Sealed. This means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
- 8) Prowirl 72 and Prowirl 73 transmitter is intended for installation to Service Interface PXA 193 when using the PROLINE EX-ZWEILEITER-KABEL (blue cable)
- 9) Sensor of remote version and interior of measuring tube of remote and compact version are permissible for use in Zone 0

Änderungen:

A	B	C	D	E

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Ersatz für:
Ersteller: FES/bn
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FM CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (XP-version)
Compact Version, Remote version

FES0077

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

Terminal 12:

Terminal 34:

Prowirl 7 ..**0**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 ..**0**P****H and Prowirl 7** ..**0**P****K**
Division 1 and Division 2 installation
2) Terminal 1 and 2
Supply voltage: U ≤ 36 Vdc
U_{max} = 250 Vdc

Prowirl 7 ..**0**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 NON-HAZARDOUS
- 8) Control room equipment may not use or generate over 250Vrms.
- 9) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

Änderungen:

A	B	C	D	E

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

FES0077-0001

**Supplementary
documentation**

Prowirl 72 FOUNDATION Fieldbus:

TI064D/06/

BA095D/06/

Prowirl 73 FOUNDATION Fieldbus:

TI064D/06/

BA096D/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

Proline Prowirl 72 / Prowirl 73 FOUNDATION Fieldbus, Ex-d explosion proof version (XP) Division 1

Ex documentation for the operating instruction:
BA095D (Prowirl 72 FOUNDATION Fieldbus) and
BA096D (Prowirl 73 FOUNDATION Fieldbus)

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

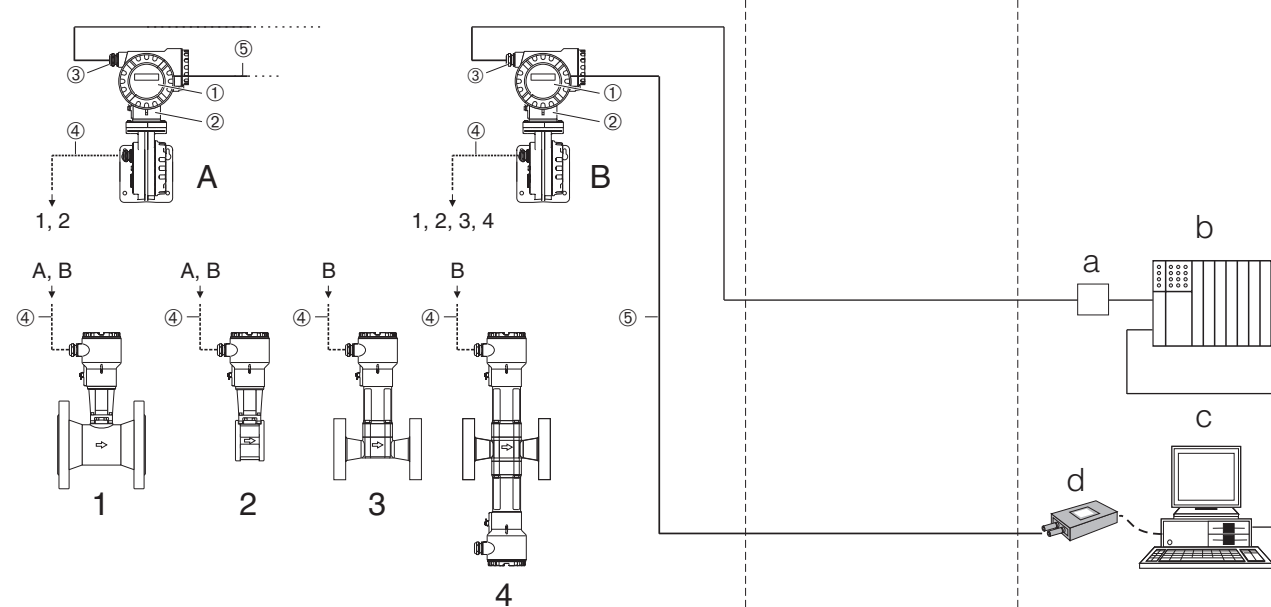
Temperature Class

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

Prowirl 72 / Prowirl 73 FOUNDATION Fieldbus, compact version

Hazardous area		Safe area
Division 1 / Zone 1	Division 2 / Zone 2	
F06-7xPBxxZZ-16-xx-xx-xx-013		
Division 1 / Zone 1	Division 2 / Zone 2	Safe area
Hazardous area		
Prowirl 73 FOUNDATION Fieldbus: A = Sensor F (DN 1/2"...12"); Standard version PN 10...40; CI 150...300; JIS 10...20K D = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K Prowirl 72 FOUNDATION Fieldbus: B = Sensor F (DN 1/2"...12"); Standard version PN 10...40; CI 150...300; JIS 10...20K C = Sensor F (DN 1/2"...6"); High pressure version PN 64...160; CI 600; JIS 40K D = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K E = Sensor F (DN 1/2"...6"); Dualsens PN 10...160; CI 150...600; JIS 10...40K	① Transmitter electronics Prowirl 72 FOUNDATION Fieldbus resp. Prowirl 73 FOUNDATION Fieldbus in: Cl. I Div. 1 Groups ABCD Cl. I Div. 1 Zone 1 IIC Cl. II Div. 1 Groups EFG Cl. III ② Prowirl 72 resp. 73 standard housing ③ Cable entries: 1/2" NPT only ④ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect to the Service Interface FXA 193. This connecting cable is contained in the scope of delivery for the Service Interface FXA 193. Note! For ambient and fluid temperature ranges, and temperature class, see Page 4.	a = Segment coupler b = PLC/DCS c = PC with configuration tool d = Service Interface FXA 193 (see Page 9)

Prowirl 72 / Prowirl 73 FOUNDATION Fieldbus, remote version

Hazardous area		Safe area
Division 1 / Zone 1	Division 2 / Zone 2	
		
F06-7xPBxxZZ-16-xx-xx-xx-014		
Division 1 / Zone 1	Division 2 / Zone 2	Safe area
Hazardous area		
Prowirl 73 FOUNDATION Fieldbus: A = Transmitter Prowirl 73 FOUNDATION Fieldbus 1 = Sensor F (DN 1/2"...12") Standard version PN 10...40; CI 150...300; JIS 10...20K 2 = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K Prowirl 72 FOUNDATION Fieldbus: B = Transmitter Prowirl 72 FOUNDATION Fieldbus 1 = Sensor F (DN 1/2"...12"); Standard version PN 10...40; CI 150...300; JIS 10...20K 2 = Sensor W (DN 1/2"...6"); Wafer PN 10...40; CI 150...300; JIS 10...20K 3 = Sensor F (DN 1/2"...6"); High pressure version PN 64...160; CI 600; JIS 40K 4 = Sensor F (DN 1/2"...6"); Dualsens PN 10...160; CI 150...600; JIS 10...40K	① Transmitter electronics Prowirl 72 FOUNDATION Fieldbus resp. Prowirl 73 FOUNDATION Fieldbus in: Cl. I Div. 1 Groups ABCD Cl. I Div. 1 Zone1 IIC Cl. II Div. 1 Groups EFG Cl. III ② Prowirl 72 resp. 73 standard housing ③ Cable entries: 1/2" NPT only ④ Connecting cable remote version: see Page 9. ⑤ Only the "PROLINE EX-ZWEILEITER-KABEL" connection cable can be used to connect to the Service Interface FXA 193. This connecting cable is contained in the scope of delivery for the Service Interface FXA 193.  Note! For ambient and fluid temperature ranges, and temperature class, see Page 5.	a = Segment coupler b = PLC/DCS c = PC with configuration tool d = Service Interface FXA 193 (see Page 9)

Temperature tables compact version

Measuring system Prowirl 72 FOUNDATION Fieldbus (compact version)

- Sensor standard temperature version:

Prowirl 72*-**0*****K**

Prowirl F/W	Max. medium temperature [°C] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °C} \dots +60\text{ °C}$	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*****K, Prowirl 72***-**2*****K, Prowirl 72***-**3*****K**

Prowirl F/W	Max. medium temperature [°C] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °C} \dots +60\text{ °C}$	130	190	290	440

The minimum medium temperature is -200 °C.

Measuring system Prowirl 73 FOUNDATION Fieldbus (compact version)

- Sensor standard temperature version:

Prowirl 73*-**4*****K**

Prowirl F/W	Max. medium temperature [°C] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °C} \dots +60\text{ °C}$	130	190	290	440

The minimum medium temperature is -200 °C.

Temperature tables remote version

Measuring system Prowirl 72 FOUNDATION Fieldbus (remote version)

- Sensor standard temperature version:

Prowirl 72*_**0*****K**

Prowirl F/W	Max. medium temperature [°C] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °C} \dots +85\text{ °C}$	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*****K, Prowirl 72***_**2*****K, Prowirl 72***_**3*****K**

Prowirl F/W	Max. medium temperature [°C] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °C} \dots +85\text{ °C}$	130	190	290	440

The minimum medium temperature is -200 °C .

- Transmitter Prowirl 72 FOUNDATION Fieldbus:

Prowirl 72*_*****K**

	Max. medium temperature [°C] in			
	T4	T3	T2	T1
Prowirl 72 FOUNDATION Fieldbus	60	60	60	60

The minimum ambient temperature is -40 °C .

Measuring system Prowirl 73 FOUNDATION Fieldbus (remote version)

- Sensor standard temperature version:

Prowirl 73*_**4*****K**

Prowirl F/W	Max. medium temperature [°C] in			
	T4	T3	T2	T1
at $T_a = -40\text{ °C} \dots +85\text{ °C}$	130	190	290	440

The minimum medium temperature is -200 °C .

- Transmitter Prowirl 73 FOUNDATION Fieldbus:

Prowirl 73*_*****K**

	Max. medium temperature [°C] in			
	T4	T3	T2	T1
Prowirl 73 FOUNDATION Fieldbus	60	60	60	60

The minimum ambient temperature is -40 °C .

Approvals

No. / approval type	Description
160686-135901 (see Page 8 for notes on special conditions)	for the electric flow measuring system Prowirl 72 resp. 73 Identification: see below

Prowirl 72 FOUNDATION Fieldbus, XP (compact version)

P r o w i r l 7 2 * * * _ * * * * * * . * * * * *		
		K = FOUNDATION Fieldbus
		P = 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 1 IIC
Prowirl 72 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 1 IIC

Prowirl 72 FOUNDATION Fieldbus, XP (remote version)

The diagram shows a terminal block with two rows of terminals. The top row is labeled 'K = FOUNDATION Fieldbus' and the bottom row is labeled 'P = Cl. I, Div. 1'. A cable labeled 'Prowirl 72 FOUNDATION Fieldbus (remote version)' is connected to the terminals. The cable has a green shielded braid connected to the 'K' terminal and a red twisted pair connected to the 'P' terminal.

Prowirl 73 FOUNDATION Fieldbus, XP (compact version)

P r o w i r l 7 3 * * * _ * * * * * * . * * * * *		
		K = FOUNDATION Fieldbus
		P = 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 1 IIC
Prowirl 73 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 1 IIC

Prowirl 73 FOUNDATION Fieldbus, XP (remote version)

P r o w i r l 7 3 * * * _ * * * * * * . * * * * *		
		K = FOUNDATION Fieldbus
		P = Cl. I, Div. 1
Transmitter Prowirl 73 FOUNDATION Fieldbus (remote version)		
Prowirl 73 FOUNDATION Fieldbus		Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 1 IIC
Sensor Prowirl 73 F (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 1 IIC
Prowirl 72 W	DN 15...150	Cl. I, Div. 1 Groups ABCD Cl. II, Div. 1 Groups EFG Cl. III Cl. I, Zone 1 IIC

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).

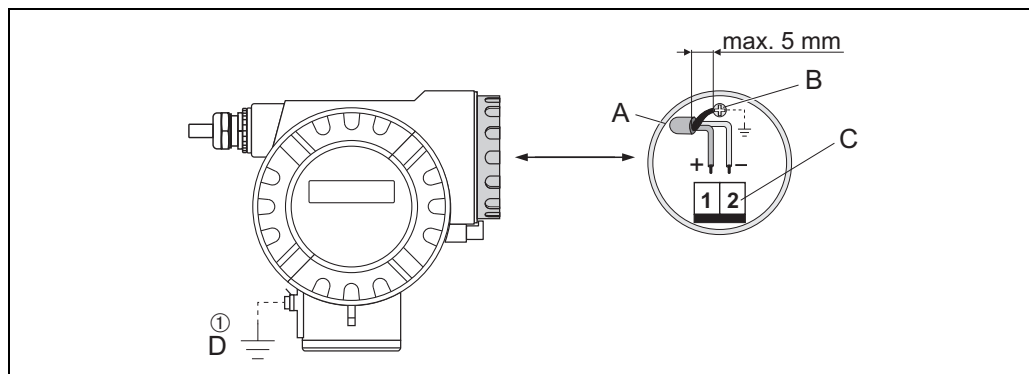
General warnings



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



F06-73PBxxxx-11-00-00-xx-000

Fig. 1. Electrical connections Prowirl 72 resp. Prowirl 73 FOUNDATION Fieldbus

A = FOUNDATION Fieldbus cable

B = Ground terminal in the wiring compartment (between the stripped FOUNDATION Fieldbus cable and the ground terminal, the cable shielding should not exceed a length of 5 mm)

C = Terminal connector (1 = FF +; 2 = FF -)

D = Ground terminal for potential equalisation (external, only relevant for remote version)



Caution!

- Ground potential equalisation must exist between the safe and hazardous area.
- The transmitter is to be securely connected to the potential equalization system using either the transmitter's external screw terminal (D), or the ground terminal (B) in the wiring compartment.
- Between the stripped FOUNDATION Fieldbus cable and the ground terminal, the cable shielding should not exceed a length of 5 mm.
- 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***_*****P***K; Prowirl 73***_*****P***K

Terminals	1 (+)	2 (-)
Designation	FOUNDATION Fieldbus	
Safety-related values	U = 36 V DC ($U_{max} = 250$ V)	

Service adapter

The service adapter is exclusively for connection to Endress+Hauser approved service interfaces FXA 193.



Warning!

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

Cable entries

Choice 1/2" NPT thread for cable entries only
(see also the figures on Page 2 and Page 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 intrinsically safe use. Functionally the cable length is limited to 30 m.

The max. capacitance of the cable is 1 μ F/km.

The max. cable inductivity is 1 mH/km.

The cable delivered by Endress+Hauser (max. 30 m) fulfils these requirements.

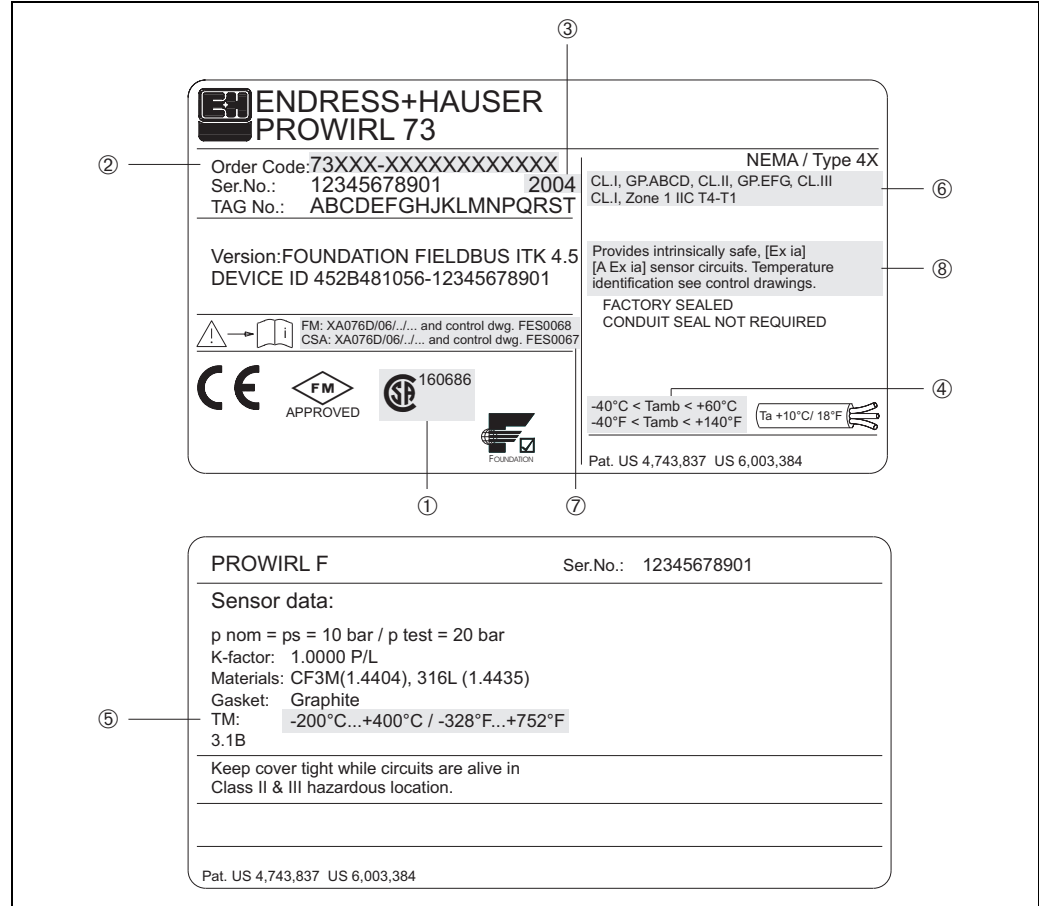
Device identification

Transmitter Prowirl 72 FOUNDATION Fieldbus and F/W sensor resp.

Prowirl 73 FOUNDATION Fieldbus and F/W sensor.

Transmitter Prowirl 72 FOUNDATION Fieldbus and F/W sensor resp.

Transmitter Prowirl 73 FOUNDATION Fieldbus and F/W sensor.



F06-7xFFxxxx-18-06-xx-xx-006

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

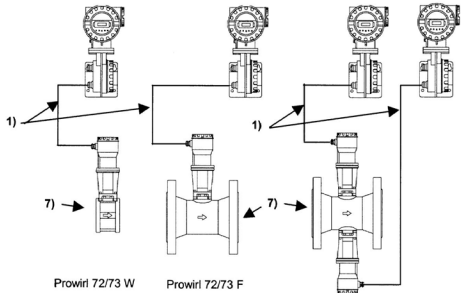
No.	Meaning
①	Label of the notified body: Canadian Standards Association
②	Type code
③	Year of manufacture
④	Ambient temperature range
⑤	Maximum medium temperature
⑥	Type of protection and explosion group for the measuring system
⑦	Applicable Ex documentation
⑧	Warning

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 1 Group IIC
Class II Division 1 Groups EFG
Class III

Remote version



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****,
PROWIRL 7**..*J**N****, PROWIRL 7**..*K**N****

Ta = 40°C	Max. medium temperature					
	T6 2)	T5 2)	T4	T3	T2 - T1	
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****, PROWIRL 7**..*5**N****,
PROWIRL 7**..*B**N****, PROWIRL 7**..*G**N****

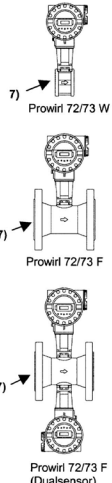
Ta = 40°C	Max. medium temperature					
	T6 2)	T5 2)	T4	T3	T2 - T1	
80°C	95°C	130°C	190°C	280°C	280°C	
Ta = 60°C	---	95°C	130°C	190°C	280°C	280°C
Ta = 85°C	---	---	130°C	190°C	280°C	280°C

Transmitter:

PROWIRL 7**..*.....P****

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

Compact version



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****,
PROWIRL 7**..*J**N****, PROWIRL 7**..*K**N****

Ta = 40°C	Max. medium temperature					
	T6 2)	T5 2)	T4	T3	T2 - T1	
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

PROWIRL 7**..*0**N****, PROWIRL 7**..*5**N****, PROWIRL 7**..*B**N****,
PROWIRL 7**..*G**N****

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

Notes:

- 1) Applicable Control Drawings
- 2) Max. cable length for intrinsically safe installation of remote sensor is 100m for using cable parameters $L_{\text{cable}} = 1 \text{ mH/km}$ and $C_{\text{cable}} = 1 \mu\text{F/km}$
- 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 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) The Prowirl 72/73 is Factory Sealed. This means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
- 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 version are permissible for use in Zone 0

Anderungen:

A	10.12.03 / Bn	F	E
B			
C			
D			
E			

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Erstellt für:
Ersteller: FES/Bn
Datei: M:\ZEICHNUNG\1031210c.doc ID 1113

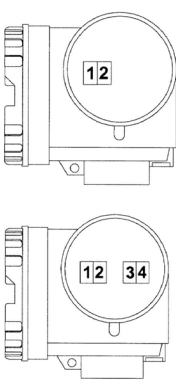
CSA CONTROL DRAWING
PROWIRL 72, PROWIRL 73 (XP-version)
Compact Version, Remote version

Messstab: Gezeichnet: 18.6.03 Bn
Geprüft: Ex-geprüft: 10.12.03 Bn
Gesehen:

FES0076 A

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

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



Notes:

- 6) Installation of transmitter circuit wiring according to Canadian 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 INTRINSIC SAFETY.

Prowirl 7..*.....P****A**
Division 1 and Division 2 installation

- 1) **Terminal 1 and 2**
Supply voltage: $U \leq 36 \text{ Vdc}$
 $U_{\text{max}} = 250 \text{ Vdc}$
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: $U \leq 36 \text{ Vdc}$
 $U_{\text{max}} = 250 \text{ Vdc}$

Prowirl 7..*.....P****W**
Division 1 and Division 2 installation

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

Class II, III installation

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

Anderungen:

A	10.12.03 / Bn	F	E
B			
C			
D			
E			

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Datei: M:\ZEICHNUNG\1031210c.doc ID 1113

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

Messstab: Gezeichnet: 18.6.03 Bn
Geprüft: Ex-geprüft: 10.12.03 Bn
Gesehen:

FES0076-0001 A

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



**Supplementary
documentation**

Prowirl 72 FOUNDATION Fieldbus:
TI064D/06/
BA095D/06/

Prowirl 73 FOUNDATION Fieldbus:
TI064D/06/
BA096D/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

