

















Safety Instructions

Proline Promass 40

Division 1



Ex documentation for the Operating Instructions according to FACTORY MUTUAL standards $\rightarrow \; \stackrel{\triangle}{=} \; 3$



Ex documentation for the Operating Instructions according to CANADIAN STANDARDS ASSOCIATION $\rightarrow \stackrel{\cong}{} 13$



XA00058D Proline Promass 40

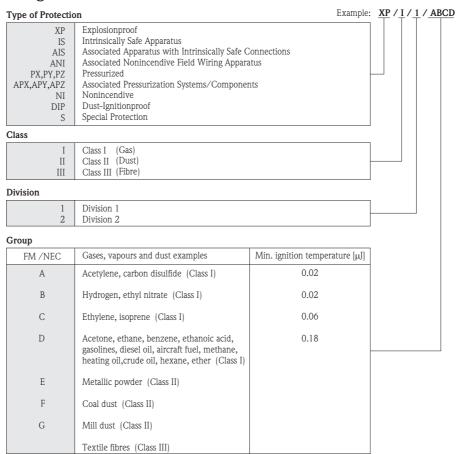
Examples for markings according to FM and CSA:

FM APPROVALS



Temperature Class

sui	Maximum face temperat	ure
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
Т3	392 °F	200 °C
T3A	356 °F	180 °C
ТЗВ	329 °F	165 °C
T3C	320 °F	160 °C
T4	275 °F	135 °C
T4A	248 °F	120 °C
T5	212 °F	100 °C
Т6	185 °F	85 °C





Temperature Class

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			
Т3	200 °C	392 °F			
T3A	180 °C	356 °F			
ТЗВ	165 °C	329 °F			
T3C	160 °C	320 °F			
T4	135 °C	275 °F			
T4A	120 °C	248 °F			
T5	100 °C	212 °F			
Т6	85 °C	185 °F			

٦	Class		Example: C	Class I, Division 1, Group ABCD					
	I II	Class I (Gas) Class II (Dust) Class III (Fibre)							
	Division								
	1 2	Division 1 Division 2							
	Group								
	CSA / CSC	Gases, vapours and dust examples	Min. ignition temperature $[\mu J]$						
	A	Acetylene, carbon disulfide (Class I)	0.02						
	В	Hydrogen, ethyl nitrate (Class I)	0.02						
	С	Ethylene, isoprene (Class I)	0.06						
	D	Acetone, ethane, benzene (Class I)	0.18						
	Е	Metallic powder (Class II)							
	F	Coal dust (Class II)							
	G	Mill dust (Class II)							
		Textile fibres (Class III)							
	Type of Protection	on							
	Explosionproof Intrinsically Safe Apparatus Associated Apparatus with Intrinsically Safe Connections Associated Nonincendive Field Wiring Apparatus Pressurized Associated Pressurization Systems/Components Nonincendive Dust-Ignitionproof Special Protection								

A0005630-en

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Safety Instructions

Proline Promass 40

Division 1



Ex documentation

This documentation is an integral part of the following Operating Instructions:

■ BA00061D, Operating Instruction, Proline Promass 40

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Special conditions

- Install per National Electrical Code. Install intrinsically safe circuits per NEC ANSI/ NFPA 70 and ISA RP 12.6 respecting the explosion proof integrity of the enclosure.
- Control room equipment shall not use or generate more than 250 V rms.
- The device must be integrated into the potential equalization system.
- For terminals No. 20 to No. 27 of the transmitter, only devices with ratings $U_m \le 250 \text{ V}$ and $I_m \le 500 \text{ mA}$ are allowed to be connected.
- It is not permissible to connect the service adapter whilst the atmosphere is considered to be explosive.
- Use of the devices is restricted to mediums against which the process-wetted materials are adequately resistant.
- Class II Group G: The surface temperature of the apparatus cannot exceed 329 °F.
- Transmitter enclosure G02 explosionproof for use in Class 1 Division 1 Groups A, B, C, D (seals not required) and dust-ignition proof for Class II, III Division 1 Groups E, F, G.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except Promass E: DN 3" (sensor version Group C-D) which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G. (optionally, a version for Groups A and B is available).
- Substitution of components may impair intrinsic safety.



• Use supply wires suitable for 9°F above ambient temperature, but at least for 176 °F.

General warnings

- 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.
- Open the device only when it is de-energized (and after a delay of at least 10 minutes following shutdown
 of the power supply).
- The housing of the Ex-rated transmitter can be turned in 90° steps. Whereas the non-Ex version has a bayonet adapter, however, the Ex version has a thread. Recesses for centering the worm screw are provided to prevent inadvertent movement of the transmitter housing.

 It is permissible to turn the transmitter housing through a maximum of 180° during operation (in either direction), without compromising explosion protection. After turning the housing the worm screw must be tightened again.
- The screw cap has to be removed before the local display can be turned, and this must be done with the device de-energized (and after a delay of at least 10 minutes following shutdown of the power supply).

Turning the transmitter housing

- 1. Unscrew the grub screw.
- 2. Rotate the transmitter housing cautiously clockwise until the end stop (end of the thread).
- 3. Rotate the transmitter housing counter-clockwise (max. 360°) in the wanted position.
- 4. Tighten the grub screw again.

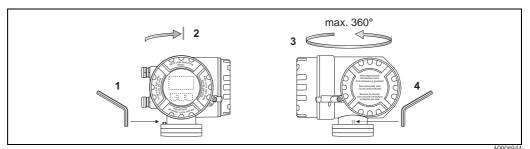


Fig. 1: Turning the transmitter housing



Approvals

General

The system meets the fundamental health and safety requirements for the design and construction of devices and protective systems intended for use in potentially explosive atmospheres in accordance with the National Electrical Code.

No. / approval type

J.I. 3002554

Notified body

FM: Factory Mutual Research

Identification

The identification of the system must contain the following specifications:

- XP-IS-DIP / I, II, III / 1 / ABCDEFG / T6-T1, or
 XP-IS-DIP / I, II, III / 1 / CDEFG / T6-T1



The installation instructions for the safe use of the system must be observed $\rightarrow \stackrel{\triangle}{=} 4$.



Description of measuring system

The measuring system consists of a compact version: Transmitters and sensors form a mechanical unit.

Nameplate

The nameplates, which are mounted in a clearly visible position on the transmitter and sensor, contain all of the relevant information about the measuring system.

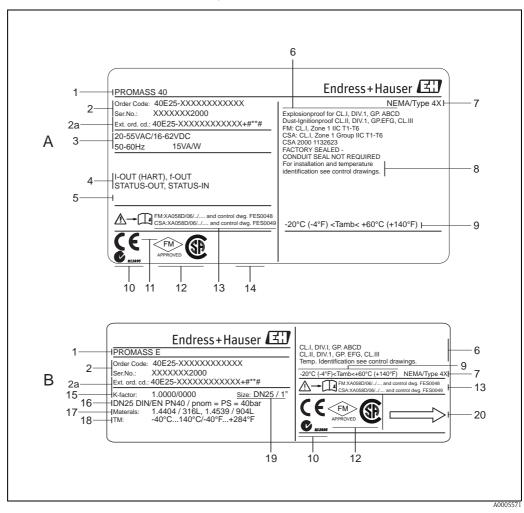


Fig. 2: Example for nameplates of a transmitter and of a sensor

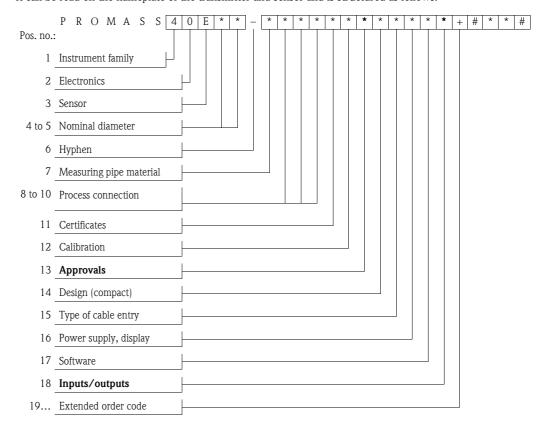
- A Transmitter nameplate
- B Sensor nameplate
- 1 Transmitter or sensor type
- 2 Order code and serial number
- 2a Extended order code
- 3 Power supply, frequency and power consumption
- 4 Available inputs/outputs
- 5 Space for additional information on special products
- 6 Space for additional information
- 7 Type of protection
- 8 Space for notes, e.g. delays, etc.
- 9 Ambient temperature range
- 10 C-Tick symbol

- 11 Space for notified body for quality assurance monitoring
- 12 Label of notified body: Factory Mutual Research
- 13 Associated Ex documentation
- 14 Space for other approval specifications and certificates
- 15 Calibration factor/zero point
- 16 Nominal diameter/nominal pressure
- 17 Lining material
- 18 Fluid temperature range
- 19 Nominal diameter device
- 20 Flow direction



Type code

The type code describes the exact design and the equipment of the measuring system. It can be read on the nameplate of the transmitter and sensor and is structured as follows:



Approvals (Pos. no. 13 in the type code)

*	Application/zone
N, O	 Class I, Groups ABCD Class I, Zone 1, Group IIC Class II, Groups EFG Class III
P	 Class I, Groups CD Class I, Zone 1, Group IIB Class II, Groups EFG Class III

Inputs/outputs (Pos. no. 18 in the type code)

*	Type of protection					
A, D	non-intrisically safe outputs					
S, T	Ex ia					

Note!

For a detailed explanation of these values with regard to the outputs and inputs available, as well as a description of the associated terminal assignment and connection data: $\rightarrow \stackrel{\cong}{=} 10$ ff.



Temperature table compact version

Max. medium temperature [°F] for T1-T6 in relation to the maximum ambient temperature T_a

	Nominal diameter [in]	T _a [°F]	T6 (185 °F)	T5 (212 °F)	T4A (248 °F)	T4 (275 °F)	T3A (356 °F)	T2C (446 °F)	T2B (500 °F)	T1 (842 °F)
	3/8" to 2"	+113	113	212	248	266	284	284	284	284
4*E**	1" to 2"	+122	122	212	248	266	284	284	284	284
4 L		+140	_	212	248	266	284	284	284	284
	3"	T140	140	167	203	230	284	284	284	284

The minimum **medium temperature** is –40 °F.

The minimum ambient temperature $\rm T_a$ to -4 °F. A version for an ambient temperature $\rm T_a$ to -40 °F is also optionally available.

Design of measuring system

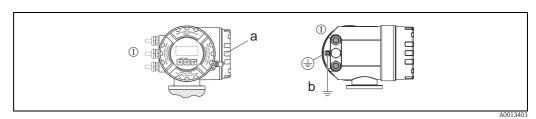


Fig. 3: Design of the measuring system, compact/remote version

- Connection compartment cover
- Screw terminal for connecting to the potential equalization
- see following section "Cable entries"

Cable entries

① Cable entries for transmitter terminal compartment (XP version) power supply/communication cable. Choice of thread for cable entry: 1/2" NPT.

Make sure that the XP cable glands/entries are secured to prevent working loose.

Cable specification

You can find information about the cable specification in the associated Operating Instructions.

Potential equalization

The transmitter must be safely integrated into the potential equalization via the screw terminal on the outside of the transmitter housing. Alternatively, the transmitter of the compact version as of serial number 4Axxxxxx000 can be integrated into the potential equalization via the pipeline as long as the pipeline provides a ground connection conforming to regulations.

Note!

Further information about potential equalization, screening and grounding can be found in the associated Operating Instructions.

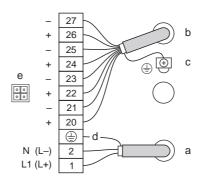


Electrical connection

Connection compartment

Transmitter housing (terminal assignment, connection data $\rightarrow \stackrel{\text{\tiny le}}{=} 9 \text{ ff.}$)

4 to 20 mA HART



A0005611

Fig. 4: Electrical connections

- a Power supply cable (terminal assignment, connection data $\rightarrow \stackrel{ all}{=} 9$)
- b Signal cable (terminal assignment, connection data $\rightarrow \boxed{2}$ 9)
- c Ground terminal for signal cable shield
- d Ground terminal for protective ground
- e Service adapter for connecting the service interface FXA193 (Fieldcheck, FieldCare)

Terminal assignment and connection data: Power supply

All transmitters	1 L (+)	2 N (-)	
Designation	Supply	Protective earth	
Functional values	AC: U = 8: AC: U = 2 DC: U = 1 Power consumption	Caution! Observe the grounding concepts	
Intrinsically safe circuit	n	of the system!	
U _m	260	V AC	



Terminal assignment and connection data for signal circuits (intrinsically safe circuits)

Note!

The following tables contain values/specifications, which are dependent on the type code (type of measuring device). Please compare the following type code to the one shown on the nameplate of your measuring device. For a graphic representation of the electrical connections: $\rightarrow \mathbb{B}$ 9.

Terminal assignment of transmitter 40***-********S+#**#

T	Terminal no. (inputs/outputs)								
Transmitter	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)	
Assignment	-	_	_		Pulse/frequency output, passive			output HART, active	
Electric circuit	-	_	-	_	intrin	sically safe	intrin	sically safe	
Safety-related values	-	-	-	-			1) L _o IIC/IIB	21.8 V DC 90 mA 490 mW 4.1 mH/15 mH 150 nF/1160 nF 2 mH/10 mH 80 nF/300 nF 30 V DC ² 10 mA ²) 0.3 W ²) negligible 6 nF	
Functional values	-	-	-	_	passive: 30 V DC / 250 mA		galvanically is active: $0/4$ to $R_L < 400 \ \Omega$ $R_L \ HART \ge 2$	20 mA	

¹⁾ Permitted values if concentrated inductance and capacitance occur simultaneously.

Terminal assignment of transmitter 40***-*******T+#**#

Transmitter	Terminal no. (inputs/outputs)							
Transmitter	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)
Assignment	-	_				Pulse/frequency output, passive		output HART, passive
Electric circuit	-	-		_	intrin	sically safe	intrin	sically safe
Safety-related values	-	-		_	$\begin{array}{c} U_i \\ I_i \\ P_i \\ L_i \\ C_i \end{array}$	30 V DC 500 mA 600 mW negligible 6 nF	$\begin{array}{c} U_i \\ I_i \\ P_i \\ L_i \\ C_i \end{array}$	30 V DC 100 mA 1.25 W negligible 6 nF
Functional values	-	-		_	galvanically isolated, passive: 30 V DC / 250 mA Open Collector Full scale frequency 2 to 5000 Hz		$\begin{array}{ll} \text{assive: 30 V DC / 250 mA} \\ \text{pen Collector} \\ \text{ill scale frequency} \end{array} \begin{array}{ll} \text{passive: 4 to 20 mA} \\ \text{voltage drop} \leq 9 \text{ V} \\ \text{R}_L < [(V_{p. supply} - 9 \text{ V}) \div \end{array}$	

 $^{^{2)}}$ The interconnection must be assessed according to the valid construction provisions.



Terminal assignment and connection data for signal circuits (non-intrinsically safe circuits)

Note!

The following tables contain values/specifications, which are dependent on the type code (type of measuring device). Please compare the following type code to the one shown on the nameplate of your measuring device. For a graphic representation of the electrical connections: $\rightarrow \blacksquare 9$.

Terminal assignment

Order	Terminal no. (inputs/outputs)									
characteristic "Inputs/outputs"	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)		
A	-	_	-		Pulse/frequency output		Current output HART			
D	Status	input	Relay output		Pulse/frequency output		Current output HART			

Safety-related and functional values of signal circuits

Signal circuits	Functional values	Safety-related v	alues
Current output HART	galvanically isolated, active/passive can be selected: active: $0/4$ to 20 mA $R_L < 700~\Omega,~R_L~HART \ge 250~\Omega$ passive: 4 to $20~mA$ $V_S = 18~to~30~V~DC,~R_i \ge 150~\Omega$	intrinsically safe U_m I_m	= no = 260 V = 500 mA
Pulse/frequency output	galvanically isolated, active/passive can be selected: active: 24 V DC / 25 mA (max. 250 mA during 20 ms) $R_L > 100 \Omega$ passive: 30 V DC / 250 mA Open Collector Full scale frequency 2 to 10 000 Hz ($f_{max} = 12500 \text{ Hz}$)		
Relay output	galvanically isolated, max. 30 V AC / 500 mA max. 60 V DC / 100 mA		
Status input	galvanically isolated, 3 to 30 V DC $R_i = 5 \; k\Omega \label{eq:resolution}$		



Service adapter

The service adapter is only used for connecting service interfaces approved by Endress+Hauser.

⚠ Warning!

It is not permissible to connect the service adapter whilst the atmosphere is considered to be explosive.

Device fuse

⚠ Warning!

Only use the following fuse types that are mounted on the power unit board:

- Voltage 20 to 55 V AC / 16 to 62 V DC:
 Fuse 2.0 A slow-blow, disconnect capacity 1500 A
 (Schurter, 0001.2503 or Wickmann, Standard Type 181 2.0 A)
- Voltage 85 to 260 V AC:
 Fuse 0.8 A slow-blow, disconnect capacity 1500 A
 (Schurter, 0001.2507 or Wickmann, Standard Type 181 0.8 A)

Technical Data

Dimensions

Please refer to the respective Technical Information for these dimensions:

■ Promass 40E → TI00055D

Weight

- The weight of the XP version is approx. 4.4 lbs greater than that of the standard version.
- The weight of the XP version in stainless steel is approx. 20 lbs greater than that of the standard version.

Control Drawings

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

Note!

The "Documentation/Important Information" folder provided with the measuring device contains a CD-ROM with all the Control Drawings.



















Safety Instructions

Proline Promass 40

Division 1

® Ex documentation

This documentation is an integral part of the following Operating Instructions:

■ BA00061D, Operating Instruction, Proline Promass 40

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Special conditions

- Install per Canadian Electrical Code.
- Control room equipment shall not use or generate more than 250 V rms.
- The device must be integrated into the potential equalization system.
- For terminals No. 20 to No. 27 of the transmitter, only devices with ratings $U_m \le 250 \text{ V}$ and $I_m \le 500 \text{ mA}$ are allowed to be connected.
- It is not permissible to connect the service adapter whilst the atmosphere is considered to be explosive.
- Use of the devices is restricted to mediums against which the process-wetted materials are adequately resistant.
- Use supply wires suitable for 5 °C above ambient temperature, but least for 80 °C.
- Transmitter enclosure G02 explosionproof for use in Class 1 Division 1 Groups A, B, C, D (seals not required) and dust-ignition proof for Class II, III Division 1 Groups E, F, G.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except Promass E: DN 80 (sensor version Group C-D) which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G. (optionally, a version for Groups A and B is available)
- Substitution of components may impair intrinsic safety.



Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C.

General warnings

- 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.
- Open the device only when it is de-energized (and after a delay of at least 10 minutes following shutdown
 of the power supply).
- The housing of the Ex-rated transmitter can be turned in 90° steps. Whereas the non-Ex version has a bayonet adapter, however, the Ex version has a thread. Recesses for centering the worm screw are provided to prevent inadvertent movement of the transmitter housing. It is permissible to turn the transmitter housing through a maximum of 180° during operation (in either direction), without compromising explosion protection. After turning the housing the worm screw must be tightened again.
- The screw cap has to be removed before the local display can be turned, and this must be done with the device de-energized (and after a delay of at least 10 minutes following shutdown of the power supply).

Turning the transmitter housing

- 1. Unscrew the grub screw.
- 2. Rotate the transmitter housing cautiously clockwise until the end stop (end of the thread).
- 3. Rotate the transmitter housing counter-clockwise (max. 360°) in the wanted position.
- 4. Tighten the grub screw again.

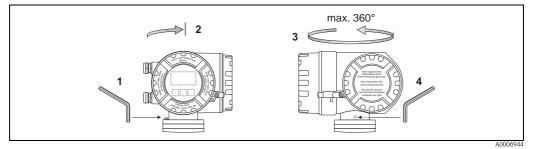


Fig. 5: Turning the transmitter housing



Approvals

General

The system meets the fundamental health and safety requirements for the design and construction of devices and protective systems intended for use in potentially explosive atmospheres in accordance with the Canadian Electrical Code.

No. / approval type

160686-1132623

Notified body

CSA: Canadian Standard Association

Identification

The identification of the system must contain the following specifications: or

- Class I, Groups ABCD
- Class I, Zone 1, Group IIC
- Class II, Groups EFG
- Class III

- Class I, Groups CD
- Class I, Zone 1, Group IIB
- Class II, Groups EFG
- Class III



The installation instructions for the safe use of the system must be observed $\rightarrow 16$.



Description of measuring system

The measuring system consists of a compact version: Transmitters and sensors form a mechanical unit.

Nameplate

The nameplates, which are mounted in a clearly visible position on the transmitter and sensor, contain all of the relevant information about the measuring system.

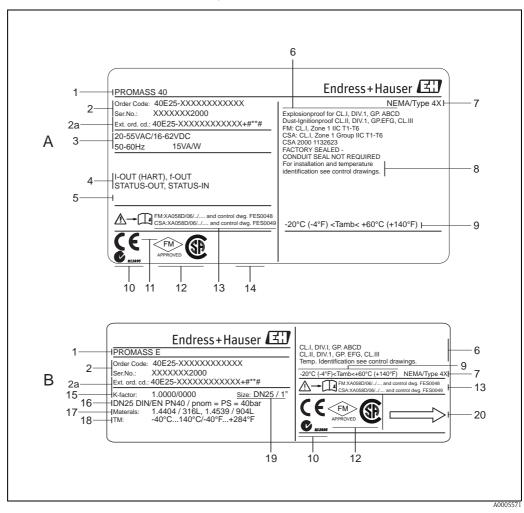


Fig. 6: Example for nameplates of a transmitter and of a sensor

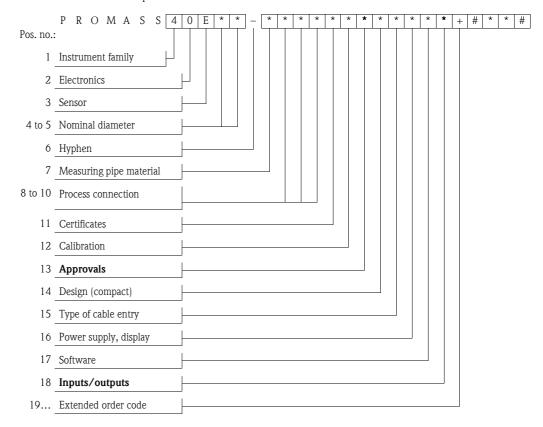
- A Transmitter nameplate
- B Sensor nameplate
- 1 Transmitter or sensor type
- 2 Order code and serial number
- 2a Extended order code
- 3 Power supply, frequency and power consumption
- 4 Available inputs/outputs
- 5 Space for additional information on special products
- 6 Space for additional information
- 7 Type of protection
- 8 Space for notes, e.g. delays, etc.
- 9 Ambient temperature range
- 10 C-Tick symbol

- 11 Space for notified body for quality assurance monitoring
- 12 Label of notified body: Canadian Standards Association
- 13 Associated Ex documentation
- 14 Space for other approval specifications and certificates
- 15 Calibration factor/zero point
- 16 Nominal diameter/nominal pressure
- 17 Lining material
- 18 Fluid temperature range
- 19 Nominal diameter device
- 20 Flow direction



Type code

The type code describes the exact design and the equipment of the measuring system. It can be read on the nameplate of the transmitter and sensor and is structured as follows:



Approvals (Pos. no. 13 in the type code)

*	Application/zone
N, O	 Class I, Groups ABCD Class I, Zone 1, Group IIC Class II, Groups EFG Class III
P	 Class I, Groups CD Class I, Zone 1, Group IIB Class II, Groups EFG Class III

Inputs/outputs (Pos. no. 18 in the type code)

*	Type of protection				
A, D non-intrisically safe outputs					
S, T	Ex ia				

Note!

For a detailed explanation of these values with regard to the outputs and inputs available, as well as a description of the associated terminal assignment and connection data: $\rightarrow \stackrel{\cong}{}$ 22 ff.



Temperature table compact version

Max. medium temperature [$^{\circ}$ C] for T1-T6 in relation to the maximum ambient temperature T_a

	Nominal diameter [mm]	T _a [°C]	T6 (85 °C)	T5 (100 °C)	T4A (120 °C)	T4 (135 °C)	T3A (180 °C)	T2C (230 °C)	T2B (260 °C)	T1 (450 °C)
	8 to 50	+45	45	100	120	130	140	140	140	140
4*E**	25 to 50	+50	50	100	120	130	140	140	140	140
4 6	23 10 30	+60	_	100	120	130	140	140	140	140
	80	+00	60	75	95	110	140	140	140	140

The minimum **medium temperature** is —40 °C.

The minimum ambient temperature T_a to $-20~^\circ\text{C}.$ A version for an ambient temperature T_a to $-40~^\circ\text{C}$ is also optionally available.

Design of measuring system

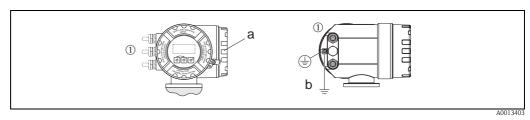


Fig. 7: Design of the measuring system, compact/remote version

- Connection compartment cover
- Screw terminal for connecting to the potential equalization
- see following section "Cable entries"

Cable entries

① Cable entries for transmitter terminal compartment (XP version) power supply/communication cable. Choice of thread for cable entry: 1/2" NPT.

Make sure that the XP cable glands/entries are secured to prevent working loose.

Cable specification

You can find information about the cable specification in the associated Operating Instructions.

Potential equalization

The transmitter must be safely integrated into the potential equalization via the screw terminal on the outside of the transmitter housing. Alternatively, the transmitter of the compact version as of serial number 4Axxxxxx000 can be integrated into the potential equalization via the pipeline as long as the pipeline provides a ground connection conforming to regulations.

Note!

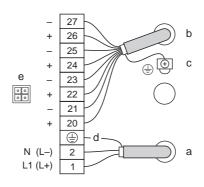
Further information about potential equalization, screening and grounding can be found in the associated Operating Instructions.

Electrical connection

Connection compartment

Transmitter housing (terminal assignment, connection data \rightarrow $\stackrel{ }{ }$ 21 ff.)

4 to 20 mA HART



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Fig. 8: Electrical connections

- a Power supply cable (terminal assignment, connection data $\rightarrow \stackrel{ all}{=} 21$)
- b Signal cable (terminal assignment, connection data $\rightarrow = 21$)
- c Ground terminal for signal cable shield
- d Ground terminal for protective ground
- e Service adapter for connecting the service interface FXA193 (Fieldcheck, FieldCare)

Terminal assignment and connection data: Power supply

All transmitters	1 L (+)	2 N (-)	
Designation	Supply	Protective earth	
Functional values	AC: U = 8: AC: U = 2 DC: U = 1 Power consumption	Caution! Observe the grounding concepts	
Intrinsically safe circuit	n	of the system!	
U _m	260		



Terminal assignment and connection data for signal circuits (intrinsically safe circuits)

Note!

The following tables contain values/specifications, which are dependent on the type code (type of measuring device). Please compare the following type code to the one shown on the nameplate of your measuring device. For agraphic representation of the electrical connections: $\rightarrow \stackrel{\text{\tiny le}}{=} 21$.

Terminal assignment of transmitter 40***-********S+#**#

Tromamittan	Terminal no. (inputs/outputs)								
Transmitter	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)	
Assignment				Pulse/frequency output, passive		Current output HART, active			
Electric circuit	_			_	intrin	sically safe	intrin	sically safe	
Safety-related values	-		-	-	$\begin{array}{c} U_i \\ I_i \\ P_i \\ L_i \\ C_i \end{array}$	30 V DC 500 mA 600 mW negligible 6 nF	1) L _o IIC/IIB	21.8 V DC 90 mA 490 mW 4.1 mH/15 mH 160 nF/1160 nF 2 mH/10 mH 80 nF/300 nF 30 V DC ²⁾ 10 mA ²⁾ 0.3 W ²⁾ negligible 6 nF	
Functional values	_		-	_	galvanically isolated, passive: 30 V DC / 250 mA Open Collector Full scale frequency 2 to 5000 Hz		galvanically isolated, active: $0/4$ to 20 mA $R_L < 400~\Omega$ R_L HART $\geq 250~\Omega$		

¹⁾ Permitted values if concentrated inductance and capacitance occur simultaneously.

Terminal assignment of transmitter 40***-*******T+#**#

Transmitter	Terminal no. (inputs/outputs)								
Transmitter	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)	
Assignment	-	_	-		Pulse/frequency output, passive		Current output HART, passive		
Electric circuit	-	-	-	_	intrin	sically safe	intrin	sically safe	
Safety-related values	-	_		_	$\begin{array}{c} U_i \\ I_i \\ P_i \\ L_i \\ C_i \end{array}$	30 V DC 500 mA 600 mW negligible 6 nF	$\begin{array}{c} U_i \\ I_i \\ P_i \\ L_i \\ C_i \end{array}$	30 V DC 100 mA 1.25 W negligible 6 nF	
Functional values	-	-		-	galvanically isolated, passive: 30 V DC / 250 mA Open Collector Full scale frequency 2 to 5000 Hz		galvanically isolated, passive: 4 to 20 mA voltage drop \leq 9 V $R_L < [(V_{p. supply} - 9 V) \div 25]$		

 $^{^{2)}}$ The interconnection must be assessed according to the valid construction provisions.



Terminal assignment and connection data for signal circuits (non-intrinsically safe circuits)

Note!

The following tables contain values/specifications, which are dependent on the type code (type of measuring device). Please compare the following type code to the one shown on the nameplate of your measuring device. For a graphic representation of the electrical connections: $\rightarrow \triangleq 21$.

Terminal assignment

Order	Terminal no. (inputs/outputs)							
characteristic "Inputs/outputs"	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)
A	-	_	-		Pulse/frequency output		Current output HART	
D	Status	s input	Relay output		Pulse/frequency output		ut Current output HART	

Safety-related and functional values of signal circuits

Signal circuits	Functional values	Safety-related values
Current output HART	galvanically isolated, active/passive can be selected: active: 0/4 to 20 mA $R_L < 700~\Omega,~R_L~HART \ge 250~\Omega$ passive: 4 to 20 mA $V_S = 18~to~30~V~DC,~R_i \ge 150~\Omega$	$\begin{array}{lll} \text{intrinsically safe} &=& \text{no} \\ U_m &=& 260 \text{ V} \\ I_m &=& 500 \text{ mA} \end{array}$
Pulse/frequency output	galvanically isolated, active/passive can be selected: active: $24 \text{ V DC} / 25 \text{ mA}$ (max. 250 mA during 20 ms) $R_L > 100 \Omega$ passive: $30 \text{ V DC} / 250 \text{ mA}$ Open Collector Full scale frequency $2 \text{ to } 10 \text{ 000 Hz}$ ($f_{max} = 12 \text{ 500 Hz}$)	
Relay output	galvanically isolated, max. 30 V AC / 500 mA max. 60 V DC / 100 mA	
Status input	galvanically isolated, 3 to 30 V DC $R_i = 5 \; k\Omega \label{eq:resolution}$	



Service adapter

The service adapter is only used for connecting service interfaces approved by Endress+Hauser.

⚠ Warning!

It is not permissible to connect the service adapter whilst the atmosphere is considered to be explosive.

Device fuse

⚠ Warning!

Only use the following fuse types that are mounted on the power unit board:

Voltage 20 to 55 V AC / 16 to 62 V DC:
 Fuse 2.0 A slow-blow, disconnect capacity 1500 A
 (Schurter, 0001.2503 or Wickmann, Standard Type 181 2.0 A)

Voltage 85 to 260 V AC:
 Fuse 0.8 A slow-blow, disconnect capacity 1500 A
 (Schurter, 0001.2507 or Wickmann, Standard Type 181 0.8 A)

Technical Data

Dimensions

Please refer to the respective Technical Information for these dimensions:

■ Promass 40E → TI00055D

Weight

- The weight of the XP version is approx. 2 kg greater than that of the standard version.
- The weight of the XP version in stainless steel is approx. 9 kg greater than that of the standard version.

Control Drawings

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

Note!

The "Documentation/Important Information" folder provided with the measuring device contains a CD-ROM with all the Control Drawings.

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