



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX CSA 21.0020X** Page 1 of 4 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2021-06-24

Applicant: **Endress+Hauser Flowtec AG**
Kaegenstrasse 7
Reinach BL1, CH-4153
Switzerland

Equipment: **Proline 10 Flowmeter system**

Optional accessory:

Type of Protection: **Ex d, Ex e, Ex i, Ex t**

Marking: See the annexes attached to this certificate for marking details:
Annex-A: Proline Promass K10
Annex-B: Proline Promag P10

Approved for issue on behalf of the IECEx
Certification Body:

Dorin Stochitoiu

Position:

Technical Oversight Specialist

Signature:
(for printed version)

Date:

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CSA Group
178 Rexdale Boulevard
Toronto, Ontario M9W 1R3
Canada





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Manufacturer: **Endress+Hauser Flowtec AG**
Kägenstrasse 7
CH-4153
Reinach/BL1
Other manufacturing locations listed in certificate annex.
Switzerland

Additional
manufacturing
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-26:2014-10 Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
Edition:3.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[CA/CSA/ExTR21.0018/00](#)

Quality Assessment Report:

[DE/TUN/QAR06.0004/08](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Proline Promass K10 - 8KBB** and O8KBB**

Proline Promag P10 - 5PBB** and O5PBB**

SPECIFIC CONDITIONS OF USE: YES as shown below:

See the annexes attached to this certificate for specific conditions of use.



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Equipment (continued):

This certificate covers two types of flowmeter for the platform Proline 10:

- Proline Promass K10
- Proline Promag P10

All versions of Proline 10 are available as a compact version where the transmitter is installed integral to the sensor. In addition, the version Proline Promag P10 is also available as a remote version, where the sensor is installed remotely to the transmitter.

All Proline Promag 10 and Proline Promass 10 flowmeters are available for an ambient temperature of -40°C to +60°C.

The flowmeters Proline Promass 10 and Proline Promag 10 have the ingress protection rating IP66 and IP67.

See the annexes attached to this certificate for further product details.

Annexes:

- [Annex_A_to_IECEX_CSA_21.0020X_Issue_0_Promass10.pdf](#)
- [Annex_B_to_IECEX_CSA_21.0020X_Issue_0_Promag10.pdf](#)



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Annex A:

This Annex is applicable for flowmeters type Proline Promass K10

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1. Description

Proline 10 is a platform used for flowmeters type Proline Promass K 10.

The Promass K 10 is a flowmeter intended for measuring gases and liquids based on the measuring principle of controlled generated coriolis forces. It consists of a transmitter type Promass 10 and a sensor type Promass K for a range of medium temperature of -40°C to +150°C. The transmitter enclosure is connected integral to the Promass K sensor as a compact version. The Promass K sensors are available in sizes DN8 (3/8") to DN80 (3").

All versions of Promass K10 are available for use in hazardous location Zone 1 group IIB, Zone 21 group IIIC or Zone 2 group IIB.

The Proline Promass 10 sensor may be installed in Zone 0 group IIB where the process medium is contained in the measuring tube.

The versions of electronic are designed either with intrinsically safe IO's, Ex ib for Zone 1, Ex ic for Zone 2 respectively or with non-intrinsically safe IO's. A mix of type of protections, Ex i in combination with non-Ex i IO's is not allowed for IO's.

All Proline Promass 10 flowmeters are available for an ambient temperature of -40°C to +60°C.

The versions of flowmeters Proline Promass 10 are available for an enclosure protection of degree IP66, IP67.



2. Order Code

2.1. Proline Promass 10

Extended order code Proline Promass 10

8aBbcc – eehiklnppqqrss + ###
O8aBbcc – eehiklnppqqrssstt + ### for OEM-version
8xBbdd – eehiklnooppss + ### for replacement transmitter
O8xBbdd – eehiklnooppssstt + ### for replacement transmitter OEM

- 8 = Promass**
- a = Type of sensor**
 K = Promass K
 x = replacement transmitter without sensor
- B = Proline 10**
- b = Generation**
 B = Generation of Flowmeter
- cc = Size**
 any double digits with combination of number or letter
- dd = Assignment of replacement transmitter**
 xx = standard transmitter
 x1 = transmitter for approval code ee = BA or C1
- ee = Approval**
 BA = Ex db eb [ib] IIB T4...T1 Gb (compact version only)
 Ex tb IIIC T** Db
 BC = Ex db [ib] IIB T4...T1 Gb (compact version only)
 Ex tb IIIC T** Db
 BS = Ex ec IIC T4...T1 Gc (compact version only)
- h = Power Supply**
 D = 24Vdc
 E = 100-230Vac
 I = 100-230Vac / 24Vdc
 X = sensor only for replacement
- i = Input / Output**
 B = 4-20mA HART, Pulse/Frequency/Switch output
 C = 4-20mA HART, Pulse/Frequency/Switch output Ex i
 M = Modbus RS485, 4-20mA
 U = Modbus RS485, 4-20mA (Ex i)
 X = sensor only for replacement
- k = Display / Operation**
 any single number or letter
- l = Housing**
 any single number or letter
- n = Cable Entry**
 any single number or letter
- oo = Existing product**
 any double digits with combination of number or letter
- pp = Measuring tube material**
 any double digits with combination of number or letter



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- qqq** = **Process connection**
any triple digits with combination of number or letter
- r** = **Calibration**
any single number or letter
- ss** = **Device model (two digit)**
A1 = product version 1
- tt** = **Customer version (two digits)**
any double digits with combination of number or letter
- +** = **Additional optional order codes**
- **** = **Option in two digits (none, two or multiple of two digits)**
any combination of number and/or letter
- #** = **Signs used as indicator for optional abbreviation of extended order code**



2.2. Assignment of Flowmeter to Replacement Transmitter

The replacement transmitters are assigned to the flowmeter Proline Promass 10 as follows:

Product flowmeters				Replacement transmitter type			
model code	Generation code b =	Approval code ee =	device model code ss =	model code	Generation code b =	Approval code ee =	device model code ss =
8KBb**-ee...ss, O8KBb**-ee...ss	B	BA	A1	8xBbx1-ee...ss, O8xBbx1-ee...ss	B	BA	A1
	B	BC, BS	A1	8xBbxx-ee...ss, O8xBbxx-ee...ss	B	BC, BS	A1



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3. Parameters

3.1. Electrical Parameters

Power Supply			
Order Code h =	approval code ee =	terminal no.	values
D	BS	No. 1(L+), 2(L-)	$U_N = 19.2...31.2V_{DC}$ $U_M = 250V_{AC}$
E	BS	No. 1(L), 2(N)	$U_N = 85...264V_{AC}$ $U_M = 250V_{AC}$
I	BA, BC, BS	No. 1(L+/L), 2(L-/N)	$U_N = 19.2...31.2V_{DC} / 85...264V_{AC}$ $U_M = 250 V$

Input/Output			
Order Code i =	terminal no.	Values for approval code ee = BA, BC	Values for approval code ee = BS
B	No. 26, 27 (4-20mA HART, active)	$U_N = 30V_{DC}$ $U_M = 250V_{AC}$	$U_N = 30V_{DC}$ $U_M = 250V_{AC}$
	No. 24, 25 (4-20mA HART, passive)	$U_N = 30V_{DC}$ $U_M = 250V_{AC}$	$U_N = 30V_{DC}$ $U_M = 250V_{AC}$
	No. 22, 23 (Pulse, frequency, switch)	$U_N = 30V_{DC}$ $U_M = 250V_{AC}$	$U_N = 30V_{DC}$ $U_M = 250V_{AC}$
C	No. 26, 27 (4-20mA HART, active Ex i)	$U_O = 22.3V$ $I_O = 93mA$ $P_O = 520mW$ $L_O = 8mH$ $C_O = 500nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$	$U_O = 22.3V$ $I_O = 93mA$ $P_O = 520mW$ $L_O = 29mH$ $C_O = 1400nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$
	No. 24, 25 (4-20mA HART, passive Ex i)	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 6nF$	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0mH$ $C_i = 6nF$
	No. 22, 23 (Pulse, frequency, switch Ex i)	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 10nF$	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 10nF$



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M	No. 26, 27 (4-20mA, active)	$U_N = 30V$ $U_M = 250Vac$	$U_N = 30V_{DC}$ $U_M = 250Vac$
	No. 24, 25 (4-20mA, passive)	$U_N = 30V$ $U_M = 250Vac$	$U_N = 30V_{DC}$ $U_M = 250Vac$
	No. 22, 23 (Modbus)	$U_N = 3.3V$ $U_M = 250Vac$	$U_N = 3.3V_{DC}$ $U_M = 250Vac$
U	No. 26, 27 (4-20mA, active Ex i)	$U_O = 22.3V$ $I_O = 93mA$ $P_O = 520mW$ $L_O = 8mH$ $C_O = 500nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$	$U_O = 22.3V$ $I_O = 93mA$ $P_O = 520mW$ $L_O = 29mH$ $C_O = 1400nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$
	No. 24, 25 (4-20mA, passive Ex i)	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 6nF$	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 6nF$
	No. 22, 23 (Modbus Ex i)	$U_i = 4.2V$ $I_i = n.a.$ $P_i = n.a.$ $L_i = 0\mu H$ $C_i = 6nF$ $L_O/R_O = 1.2mH/\Omega$ $U_O = 4.2V$ $I_O = 120mA$ $P_O = 130mW$ $L_O = 10mH$ $C_O = 900\mu F$	$U_i = 4.2V$ $I_i = n.a.$ $P_i = n.a.$ $L_i = 0\mu H$ $C_i = 6nF$ $L_O/R_O = 2.5mH/\Omega$ $U_O = 4.2V$ $I_O = 120mA$ $P_O = 130mW$ $L_O = 20mH$ $C_O = 900\mu F$

Service Interface		
Order Code ee =	terminal no.	values
all	CDI	$U_i = 7.0V$ $I_i = n.a$ (current limited circuit) $L_i = 0 \mu H$ $C_i = 0 \mu F$ $U_O = 3.9V$ $I_O = 10mA$ $P_O = 40mW$ $L_O = 1H$ $C_O = 300\mu F$

3.2. Thermal Parameters (Zone 1 and Zone 21)

Proline Promass 10

Notes:

This page applies to versions with extended order code covering:

8*BB** – dd... O8*BB** – dd...
 with approval option cCSAus / CSA: dd = CC, C1, C3
 IECEx / ATEX: dd = BA, BC

Temperature table for versions with sensor insulated and not insulated (for insulation refer to manual of Endress+Hauser Flowtec)									
Size / DN	T _{med}		T _{A,max} [°C]	T _{med,max} [°C]					
	min [°C]	max [°C]		T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
08...50	-40	150	50	---	---	130	130	150	150
			60	---	---	100	130	150	150
80			60	---	---	110	135	150	150

Temperature table for versions with sensor insulated (for insulation not in compliance to manual of Endress+Hauser Flowtec)						
Size / DN	T _{max} to be measured at reference point at sensor neck [°C]					
	T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
all	---	---	67	68	69	69

Notes: (1) for safe use temperatures shall not exceed all of the following:
 - temperature table for versions with sensor not insulated (refer to table on the left)
 - temperature at reference point as listed in this table
 - for maximum medium temperature and minimum medium temperature see nameplate
 (2) location of reference point

Änderungen: A 13.01.2020 / Bn B C D E	F	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersetzt durch:		
	G		Ersetzt für:		
	H		Ersteller: FES / Bn		
	J		FILE: M\Zeichng\FES0358A\FES0358A.doc		
	K				
Control Drawing IECEx, ATEX, CSA, cCSAus Zone 1, Zone 21, Cl.I Div. 1, Cl.II, Cl.III, Cl.I Zone 1 Thermal Parameter Proline Promass 10			Gezeichnet	13.01.2020	Bn
			Geprüft		
			Ex-geprüft	13.01.2020	Bn
			Gesehen		
Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach			FES0358A 1/1		

3.3. Thermal Parameters (Zone 2)

Proline Promass 10

Notes:

This page applies to versions with extended order code covering:

8*BB** – dd... O8*BB** – dd...
 with approval option cCSAUs / CSA: dd = CS, CZ
 IECEx / ATEX: dd = BS

Temperature table for versions with sensor not insulated

Size / DN	T _{med}		T _{a,max}	T _{med,max} [°C]				
	min [°C]	max [°C]		T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)
08...15	-40	150	55	---	115	150	150	150
			60	---	115	140	150	150
25...80			60	---	95	140	150	150

Temperature table for versions with sensor insulated

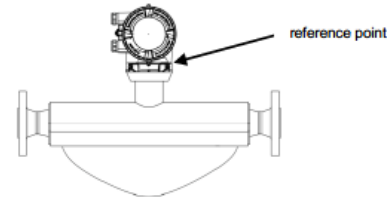
(for insulation refer to manual of Endress+Hauser Flowtec)

Size / DN	T _{med}		T _{a,max}	T _{med,max} [°C]				
	min [°C]	max [°C]		T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)
08...15	-40	150	60	---	115	135	150	150
			60	---	95	135	150	150
25...80			60	---	95	135	150	150

Temperature table for versions with sensor insulated (for insulation not in compliance to manual of Endress+Hauser Flowtec)

Size / DN	T _{max} to be measured at reference point at sensor neck [°C]					
	T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
all	---	---	67	68	69	69

- Notes:
- for safe use temperatures shall not exceed all of the following:
 - temperature table for versions with sensor not insulated (refer to table on the left)
 - temperature at reference point as listed in this table
 - for maximum medium temperature and minimum medium temperature see nameplate
 - location of reference point



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	B		G				
	C		H				
	D		J				
	E		K				
Control Drawing IECEx, ATEX, CSA, cCSAus					Gezeichnet	13.01.2020	Bn
Zone 2, Cl.I Div. 2, Cl.I Zone 2					Geprüft		
Thermal Parameter					Ex-geprüft	13.01.2020	Bn
Proline Promass 10					Gesehen		
Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0359A 1/1		



4. Marking

Proline Promass 10 (compact version)		
Model Code: 8*B*** - ee* ⁱ *****+## O8*B*** - ee* ⁱ *****+##		
Approval ee =	I/O i =	Marking of Ex protection
BA	C, U	Transmitter: Ex db eb ib [ib] IIB T4...T1 Gb Ex tb [ib] IIIC T** °C Db Sensor : Ex ia/ib IIB T4...T1 Ga/Gb Ex tb IIIC T** °C Db or Ex ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
	B, M	Transmitter: Ex db eb ib IIB T4...T1 Gb Ex tb IIIC T** °C Db Sensor: Ex ia/ib IIB T4...T1 Ga/Gb Ex tb IIIC T** °C Db or Ex ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
BC	C, U	Transmitter: Ex db ib [ib] IIB T4...T1 Gb Ex tb [ib] IIIC T** °C Db Sensor: Ex ia/ib IIB T4...T1 Ga/Gb Ex tb IIIC T** °C Db or Ex ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
	B, M	Transmitter: Ex db ib IIB T4...T1 Gb Ex tb IIIC T** °C Db Sensor: Ex ia/ib IIB T4...T1 Ga/Gb Ex tb IIIC T** °C Db or Ex ib IIB T4...T1 Gb Ex tb IIIC T** °C Db

Information: Level of Protection representative for ...
db -> electronic compartment eb -> terminal compartment ib -> display + sensor [ib] -> IO's tb -> enclosure
db -> electronic compartment eb -> terminal compartment ib -> display + sensor tb -> enclosure
db -> electronic compartment + terminal compartment ib -> display + sensor [ib] -> IO's tb -> enclosure
db -> electronic compartment + terminal compartment ib -> display + sensor tb -> enclosure



BS	C, U	Transmitter: Ex ec ic [ic] IIB T4...T1 Gc Sensor : Ex ec ic IIB T4...T1 Gc	ec -> electronic compartment + terminal compartment + sensor ic -> display [ic] -> IO's
	B, M	Transmitter: Ex ec ic IIB T4...T1 Gc Sensor : Ex ec ic IIB T4...T1 Gc	ec -> electronic compartment + terminal compartment ic -> display

5. Conditions of Certification

- All equipment of the measurement system shall be included in the equipotential bonding. Along the intrinsically safe circuits potential equalization must exist.
- The sensors may only be used for those process media, for which the wetted parts are known to be suitable (refer to nameplate or installation instructions for applicable materials)
- It is not permitted to use versions of Proline Promass 10 without display module (refer to installation instructions for proper assembly)
- The flameproof joints are not intended to be repaired
- For order code 'ee' = BC:
Equipment of Proline Promass 10 with transmitter terminal compartment with type of protection Ex db must be de-energized for 10 minutes before opening enclosure
- For order code 'ee' = BS:
Equipment for Proline Promass 10 shall be installed using a transient protection not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.
- The Proline 10 Flowmeter that may include, stainless steel label tag with rope, when not bonded to earth used on coated metallic transmitter and/or sensor enclosure, shall be prevented from risk of electrostatic charging caused by friction and/or cleaning. The equipment nameplate shall bear the following warning: WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- Only use battery Renata type lithium CR1632, 3V for display
- For Proline Promass 10 with order code 'ee' = BA, BC:
Zone 0 is only applicable for the process medium in the measuring tube



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6. Manufacturing Locations

1. Endress+Hauser Flowtec AG
Kägenstrasse 7
4153 Reinach BL 1
Switzerland
2. Endress+Hauser Flowtec AG
35, rue de l' Europe
68700 Cernay
France
3. Endress+Hauser Flowtec (India) Pvt. Ltd.
M-174 Waluj MIDC
Aurangabad 431136
Maharashtra State
India
4. Endress+Hauser Flowtec AG, Division U.S.A.
2330 Endress Place
Greenwood, Indiana 46143
USA
5. Endress+Hauser Flowtec (China) Co. Ltd.
Su-Hong-Zhong-Lu No. 465
Suzhou Industrial Park
215021 Suzhou
Province Jiangsu
P.R. China
6. Endress+Hauser Flowtec (China) Co. Ltd.
Jiang-Tian-Li-Lu No. 31
Suzhou Industrial Park
215021 Suzhou
Province Jiangsu
P.R. China
7. Endress + Hauser Flowtec (Brazil) Fluxômetros Ltda.
Estrada Municipal Antônio Sesti, 600 A - Recreio Costa Verde
CEP 13254-085 – Itatiba - SP
Brazil



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Annex B:

This Annex is applicable for flowmeters type Proline Promag P10

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1. Description

Proline 10 is a platform used for flowmeters type Proline Promag P 10.

The Promag P 10 is a magnetic-inductive flowmeter intended for measuring conductive liquids. The measuring principle is based on Faraday's law.

It consists of a transmitter type Promag 10 and the sensors type Promag P. The transmitter enclosure is connected integral to the sensor as a compact version and in alternative installed remote to the sensor as a remote version.

The sensors are available in sizes up to DN3000. An extended sensor neck may also be used for both versions, compact and remote version.

All compact versions of Proline 10 are available for use in hazardous location

Zone 1 group IIB, Zone 21 group IIIC or Zone 2 group IIB. A remote version of Proline Promag P10 is available for use in hazardous location Zone 2 group IIB only

The versions of electronic are designed either with intrinsically safe IO's, Ex ib for Zone 1, Ex ic for Zone 2 respectively or with non-intrinsically safe IO's. A mix of type of protections, Ex i in combination with non-Ex i IO's is not allowed for IO's.

All Proline Promag 10 flowmeters are available for an ambient temperature of -40°C to +60°C.

The versions of flowmeters Proline Promag 10 are available for an enclosure protection of degree IP66, IP67.



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2. Order Code

2.1. Proline Promag 10

Extended order code Proline Promag 10:

5aBbcc – eefghiklmnopppqrss + ###
O5aBbcc – eefghiklmnopppqrsstt + ### for OEM-version
5xBbdd – eefghiklmnss + ### for replacement transmitter
O5xBbdd – eefghiklmnsstt + ### for replacement transmitter OEM

- 5 = Promag**
- a = Type of sensor**
 - P = Sensor Promag P
 - x = replacement transmitter without sensor
- B = Proline 10**
- b = Generation**
 - B = Generation of Flowmeter
- cc = Size**
 - any combination of number and/or letter up to size = DN3000
- dd = Assignment of replacement transmitter**
 - xx = standard transmitter
 - x1 = transmitter for approval code ee = BA or C1
- ee = Approval**
 - BA = Ex db eb [ib] IIB T4...T1 Gb (compact version only)
Ex tb IIIC T* Db
 - BC = Ex db [ib] IIB T4...T1 Gb (compact version only)
Ex tb IIIC T* Db
 - BS = Ex ec IIC T4...T1 Gc (compact and remote version)
- f = Design**
 - any single number or letter
- g = Functionality**
 - any single number or letter
- h = Power Supply**
 - D = 24Vdc
 - E = 100-230Vac
 - I = 100-230Vac / 24Vdc
 - X = sensor only for replacement
- i = Input / Output**
 - B = 4-20mA HART, Pulse/Frequency/Switch output
 - C = 4-20mA HART, Pulse/Frequency/Switch output Ex i
 - M = Modbus RS485, 4-20mA
 - U = Modbus RS485, 4-20mA (Ex i)
 - X = sensor only for replacement
- k = Display / Operation**
 - any single number or letter
- l = Housing**
 - any single number or letter
- m = Cable Sensor Connection Remote Version**
 - any single number or letter



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- n** = **Cable Entry**
any single number or letter
- o** = **Liner material**
any single number or letter
- ppp** = **Process connection**
any triple digits with combination of number or letter
- q** = **Electrode**
any number or letter
- r** = **Calibration**
any single number or letter
- ss** = **Device Model (two digit)**
A1 = product version 1
- tt** = **Customer version (two digits)**
any double digits with combination of number or letter
- +** = **Additional optional order codes**
- **** = **Option in two digits (none, two or multiple of two digits)**
any combination of number and/or letter
- #** = **Signs used as indicator for optional abbreviation of extended order code**



2.2. Assignment of Flowmeter to Replacement Transmitter

The replacement transmitters are assigned to the flowmeter Proline Promag 10 as follows:

Product flowmeters				Replacement transmitter type			
model code	Generation code b =	Approval code ee =	device model code ss =	model code	Generation code b =	Approval code ee =	device model code ss =
5PBb**-ee...ss, O5PBb**-ee...ss	B	BA	A1	5xBbx1-ee...ss, O5xBbx1-ee...ss	B	BA	A1
	B	BC, BS	A1	5xBbxx-ee...ss, O5xBbxx-ee...ss	B	BC, BS	A1

3. Parameters

3.1. Electrical Parameters

Power Supply			
Order Code h =	approval code ee =	terminal no.	values
D	BS	No. 1(L+), 2(L-)	$U_N = 19.2...31.2V_{DC}$ $U_M = 250V_{AC}$
E	BS	No. 1(L), 2(N)	$U_N = 85...264V_{AC}$ $U_M = 250V_{AC}$
I	BA, BC, BS	No. 1(L+/L), 2(L-/N)	$U_N = 19.2...31.2V_{DC} / 85...264V_{AC}$ $U_M = 250 V$



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Input/Output			
Order Code i =	terminal no.	Values for approval code ee = BA, BC	Values for approval code ee = BS
B	No. 26, 27 (4-20mA HART, active)	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$
	No. 24, 25 (4-20mA HART, passive)	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$
	No. 22, 23 (Pulse, frequency, switch)	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$
C	No. 26, 27 (4-20mA HART, active Ex i)	$U_O = 22.3V$ $I_O = 93mA$ $P_O = 520mW$ $L_O = 8mH$ $C_O = 500nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$	$U_O = 22.3V$ $I_O = 93mA$ $P_O = 520mW$ $L_O = 29mH$ $C_O = 1400nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$
	No. 24, 25 (4-20mA HART, passive Ex i)	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 6nF$	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0mH$ $C_i = 6nF$
	No. 22, 23 (Pulse, frequency, switch Ex i)	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 10nF$	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 10nF$
M	No. 26, 27 (4-20mA, active)	$U_N = 30V$ $U_M = 250V_{ac}$	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$
	No. 24, 25 (4-20mA, passive)	$U_N = 30V$ $U_M = 250V_{ac}$	$U_N = 30V_{DC}$ $U_M = 250V_{ac}$
	No. 22, 23 (Modbus)	$U_N = 3.3V$ $U_M = 250V_{ac}$	$U_N = 3.3V_{DC}$ $U_M = 250V_{ac}$



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U	No. 26, 27 (4-20mA, active Ex i)	$U_o = 22.3V$ $I_o = 93mA$ $P_o = 520mW$ $L_o = 8mH$ $C_o = 500nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$	$U_o = 22.3V$ $I_o = 93mA$ $P_o = 520mW$ $L_o = 29mH$ $C_o = 1400nF$ $U_i = 6.5V$ $I_i = 10mA$ $P_i = 20mW$
	No. 24, 25 (4-20mA, passive Ex i)	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 6nF$	$U_i = 30V$ $I_i = 100mA$ $P_i = 1.25W$ $L_i = 0\mu H$ $C_i = 6nF$
	No. 22, 23 (Modbus Ex i)	$U_i = 4.2V$ $I_i = n.a.$ $P_i = n.a.$ $L_i = 0\mu H$ $C_i = 6nF$ $L_o/R_o = 1.2mH/\Omega$ $U_o = 4.2V$ $I_o = 120mA$ $P_o = 130mW$ $L_o = 10mH$ $C_o = 900\mu F$	$U_i = 4.2V$ $I_i = n.a.$ $P_i = n.a.$ $L_i = 0\mu H$ $C_i = 6nF$ $L_o/R_o = 2.5mH/\Omega$ $U_o = 4.2V$ $I_o = 120mA$ $P_o = 130mW$ $L_o = 20mH$ $C_o = 900\mu F$

Service Interface		
Order Code ee =	terminal no.	values
all	CDI	$U_i = 7.0V$ $I_i = n.a$ (current limited circuit) $L_i = 0 \mu H$ $C_i = 0 \mu F$ $U_o = 3.9V$ $I_o = 10mA$ $P_o = 40mW$ $L_o = 1H$ $C_o = 300\mu F$

3.2. Thermal Parameters (Zone 1 and Zone 21)

Proline Promag P10

Notes:

This page applies to versions with extended order code covering: 5PBB** - dd... O5PBB** - dd...
 with approval option cCSAus / CSA: dd = CC, CF, C1, C3
 IECEx / ATEX: dd = BA, BC

Temperature table for versions with sensor insulated and not insulated
 (for insulation refer to manual of Endress+Hauser Flow)

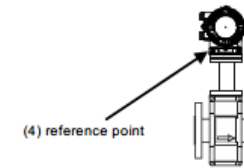
Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} [°C]					
					T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all (3)	-40 (2)	40	---	---	---	150 (2)	150 (2)	150 (2)
				55 (3)	---	---	130 (2)	130 (2)	130 (2)	130 (2)
				60 (3)	---	---	100 (2)	100 (2)	100 (2)	100 (2)

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for further limitation of medium temperature see general note below
 (3) T_{a,max} = 50°C for liner PU

Temperature table for versions with sensor insulated
 (for insulation not in compliance to manual of Endress+Hauser Flow)

Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} @T1 [°C]	T _{max} to be measured at reference point at sensor neck [°C]					
						T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all	-40 (2)	60 (2)	150 (2)	---	---	69	69	69	69

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for limitation of T_{a,max}, T_{med,max} and T_{med,min} depending on type of liner see name plate
 (3) for safe use temperatures shall not exceed all of the following:
 - temperature table for not insulated sensor (refer to table on the left)
 - temperature at reference point as listed in this table
 - for maximum medium temperature and minimum medium temperature see nameplate
 (4) location of reference point



General Note:

- In addition to the temperature tables above it is not permitted to exceed the following range of medium temperature in dependence of the liner:
 PTFE (130°C): -40°C ... 130°C
 PTFE (110°C): -10°C ... 110°C
 PTFE (90°C): -20°C ... 90°C (optional version only)
 PFA: -20°C ... 150°C
 PU: -20°C ... 50°C (optional version only)
 Hard rubber: 0°C ... 80°C (optional version only)

For permitted range of medium temperature, see name plate

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	B		G		
	C		H		Ersetzt durch: Gezeichnet 10.02.2020 Bn Geprüft Ex-geprüft 10.02.2020 Bn Gesehen
	D		J		
	E		K		
Control Drawing IECEx, ATEX, CSA, cCSAus Zone 1, Zone 21, Cl.I Div. 1, Cl.II, Cl.III, Cl.I Zone 1 Thermal Parameter Proline Promag 10					
Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0360A 1/1

3.3. Thermal Parameters (Zone 2)

Proline Promag P10 (compact version)

Notes:
 This page applies to versions with extended order code covering: 5PBB** - dd... O5PBB** - dd...
 with approval option cCSAus / CSA: dd = CS, CZ
 IECEx / ATEX: dd = BS

Temperature table for versions with sensor Insulated or not insulated


Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} [°C]					
					T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all	-40 (2)	40	---	---	---	150 (2)	150 (2)	150 (2)
				55 (3)	---	---	130 (2)	130 (2)	130 (2)	130 (2)
				60 (3)	---	---	100 (2)	100 (2)	100 (2)	100 (2)

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for further limitation of medium temperature see general note below
 (3) T_{a,max} = 50°C for liner PU

Temperature table for versions with extended sensor neck and sensor insulated (for insulation not in compliance to manual of Endress+Hauser Flow)

Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} @T1 [°C]	T _{max} to be measured at reference point at sensor neck [°C]					
						T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all	-40 (2)	60 (2)	150 (2)	---	---	69	69	69	69

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for limitation of T_{a,max}, T_{med,max} and T_{med,min} depending on type of liner see name plate
 (3) for safe use temperatures shall not exceed all of the following:
 - temperature table for not insulated sensor (refer to table on the left)
 - temperature at reference point as listed in this table
 - for maximum medium temperature and minimum medium temperature see nameplate
 (4) location of reference point



Temperature table for versions with extended sensor neck and sensor insulated or not insulated (for insulation refer to manual of Endress+Hauser Flow)

Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} [°C]					
					T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all	-40 (2)	40	---	---	---	150 (2)	150 (2)	150 (2)
				55 (3)	---	---	130 (2)	150 (2)	150 (2)	150 (2)
				60 (3)	---	---	100 (2)	130 (2)	130 (2)	130 (2)

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for further limitation of medium temperature see general note below
 (3) T_{a,max} = 50°C for liner PU

General Note:
 - In addition to the temperature tables above it is not permitted to exceed the following range of medium temperature in dependence of the liner:
 PTFE (130°C): -40°C ... 130°C
 PTFE (110°C): -10°C ... 110°C
 PTFE (90°C): -20°C ... 90°C (optional version only)
 PFA: -20°C ... 150°C
 PU: -20°C ... 50°C (optional version only)
 Hard rubber: 0°C ... 80°C (optional version only)

For permitted range of medium temperature, see name plate

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	C		H		Ersteller: FES / Bn
	D		J		FILE: M:\Zeichng\FES0361A\FES0361A.doc
	E		K		

Control Drawing IECEx, ATEX, CSA, cCSAus
 Zone 2, Cl.I Div. 2, Cl.I Zone 2
 Thermal Parameter
 Proline Promag 10

Gezeichnet	10.02.2020	Bn
Geprüft		
Ex-geprüft	10.02.2020	Bn
Gesehen		



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

FES0361A

1/2

Proline Promag P10 (remote version)

Notes: This page applies to versions with extended order code covering: 5PBB** - dd... O5PBB** - dd...
 with approval option cCSAus / CSA: dd = CS, CZ
 IECEx / ATEX: dd = BS

Temperature table for versions with sensor Insulated or not insulated

Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} [°C]					
					T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all (3)	-40 (2)	50 (3)	---	---	---	150 (2)	150 (2)	150 (2)
				60 (3)	---	---	130 (2)	130 (2)	130 (2)	130 (2)

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for further limitation of medium temperature see general note below
 (3) T_{a,max} = 50°C for liner PU

Temperature table for versions with extended sensor neck and sensor insulated or not insulated (for insulation refer to manual of Endress+Hauser Flow)

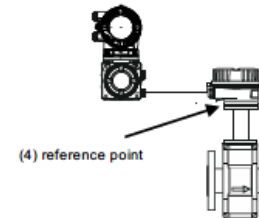
Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} [°C]					
					T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all (3)	-40 (2)	50 (3)	---	---	---	150 (2)	150 (2)	150 (2)
				60 (3)	---	---	130 (2)	130 (2)	130 (2)	130 (2)

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for further limitation of medium temperature see general note below
 (3) T_{a,max} = 50°C for liner PU

Temperature table for versions with extended sensor neck and sensor insulated (for insulation not in compliance to manual of Endress+Hauser Flow)

Sensor	Size / DN	Liner	T _{med,min} [°C]	T _{a,max} [°C]	T _{med,max} @T1 [°C]	T _{max} to be measured at reference point at sensor neck [°C]					
						T6 (85°C)	T5 (100°C)	T4 (135°C)	T3 (200°C)	T2 (300°C)	T1 (450°C)
Promag P	all	all	-40 (2)	60 (3)	150 (2)	---	---	63	65	70	70

Notes: (1) T_{a,min} = -40°C (for limitation see name plate)
 (2) for limitation of T_{a,max}, T_{med,max} and T_{med,min} depending on type of liner see name plate
 (3) for safe use temperatures shall not exceed all of the following:
 - temperature table for not insulated sensor (refer to table on the left)
 - temperature at reference point as listed in this table
 - for maximum medium temperature and minimum medium temperature see nameplate
 (4) location of reference point



Transmitter for all versions

T _{a,max}		
T6 (85°C)	T5 (100°C)	T4 (135°C)
---	---	60

Notes: T_{a,min} = -40°C (for limitation see name plate)

General Note:

- In addition to the temperature tables above it is not permitted to exceed the following range of medium temperature in dependence of the liner:
 PTFE (130°C): -40°C ... 130°C
 PTFE (110°C): -10°C ... 110°C
 PTFE (90°C): -20°C ... 90°C (optional version only)
 PFA: -20°C ... 150°C
 PU: -20°C ... 50°C (optional version only)
 Hard rubber: 0°C ... 80°C (optional version only)
 For further limitation see name plate

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	C		H		Ersteller: FES / Bn
	D		J		FILE: M:\Zeichng\FES0361A\FES0361A.doc
	E		K		

Control Drawing IECEx, ATEX, CSA, cCSAus Zone 2, Cl.I Div. 2, Cl.I Zone 2 Thermal Parameter Proline Promag 10	Gezeichnet	10.02.2020	Bn
	Geprüft		
	Ex-geprüft	10.02.2020	Bn
	Gesehen		





4. Marking

Proline Promag 10 (compact version)		
Model Code: 5*B*** - ee**i*****+### O5*B*** - ee**i*****+###		
Approval ee =	I/O i =	Marking of Ex protection
BA	C, U	Transmitter: Ex db eb ib [ib] IIB T4...T1 Gb Ex tb [ib] IIIC T** °C Db Sensor: Ex eb ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
	B, M	Transmitter: Ex db eb ib IIB T4...T1 Gb Ex tb IIIC T** °C Db Sensor: Ex eb ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
BC	C, U	Transmitter: Ex db ib [ib] IIB T4...T1 Gb Ex tb [ib] IIIC T** °C Db Sensor: Ex eb ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
	B, M	Transmitter: Ex db ib IIB T4...T1 Gb Ex tb IIIC T** °C Db Sensor: Ex eb ib IIB T4...T1 Gb Ex tb IIIC T** °C Db
BS	C, U	Transmitter: Ex ec ic [ic] IIB T4...T1 Gc Sensor: Ex ec ic IIB T4...T1 Gc
	B, M	Transmitter: Ex ec ic IIB T4...T1 Gc Sensor: Ex ec ic IIB T4...T1 Gc

Information: Level of Protection for transmitter representative for ...
db -> electronic compartment eb -> terminal compartment + sensor ib -> display + sensor [ib] -> IO's tb -> enclosure
db -> electronic compartment eb -> terminal compartment + sensor ib -> display + sensor tb -> enclosure
db -> electronic compartment + terminal compartment ib -> display + sensor [ib] -> IO's tb -> enclosure
db -> electronic compartment + terminal compartment ib -> display + sensor tb -> enclosure
ec -> electronic compartment + terminal compartment + sensor ic -> display [ic] -> IO's
ec -> electronic compartment + terminal compartment + sensor ic -> display



Proline Promag 10 (remote version)		
Model Code: 5*B*** – ee**i*****+### O5*B*** – ee**i*****+###		
Approval ee =	I/O i =	Marking of Ex protection
BA, BC	B, C, M, U	Not available for remote version
BS	B, C, M, U	Transmitter : Ex ec ic [ic] IIB T4 Gc Sensor : Ex ec ic IIB T4...T1 Gc

Information: Level of Protection for transmitter representative for ...
Not available for remote version
ec -> electronic compartment + terminal compartment ic -> display [ic]-> IO's

5. Conditions of Certification

- All equipment of the measurement system shall be included in the equipotential bonding. Along the intrinsically safe circuits potential equalization must exist.
- The sensors may only be used for those process media, for which the wetted parts are known to be suitable (refer to nameplate or installation instructions for applicable materials)
- It is not permitted to use versions of Proline Promag 10 without display module (refer to installation instructions for proper assembly)
- The flameproof joints are not intended to be repaired
- For order code 'ee' = BC:
 Equipment of Proline Promag 10 with transmitter terminal compartment with type of protection Ex db must be de-energized for 10 minutes before opening enclosure
- For order code 'ee' = BS:
 Equipment for Proline Promag 10 shall be installed using a transient protection not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.
- The Proline 10 Flowmeter that may include, stainless steel label tag with rope, when not bonded to earth used on coated metallic transmitter and/or sensor enclosure, shall be prevented from risk of electrostatic charging caused by friction and/or cleaning. The equipment nameplate shall bear the following warning: WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- Only use battery Renata type lithium CR1632, 3V for display



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6. Manufacturing Locations

1. Endress+Hauser Flowtec AG
Kägenstrasse 7
4153 Reinach BL 1
Switzerland
2. Endress+Hauser Flowtec AG
35, rue de l' Europe
68700 Cernay
France
3. Endress+Hauser Flowtec (India) Pvt. Ltd.
M-174 Waluj MIDC
Aurangabad 431136
Maharashtra State
India
4. Endress+Hauser Flowtec AG, Division U.S.A.
2330 Endress Place
Greenwood, Indiana 46143
USA
5. Endress+Hauser Flowtec (China) Co. Ltd.
Su-Hong-Zhong-Lu No. 465
Suzhou Industrial Park
215021 Suzhou
Province Jiangsu
P.R. China
6. Endress+Hauser Flowtec (China) Co. Ltd.
Jiang-Tian-Li-Lu No. 31
Suzhou Industrial Park
215021 Suzhou
Province Jiangsu
P.R. China
7. Endress + Hauser Flowtec (Brazil) Fluxômetros Ltda.
Estrada Municipal Antônio Sesti, 600 A - Recreio Costa Verde
CEP 13254-085 – Itatiba - SP
Brazil