



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx BVS 07.0011X issue No.:7

Status: **Current**

Date of Issue: **2018-02-28** Page 1 of 4

Applicant: **Endress+Hauser Flowtec AG**
Kägenstrasse 7
4153 Reinach BL 1
Switzerland

Certificate history:
Issue No. 7 (2018-2-28)
Issue No. 6 (2014-12-16)
Issue No. 5 (2013-6-27)
Issue No. 4 (2012-5-31)
Issue No. 3 (2011-12-19)
Issue No. 2 (2010-6-2)
Issue No. 1 (2008-10-30)
Issue No. 0 (2007-6-11)

Equipment: **Flowmeter type Promag 5****_*****+###**
Optional accessory:

Type of Protection: **Equipment protection by flameproof enclosures "d", Equipment protection by intrinsic safety "i", Equipment dust ignition protection by enclosure "t", Equipment protection by increased safety "e"**

Marking: Transmitter
Ex db eb [ia Ga] IIC/IIB T6...T1 Gb
Ex tb IIC T**1)°C Db

Sensor:
Ex eb [ia] IIC T6...T1 Gb
Ex tb IIC T**1)°C Db

1) Temperature table:

The maximum surface temperature for EPL Db shall be defined by the temperature table under consideration of ambient temperature T_a and medium temperature T_{med} .


Approved for issue on behalf of the IECEx
Certification Body:

Dr Franz Eickhoff

Position:

Deputy Head of Certification Body

Signature:
(for printed version)


2018-02-28

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

DEKRA EXAM GmbH
Dinnendahlstrasse 9
44809 Bochum
Germany



On the safe side.



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 07.0011X

Date of Issue: 2018-02-28

Issue No.: 7

Page 2 of 4

Manufacturer: **Endress+Hauser Flowtec AG**
Kägenstrasse 7
4153 Reinach BL 1
Switzerland

Additional Manufacturing location(s):

**Manufacturing
Locations**
see Annex

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 apparatus 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 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition: 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31 : 2013 Edition: 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2015 Edition: 5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical 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:

[DE/BVS/ExTR07.0012/07](#)

Quality Assessment Report:

[DE/TUN/QAR06.0004/06](#)



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 07.0011X

Date of Issue: 2018-02-28

Issue No.: 7

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

The flow meter is designed for flow measurement of conductive fluids.

The measuring systems consist of a transmitter and a sensor which can be mounted together (compact version) or can be used separately (remote version).

The electronic parts of the transmitter (type Promag 5*a) are certified in IECEx BVS 06.0006U and are mounted inside the enclosure Proline G02 or G12 (including terminal enclosures for remote versions) which are certified in IECEx BVS 06.0012U. For these flowmeters only the version of the enclosure with the electronics compartment and the terminal compartment separated by a bushing (marking Ex db IIC or Ex db eb IIC) is used.

The sensors are certified in IECEx BVS 12.0036U.

Subject and Type

See Annex

Listing of all used components

See Annex

Parameters

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

- 1 All equipment of the measurement system shall be included in the equipotential bonding. Along the intrinsically safe sensor circuits potential equalisation must exist.
- 2 The sensors may only be used for those media, for which the wetted parts are known to be suitable.
- 3 For the application of the transmitter in an ambient temperature of less than -20 °C suitable cables and suitable certified cable or conduit entries, for this condition shall be used. Entry holes which are not needed shall be closed by stopping plugs evaluated in this certificate or separately for this purpose.
- 4 The dimensions of the flameproof joints are in parts other than the relevant minimum or maximum values of IEC 60079-1:2007. For information on the dimensions of the flameproof joints contact the manufacturer.



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 07.0011X

Date of Issue: 2018-02-28

Issue No.: 7

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Subject of this supplement are the following modifications:

- Assessment of the Flowmeter in accordance with the current standard versions
- Modified marking
- Modified drawings
- Minor changes



IECEX Certificate of Conformity



Certificate No.: IECEX BVS 07.0011X issue No.: 7
Annex
Page 1 of 10

Additional Manufacturing locations:

Manufacturer's name	Endress+Hauser Flowtec AG
Address	Kägenstrasse 7 4153 Reinach BL 1 SWITZERLAND
Manufacturer's name	Endress+Hauser Flowtec AG
Address	35, Rue de l' Europe 68700 Cernay FRANCE
Manufacturer's name	Endress+Hauser Flowtec (India) Pvt. Ltd.
Address	M-171-176, Waluj MIDC Industrial Area Aurangabad – 431 136 Maharashtra State INDIA
Manufacturer's name	Endress+Hauser Flowtec AG (Division U.S.A.)
Address	2330 Endress Place Greenwood, Indiana 46143 USA
Manufacturer's name	Endress+Hauser Flowtec (China) Co. Ltd.
Address	China - Singapore Industrial Park (SIP) Su-Hong-Zhong-Lu No. 465 215021 Suzhou CHINA
Manufacturer's name	Endress+Hauser (Brasil) Fluxômetros Ltda.
Address	Estrada Municipal Antonio Sesti, 600-Bairro Recreio Costa Verde Itatiba, SP- 13254-085 BRAZIL



IECEx Certificate of Conformity

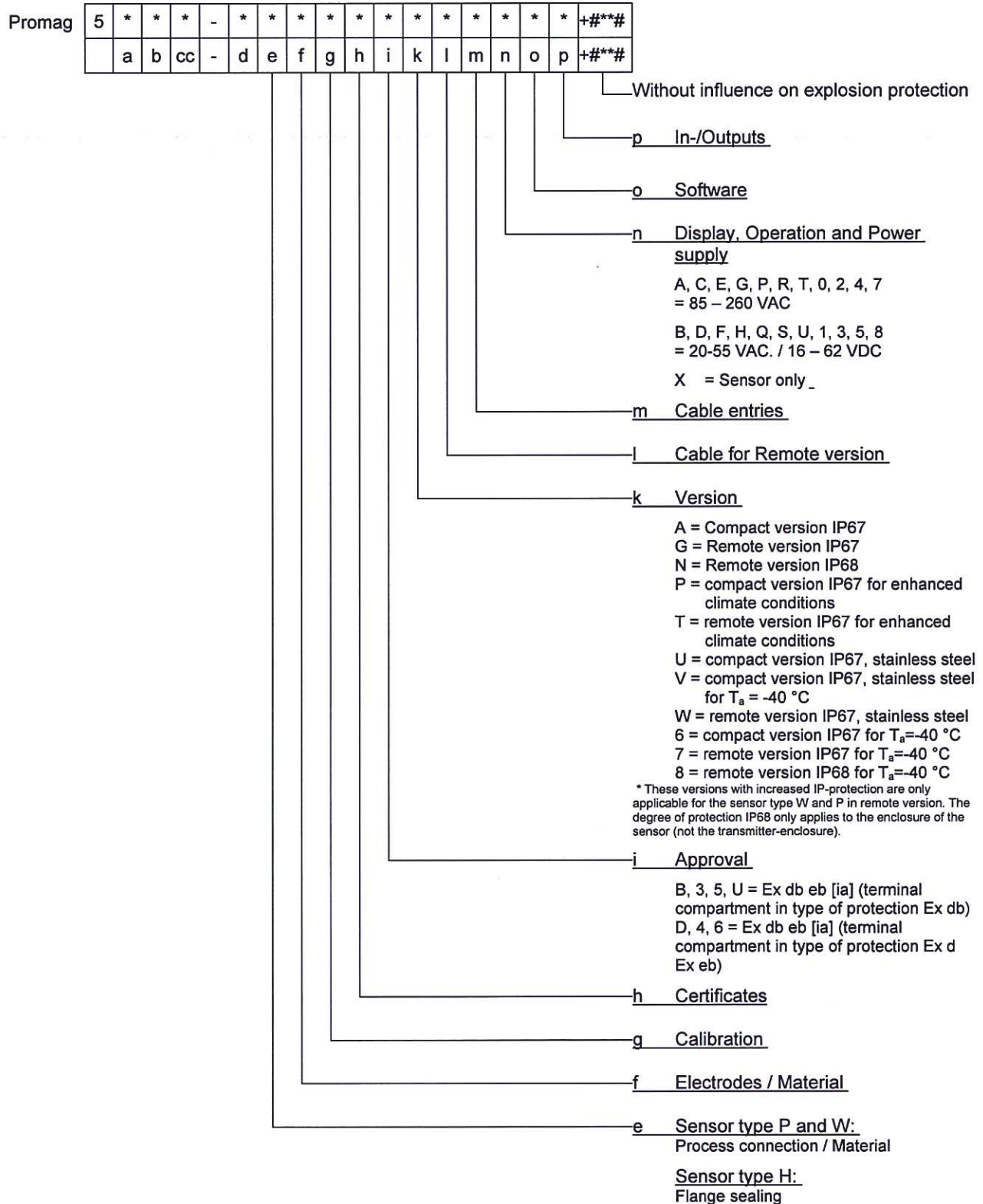


Certificate No.: IECEx BVS 07.0011X issue No.: 7
 Annex
 Page 2 of 10

Subject and Type

Flowmeter type Promag 5****-*****+###

Instead of the *** in the complete denomination letters and numerals will be inserted which characterize modifications:

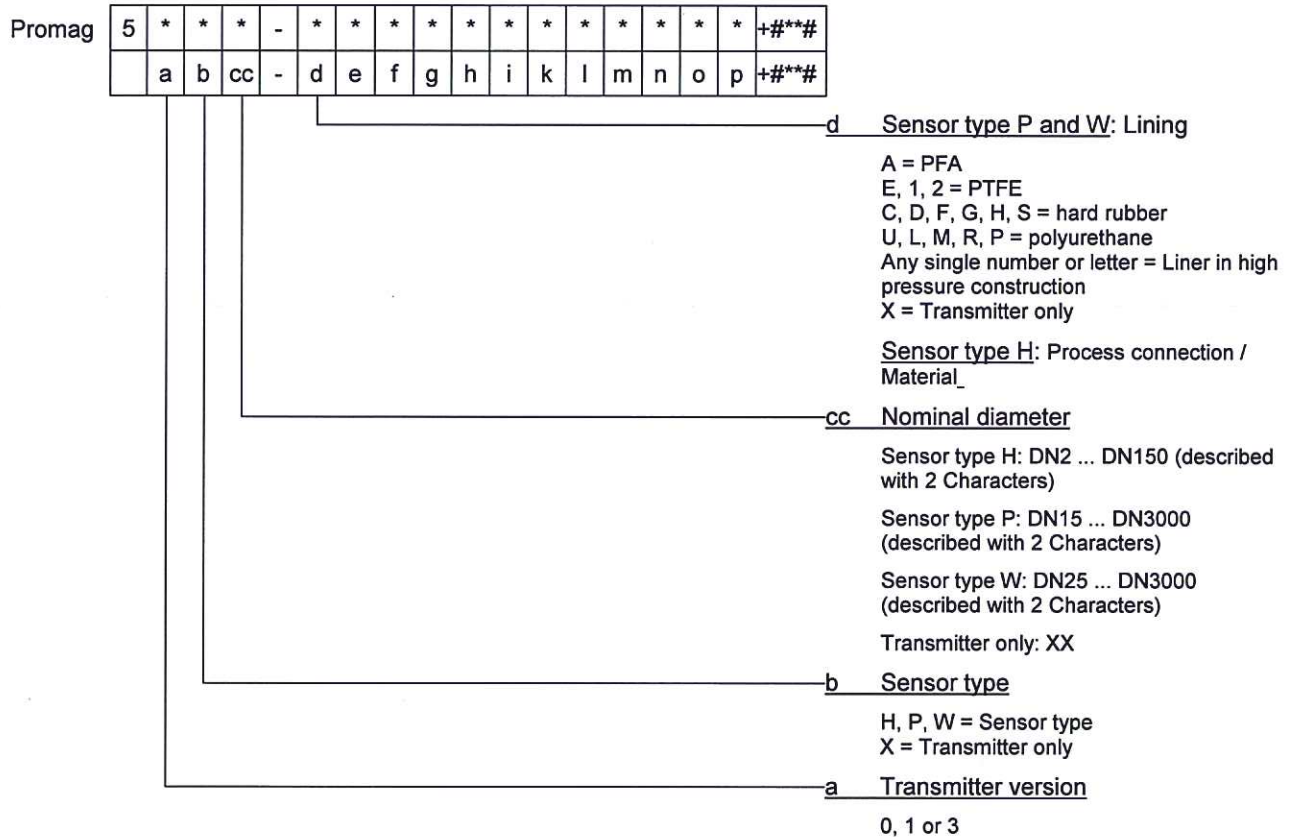




IECEX Certificate of Conformity



Certificate No.: **IECEX BVS 07.0011X issue No.: 7**
Annex
Page 3 of 10



Listing of all used components

Subject and type	Certificate	Standards
Transmitter enclosure type Proline G02 and G12	IECEX BVS 06.0012U (DE/BVS/06/2091)	IEC 60079-0:2011 IEC 60079-1:2014 IEC 60079-7:2015 IEC 60079-31:2013
Magnetic inductive sensor type Promag *	IECEX BVS 12.0036U (DE/BVS/12/2068)	IEC 60079-0:2011 IEC 60079-7:2015 IEC 60079-11:2011 IEC 60079-15:2010 IEC 60079-31:2013
Transmitter electronics type Promag 5*a	IECEX BVS 06.0006U (DE/BVS/06/2074)	IEC 60079-0:2011 IEC 60079-11:2011



IECEx Certificate of Conformity



Certificate No.: IECEx BVS 07.0011X issue No.: 7
 Annex
 Page 4 of 10

Parameters

- 1 Power supply / terminals no. 1 (L/+) and 2 (N/-)
 Nominal voltage
 Pure AC version AC 85 up to 260 V
 DC/AC version DC 16 up to 62 V
 or AC 20 up to 55 V
 Max. voltage U_m AC 260 V
 Power consumption approx. 15 W / VA
- 2 I/O-Circuits
 2.1 Non-intrinsically safe I/O-circuits

Type	Terminal No.	Safety parameters		
PROMAG 5****_*****A	20 ... 27	$U_{max} = 260 \text{ V}, I_{max} = 0.5 \text{ A}$		
PROMAG 5****_*****B				
PROMAG 5****_*****C				
PROMAG 5****_*****D				
PROMAG 5****_*****E				
PROMAG 5****_*****H				
PROMAG 5****_*****J				
PROMAG 5****_*****K				
PROMAG 5****_*****L				
PROMAG 5****_*****M				
PROMAG 5****_*****N				
PROMAG 5****_*****P				
PROMAG 5****_*****Q				
PROMAG 5****_*****V				
PROMAG 5****_*****W				
PROMAG 5****_*****0				
PROMAG 5****_*****1				
PROMAG 5****_*****2				
PROMAG 5****_*****3				
PROMAG 5****_*****4				
PROMAG 5****_*****5				
PROMAG 5****_*****6				
PROMAG 5****_*****7				
PROMAG 5****_*****8				
PROMAG 5****_*****9				

Certificate No.: IECEx BVS 07.0011X issue No.: 7
Annex
Page 5 of 10

2.2 Intrinsically safe I/O circuits

Type	Terminal No.	Safety parameters	
		Ex ia IIC	Ex ia IIB
PROMAG 5****_*****F and PROMAG 5****_*****G	26 and 27	$U_i = 30 \text{ V}$ $I_i = 600 \text{ mA}$ $P_i = 8.5 \text{ W}$ $L_i \leq 10 \text{ } \mu\text{H}$ $C_i \leq 5 \text{ nF}$	
PROMAG 5****_*****R	24 and 25 26 and 27	$U_o = 21.8 \text{ V}$ $I_o = 90 \text{ mA}$ $P_o = 491 \text{ mW}$	
		$C_o = 0.16 \text{ } \mu\text{F}$ $L_o = 4.1 \text{ mH}$	$C_o = 1.16 \text{ } \mu\text{F}$ $L_o = 15 \text{ mH}$
		$U_i = 30 \text{ V}$ $I_i = 10 \text{ mA}$ $P_i = 300 \text{ mW}$ $C_i \leq 6 \text{ nF}$ $L_i = \text{negligible}$	
PROMAG 5****_*****S	24 and 25 26 and 27	$U_i = 30 \text{ V}$ $I_i = 500 \text{ mA}$ $P_i = 600 \text{ mW}$ $C_i \leq 6 \text{ nF}$ $L_i = \text{negligible}$	
		$U_o = 21.8 \text{ V}$ $I_o = 90 \text{ mA}$ $P_o = 491 \text{ mW}$	
		$C_o = 0.16 \text{ } \mu\text{F}$ $L_o = 4.1 \text{ mH}$	$C_o = 1.16 \text{ } \mu\text{F}$ $L_o = 15 \text{ mH}$
		$U_i = 30 \text{ V}$ $I_i = 10 \text{ mA}$ $P_i = 300 \text{ mW}$ $C_i \leq 6 \text{ nF}$ $L_i = \text{negligible}$	

Certificate No.: **IECEX BVS 07.0011X issue No.: 7**
Annex
Page 6 of 10

Type	Terminal No.	Safety parameters	
		Ex ia IIC	Ex ia IIB
PROMAG 5****_*****T	24 and 25	$U_i = 30$ V $I_i = 500$ mA $P_i = 600$ mW $C_i \leq 6$ nF $L_i = \text{negligible}$	
	26 and 27	$U_i = 30$ V $I_i = 100$ mA $P_i = 1.25$ W $C_i \leq 6$ nF $L_i = \text{negligible}$	
PROMAG 5****_*****U	24 and 25 26 and 27	$U_i = 30$ V $I_i = 100$ mA $P_i = 1.25$ W $C_i \leq 6$ nF $L_i = \text{negligible}$	

3 Sensor circuits

3.1 Transmitter

3.1.1 Exciter coil circuit (non-intrinsically safe) Terminals no. 41 and 42

Voltage	DC	60	V
Current		90	mA

3.1.2 Electrode circuit (intrinsically safe)

Terminals no. 4 (Pipe GND), 5/6 (E1/S1), 7/8 (E2/S2) and 36/37 (EPD)

Maximum output voltage	U_o	37	V
Maximum output current	I_o	25	mA
Maximum output power	P_o	138	mW

		IIC	IIB
lumped values	L_o	50 mH	200 mH
	C_o	39 nF	353 nF
mixed analysis	L_o	10 mH	10 mH
	C_o	20 nF	100 nF



IECEx Certificate of Conformity



Certificate No.: IECEx BVS 07.0011X issue No.: 7
Annex
Page 7 of 10

3.2	Sensor				
3.2.1	Exciter coil circuit (non-intrinsically safe)	Terminals no. 41 and 42			
	Voltage	DC	60	V	
	Current		90	mA	
3.2.2	Electrode circuit (intrinsically safe)	Terminals no. 4, 5, 7			
	Maximum input voltage	U_i	60	V	
	Maximum internal inductance	L_i		negligible	
	Maximum internal capacitance	C_i		negligible	

3.2.3 Interconnection between transmitter and sensor

Instead of using the above (3.1.2) listed parameters for L and C the connection of the electrode circuit of the sensor and the transmitter can alternatively be made by a cable which has the following parameters:

L_{cable}	L_c	\leq	1	mH/km
C_{cable}	C_c	\leq	400	nF/km
Length of the cable for Group IIB		\leq	800	m
for Group IIC		\leq	90	m

4 Thermal Parameters
 4.1 Medium temperature

Type	Medium temperature range
PROMAG 5*H**_***** (with liner material always PFA)	$-20\text{ °C} \leq T_{Med} \leq 150\text{ °C}$
PROMAG 5*P**_***** PROMAG 5*W**_***** (with liner material PFA)	$-40\text{ °C} \leq T_{Med} \leq 150\text{ °C}$
PROMAG 5*P**_***** PROMAG 5*W**_***** (with liner material hard rubber)	$-20\text{ °C} \leq T_{Med} \leq 80\text{ °C}$
PROMAG 5*P**_***** PROMAG 5*W**_***** (with liner material PTFE)	$-40\text{ °C} \leq T_{Med} \leq 130\text{ °C}$
PROMAG 5*P**_***** PROMAG 5*W**_***** (with liner material polyurethane)	$-20\text{ °C} \leq T_{Med} \leq 50\text{ °C}$
PROMAG 5*P**_***** (high pressure construction)	$-40\text{ °C} \leq T_{Med} \leq 110\text{ °C}$

Certificate No.: IECEx BVS 07.0011X issue No.: 7
Annex
Page 8 of 10

4.2 Ambient temperature range

Type	Ambient temperature range
PROMAG 5****_*****A**** PROMAG 5****_*****P**** PROMAG 5****_*****U****	$-20\text{ °C} \leq T_a \leq 50\text{ °C}$
PROMAG 5****_*****6**** PROMAG 5****_*****V****	$-40\text{ °C} \leq T_a \leq 50\text{ °C}$
PROMAG 5****_*****G**** PROMAG 5****_*****N**** PROMAG 5****_*****T**** PROMAG 5****_*****W****	$-20\text{ °C} \leq T_a \leq 60\text{ °C}$
PROMAG 5****_*****7**** PROMAG 5****_*****8****	$-40\text{ °C} \leq T_a \leq 60\text{ °C}$

PROMAG 5****_*****V/6/7/8**** always with PTFE or PFA liner or as high pressure version.

4.3 The relationship between maximum ambient, medium temperatures, temperature class and maximum surface temperature

4.3.1 Compact version

4.3.1.1 For types:

PROMAG 5*W**_*****A****,
PROMAG 5*W**_*****P****,
PROMAG 5*W**_*****U****,
PROMAG 5*W**_*****V****,
PROMAG 5*W**_*****6****,
PROMAG 5*P**_*****A****,
PROMAG 5*P**_*****P****,
PROMAG 5*P**_*****U****,
PROMAG 5*P**_*****V****, and
PROMAG 5*P**_*****6****

Temperature table	Max. medium temperature *			
	T6	T5	T4	T3 - T1
temperature class	T6	T5	T4	T3 - T1
max. surface temperature, Group III	85 °C	100 °C	135 °C	200 °C
T _a up to 40 °C	80 °C	95 °C	130 °C	150 °C
T _a up to 45 °C	80 °C	95 °C	130 °C	130 °C
T _a up to 50 °C	80 °C	95 °C	95 °C	95 °C

* the maximum medium temperature is additionally limited by the liner material or the construction of the sensor (see clause 4.1)



IECEx Certificate of Conformity



Certificate No.: IECEx BVS 07.0011X issue No.: 7
Annex
Page 9 of 10

4.3.1.2 For types
 PROMAG 5*H**-*****A*****,
 PROMAG 5*H**-*****P*****,
 PROMAG 5*H**-*****U*****,
 PROMAG 5*H**-*****V*****, and
 PROMAG 5*H**-*****G*****

Temperature table	Max. medium temperature *			
	T6	T5	T4	T3 - T1
temperature class	T6	T5	T4	T3 - T1
max. surface temperature, Group III	85 °C	100 °C	135 °C	200 °C
T _a up to 40 °C	80 °C	95 °C	130 °C	150 °C
T _a up to 45 °C	80 °C	95 °C	130 °C	130 °C
T _a up to 50 °C	80 °C	95 °C	95 °C	95 °C

* the maximum medium temperature is additionally limited by the liner material (see clause 4.1)

4.3.2 Remote version

4.3.2.1 For types
 PROMAG 5*W**-*****G*****,
 PROMAG 5*W**-*****N*****,
 PROMAG 5*W**-*****T*****,
 PROMAG 5*W**-*****W*****,
 PROMAG 5*W**-*****7*****,
 PROMAG 5*W**-*****8*****,
 PROMAG 5*P**-*****G*****,
 PROMAG 5*P**-*****N*****,
 PROMAG 5*P**-*****T*****,
 PROMAG 5*P**-*****W*****,
 PROMAG 5*P**-*****7*****, and
 PROMAG 5*P**-*****Q*****

Transmitter

At an ambient temperature of 60 °C the interior temperature and therefore the surface temperature is ≤ 80 °C. The transmitter of the remote version therefore has the temperature class T6 / surface temperature 80 °C.

Sensor:

Temperature table	Max. medium temperature *			
	T6	T5	T4	T3 - T1
temperature class	T6	T5	T4	T3 - T1
max. surface temperature, Group III	85 °C	100 °C	135 °C	200 °C
T _a up to 50 °C	80 °C	95 °C	130 °C	150 °C
T _a up to 60 °C	80 °C	95 °C	130 °C	130 °C

* the maximum medium temperature is additionally limited by the liner material or the construction of the sensor (see clause 4.1)

Certificate No.: IECEx BVS 07.0011X issue No.: 7
Annex
Page 10 of 10

4.3.2.2 For types
 PROMAG 5*H**-*****G*****,
 PROMAG 5*H**-*****N*****,
 PROMAG 5*H**-*****T*****,
 PROMAG 5*H**-*****W*****,
 PROMAG 5*H**-*****7***** and
 PROMAG 5*H**-*****8*****

Transmitter:

At an ambient temperature of 60 °C the interior temperature and therefore the surface temperature is ≤ 80 °C. The transmitter of the remote version has the temperature class T6 / surface temperature 80 °C.

Sensor:

Temperature table	Max. medium temperature			
	T6	T5	T4	T3 - T1
temperature class	T6	T5	T4	T3 - T1
max. surface temperature, Group III	85 °C	100 °C	135 °C	200 °C
T_a up to 50 °C				
DN2 up to DN25	80 °C	95 °C	130 °C	150 °C
T_a up to 60 °C				
DN2 up to DN25	80 °C	95 °C	130 °C	130 °C
T_a up to 60 °C				
DN40 up to DN150	80 °C	95 °C	130 °C	150 °C

5 Ingres Protection

IP64, IP68 (see IEC 60079-0, clause 26.4.5)