



# APPLICATION MANUAL

Flameproof Ex d universal instrument housing types:

**XD-I80, XD-I80win  
XD-I80C, XD-I80Cwin**

Contents:

1. Destination.
2. Flameproof joints.
3. Cover locking.
4. Earth and protection terminals.
5. Protection against water and dust ingress.
6. Way of mounting.
7. Marking.

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## NOTES OF SAFETY

The XD-I80 series housings are designed to accommodate various electronic instruments or devices working in hazardous areas. If used incorrectly it is possible that application-related dangers may arise.

The XD-I80 series housings may be used by qualified and authorized company and people only, under strict observance of these application manual and relevant standards, legal requirements, and, where appropriate the certificate.

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Only the empty XD-I80 instrument housing is certified. When used as part of an end product assembly, subsequent Approval by FM Approvals or CSA of the end use equipment assembly is required.

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**1. DESTINATION.**

- Rottating machines or other devices which create turbulence shall not be incorporated.
- Oil-filled circuit-breakers and contactors shall not be used.
- Do not install switching devices with arcing contacts intendet to interrupt a circuit with an available short circuit current of greater than 10.000 r.m.s. symmetrical amperes.

CERTIFICATIONS	STANDARDS	HAZARDOUS AREAS
<b>FM</b>	FM 3600, FM 3615, FM 3810 ANSI/NEMA 250	Class I, Groups A, B, C, D Class II, Groups E, F, G Class III NEMA 4x
	ANSI/ISA 60079-0, ANSI/ISA 60079-1, ANSI/ISA 60079-31 ANSI/IEC 60529	Class I, Zone 1, AEx db IIC Gb IP66
<b>CSA</b>	CSA C22.2 No.0.4, No.0.5, No.25, No.30, No.94	Class I, Groups A, B, C, D Class II, Groups E, F, G Class III Type 4x
	CSA C22.2 No.60079-0, No.60079-1, No.60079-31, CAN/CSA 60529	Ex db IIC Gb IP66

Possible application

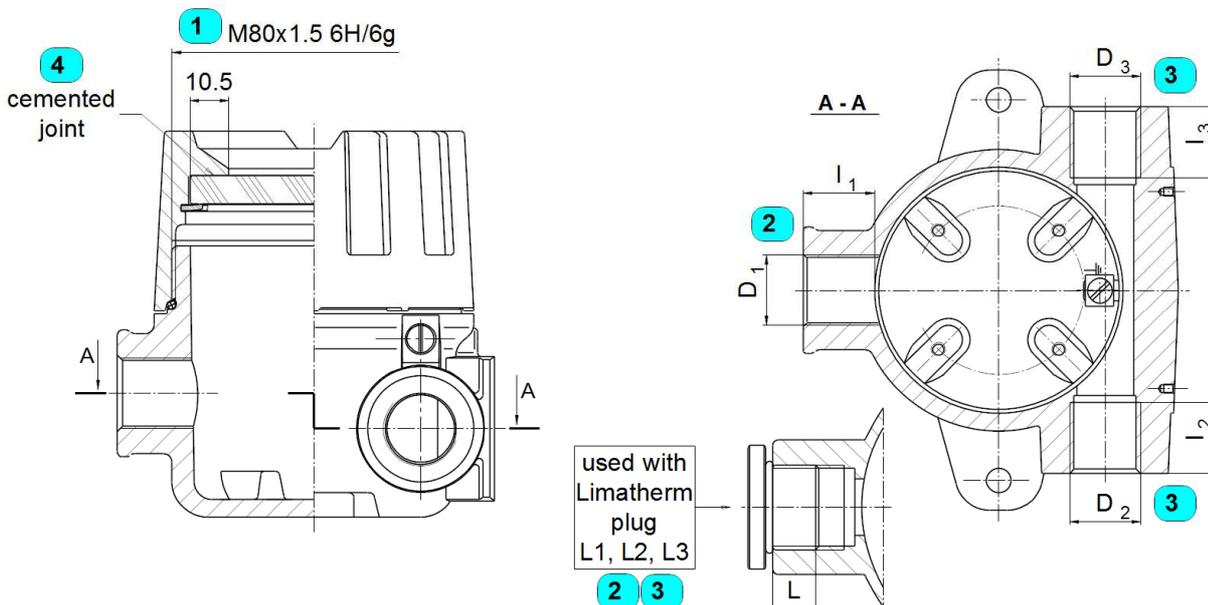
Division	Protection Code	Zone	Protection Code
Division 1	Explosionproof	Zone 1	Ex d
Division 2		Zone 21	
		Zone 2	Ex d
		Zone 22	

Ambient temperature

Housing type	T <sub>amb</sub> VMQ rubber
XD-I80, XD-I80C	-40 to +212 °F -40 to +100 °C
XD-I80win, XD-I80Cwin	-40 to +185 °F -40 to +85 °C

! The content of the housing may be placed in any arrangement provided that an area of at least 40% (group IIC) or 20% (group I) of each cross-sectional area remains free to permit unimpended gas flow and, therefore, unrestricted development of an explosion. Separate relief areas may be aggregated, provided that each areas has a minimum dimension in any direction of 12,5mm !

**2. FLAMEPROOF JOINTS.**



Flameproof joints are designed for gas group A (Div), volume  $V > 100 \text{ cm}^3$  group II C (Zone) enclosures.

Lp.	Connection type		Requirements of FM 3615 CSA C22.2 No. 30 60079-1	Achieved values			
1	M80x1,5 6H/6g		threads engaged $\geq 7$	9			
			width of engagement $\geq 12,5\text{mm}$	13,5mm			
2	D <sub>1</sub> proces opening	M20x1.5 6H M24x1.5 6H M25x1.5 6H	class 2 fit	l <sub>1</sub>	6g of male thread should be ensured by customer	L <sub>1</sub>	6H/6g
			threads engaged $\geq 5$		should be ensured by customer, possible to reach: 12,5		6,5
			depth of engagement $\geq 8 \text{ mm}$		should be ensured by customer, possible to reach: 19mm		10mm
		M27x2 6H	class 2 fit	l <sub>1</sub>	6g of male thread should be ensured by customer	L <sub>1</sub>	6H/6g
			threads engaged $\geq 5$		should be ensured by customer, possible to reach: 9		5
			depth of engagement $\geq 8 \text{ mm}$		should be ensured by customer, possible to reach: 19mm		10mm
	$\frac{1}{2}\text{NPTmod}$ $\frac{3}{4}\text{NPTmod}$	threads engaged $\geq 5$	l <sub>1</sub>	should be ensured by customer, possible to reach: 5,0 ÷ 5,5	L <sub>1</sub>	5	
	3	D <sub>2</sub> , D <sub>3</sub> conduit openings	M20x1.5 6H M24x1.5 6H M25x1.5 6H	class 2 fit	l <sub>2</sub> , l <sub>3</sub>	6g of male thread should be ensured by customer	L <sub>2</sub> , L <sub>3</sub>
threads engaged $\geq 5$				should be ensured by customer, possible to reach: 12,5		6,5	
depth of engagement $\geq 8 \text{ mm}$				should be ensured by customer, possible to reach: 19mm		10mm	
$\frac{1}{2}\text{NPTmod}$ $\frac{3}{4}\text{NPTmod}$			threads engaged $\geq 5$	l <sub>2</sub> , l <sub>3</sub>	should be ensured by customer, possible to reach: 5,0 ÷ 5,5	L <sub>2</sub> , L <sub>3</sub>	5
4		Cemented joint		min. joint length 10mm	10,5mm		

NPT threads are modified to reach 5÷5,5 engaged threads and can create flameproof joint with threaded male part with standard cutting tolerance.

**Only NPT threads can be used for CSA Division, in all openings.**

**Process opening** can be used for mounting sensor (e.g. level, flow sensor) or thermowell.

**Conduit openings** can be used to equip it with certificated explosionproof / flameproof cable glands, fill sealing fittings, flexible couplings or thermowells.

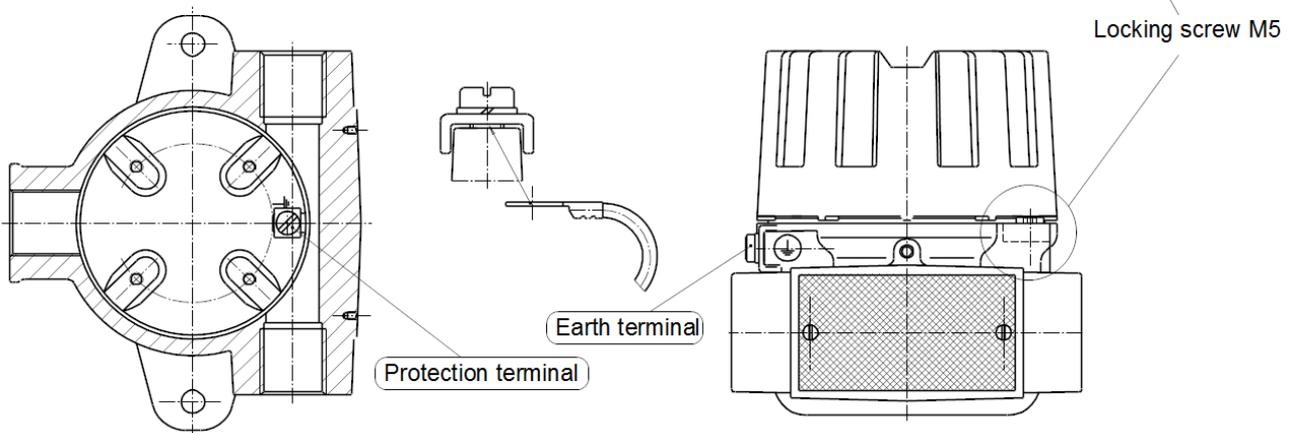
Each D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> opening can be **plugged**.

### 3. COVER LOCKING

Lock the cover by screw with hex socket using hex spanner with across flat 4mm.

### 4. EARTH AND PROTECTION TERMINALS.

Place	Type	AWG
Inside	Protection terminal	14
Outside	Earth terminal	10



### 5. PROTECTION AGAINST WATER AND DUST INGRESS (Enclosure type 4x)

There are three connections of assembled device deciding about water and dust tightness:

- 1 – cover
- 2 – process opening
- 3 – conduit openings.

Threaded connection sealing	Protection against water and dust ingress	Possible IP
Without sealing - standard accuracy class thread	NO	IP54
Use of a sealant, e.g. Loctite 577	YES	IP66
Thread tightened with O-ring	YES	IP66

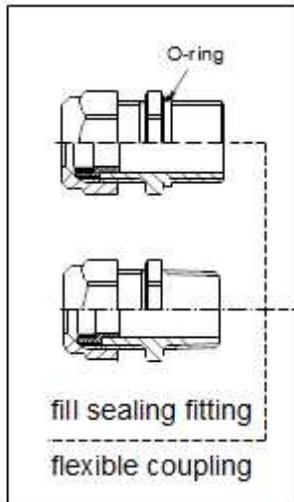
**! ATTENTION !**

**It is required min IP65 protection for instruments designed for dust zones.**  
 (Besides zone 22, non-conductive dust, where min IP54 protection is required)

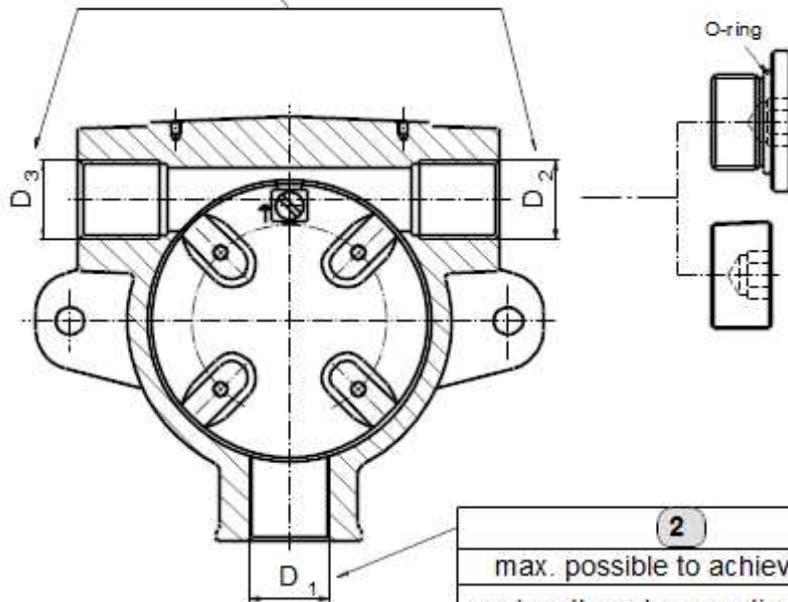
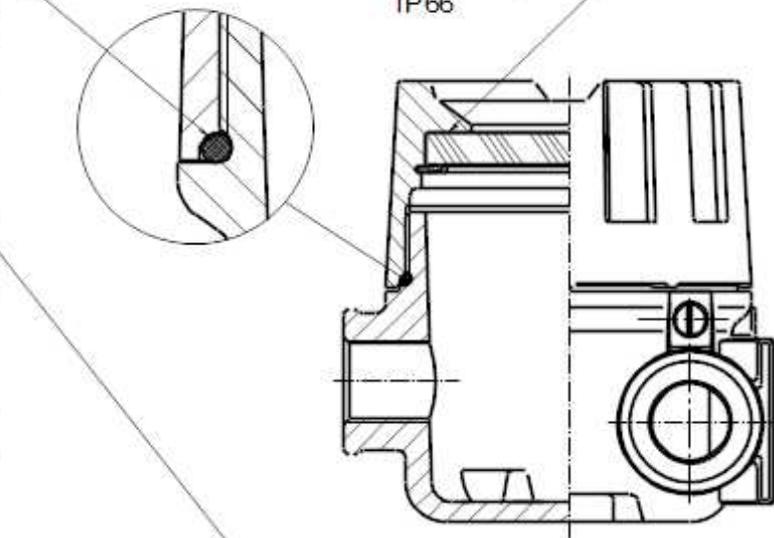
**1**  
 watertight, dusttight  
 max. possible to achieve IP66  
 tighten the cover until it stops

**3**  
 max. possible to achieve IP66  
 choose cable gland against  
 cable diameter and  
 proper tightness, proper IP  
 seal up thread connection

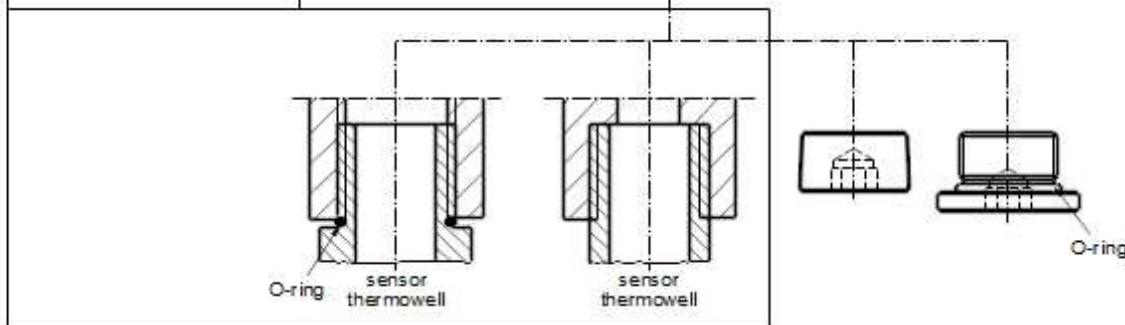
cemented joint  
 watertight, dusttight  
 IP66



**These components  
 are not included  
 as parts of the  
 certificated product**



**2**  
 max. possible to achieve IP66  
 seal up thread connection



6. WAY OF MOUNTING.

**NOTES**

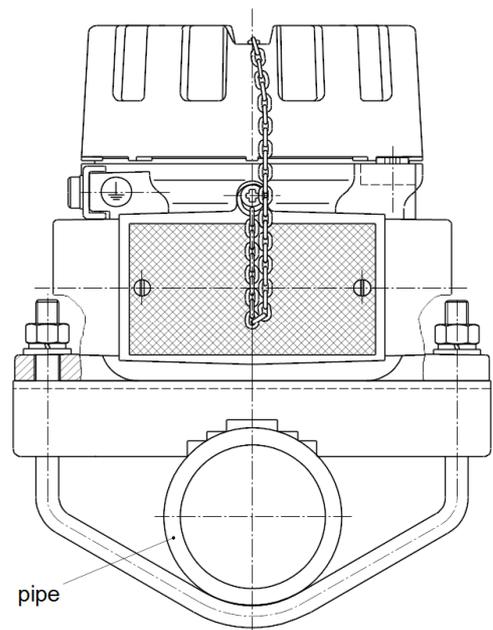
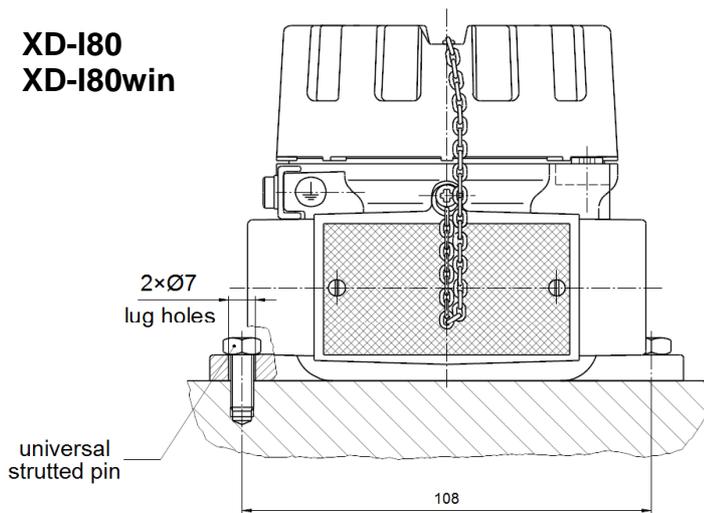
It is important to be careful when screw on or undo a cover. Thread surface should be free of any grains, pellets and other impurity, which cause seizing, and thread could be damaged.

**! Never screw on the cover forcefully !**

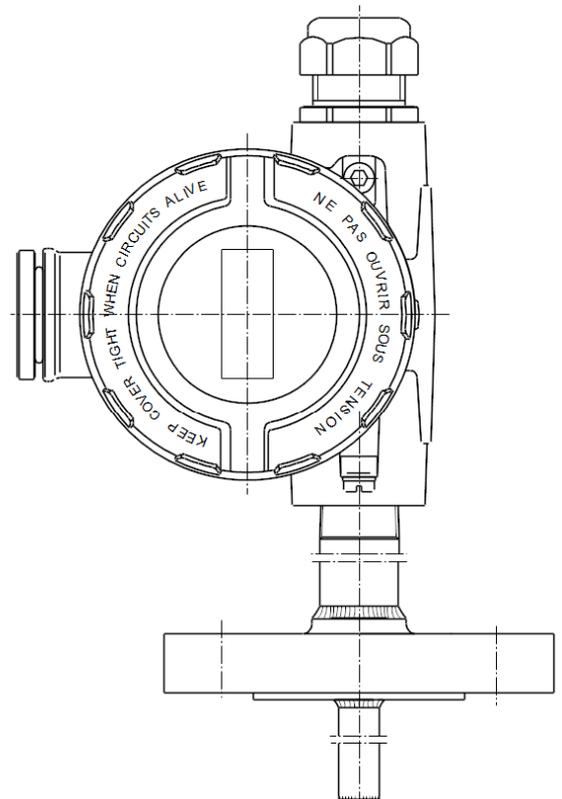
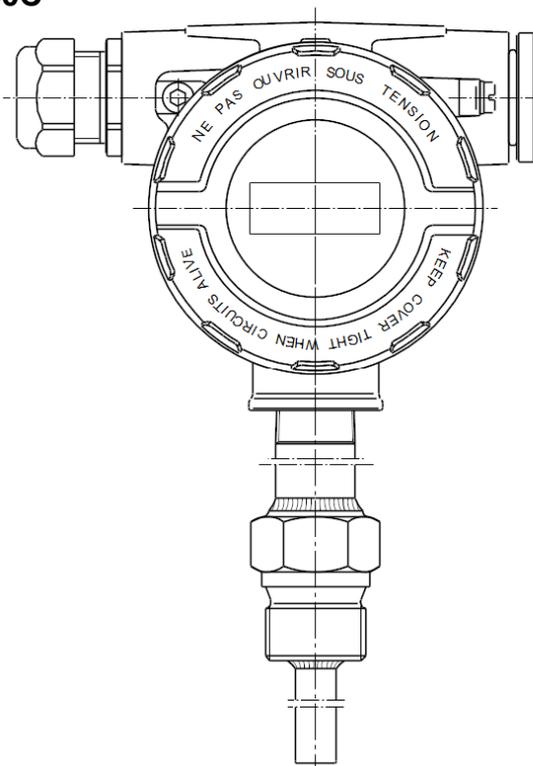
In case of necessities of opening of the connection head's cover after operation in maximum temperature it can be blocked (does not give to open with the hand).

In such case keep cover tensioned with the hand to opening and hit delicate with rubber hammer into cover.

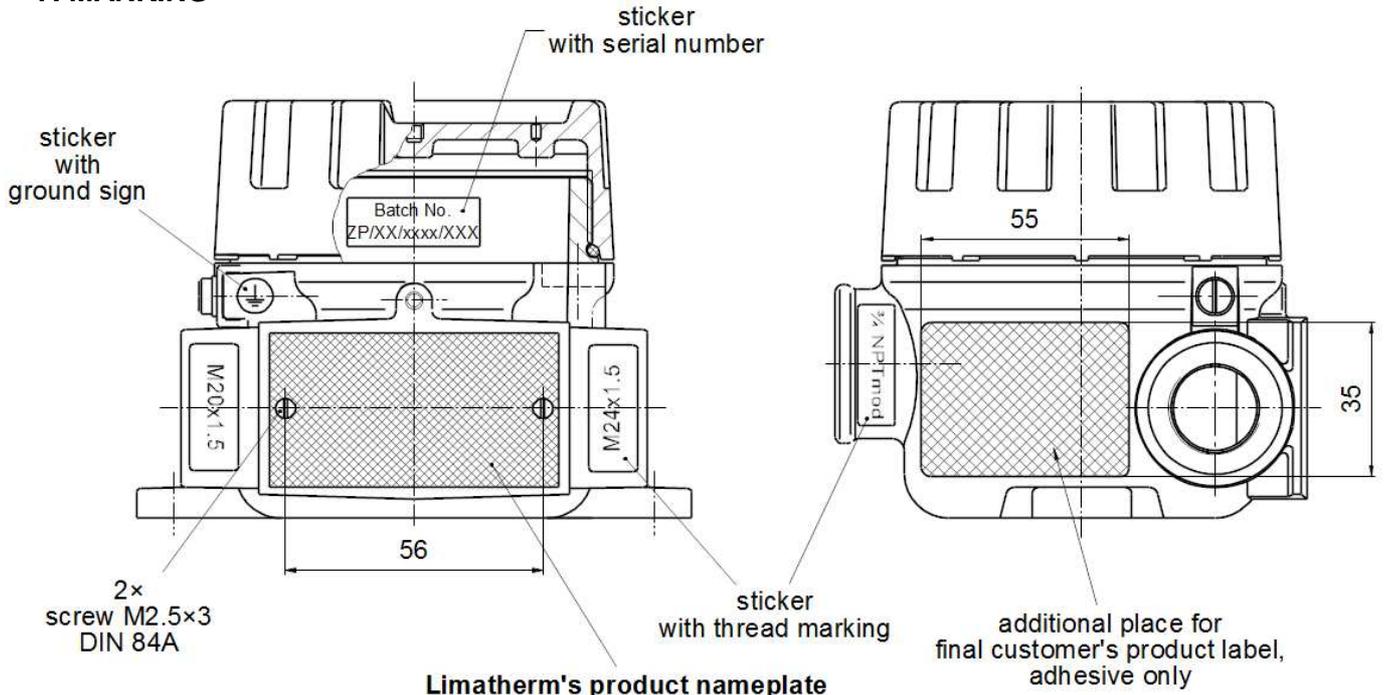
**XD-I80  
XD-I80win**



**XD-I80C  
XD-I80C**



**7. MARKING**



**Limatherm's product nameplate**

Limatherm S.A 34-600 Limanowa Poland		35
<b>Instrument housing type XD-I80</b>		
Class I, Groups ABCD, Class II, Groups EFG Class III, Type 4X For CSA Class I, Group A, conduit seal is required within 18 inches		
Class I, Zone 1, AEx db IIC, IP66 Ex db IIC Gb      II 2G Ex db IIC Gb Ex tb IIIC Db      II 2D Ex tb IIIC Db IECEx FTZU 13.0026U      FTZU 04 ATEX 0265U		
Ambient temp.: -40°C to +100°C (-40°F to 212°F)		
65		