

**N-L4405**

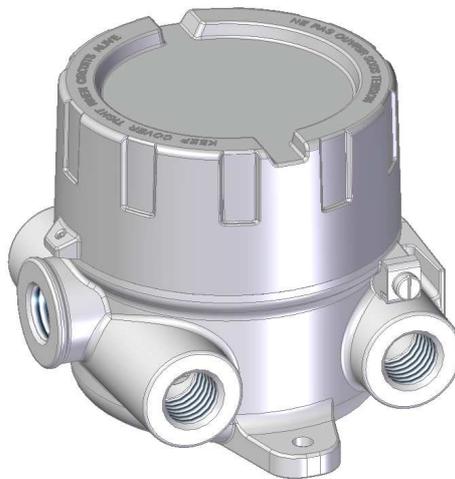
Updated 04.02.2021

## APPLICATION MANUAL

Flameproof universal instrument housing

Types:

**XD-FI, XD-FIwin, XD-FILwin, XD-FIH, XD-FIHwin**



### Contents:

1. Destination.
2. Flameproof joints.
3. Pressure test.
4. Temperature classes, ambient temperature, power dissipation.
5. Earth and protection terminals.
6. Cover locking
7. Protection degree.
8. Way of mounting.
9. Marking.

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## NOTES OF SAFETY

The XD-FI series are designed to accommodate various electronic instruments. If used incorrectly it is possible that application-related dangers may arise.

The XD-FI universal instrument housing 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-FI instrument housing is certified. When used as part of an end product assembly, subsequent approval of the end use equipment assembly is required.

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### 1. DESTINATION

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- Marking:

2014/34/UE	IECEX
II 2G Ex db IIC Gb	Ex db IIC Gb
II 2D Ex tb IIIC Db	Ex tb IIIC Db

- Standards:

ATEX 2014/34/UE  
 EN 60079-0, EN 60079-1, EN 60079-31,  
 IEC 60079-0, IEC 60079-1, IEC 60079-31

- Service temperature:

Housing type	T <sub>serv</sub>		
	O-ring TPE	O-ring VMQ	O-ring FKM
XD-FI XD-FIH	-40 to +100°C	-60 to +150°C	-20 to +200°C
XD-FIwin XD-FILwin XD-FIHwin	-40 to +100°C	-50 to +100°C	-20 to +100°C

- Possible zone application

Zone	Protection Code
Zone 1 Zone 21	Ex d Ex t
Zone 2 Zone 22	Ex d Ex t

- The empty enclosure is applicable for electrical apparatus, designed for ambient temperature not exceeding following range:

Housing type	T <sub>amb</sub>
XD-FI, XD-FIH	-60 to +150°C
XD-FIwin, XD-FILwin, XD-FIHwin	-50 to +100°C

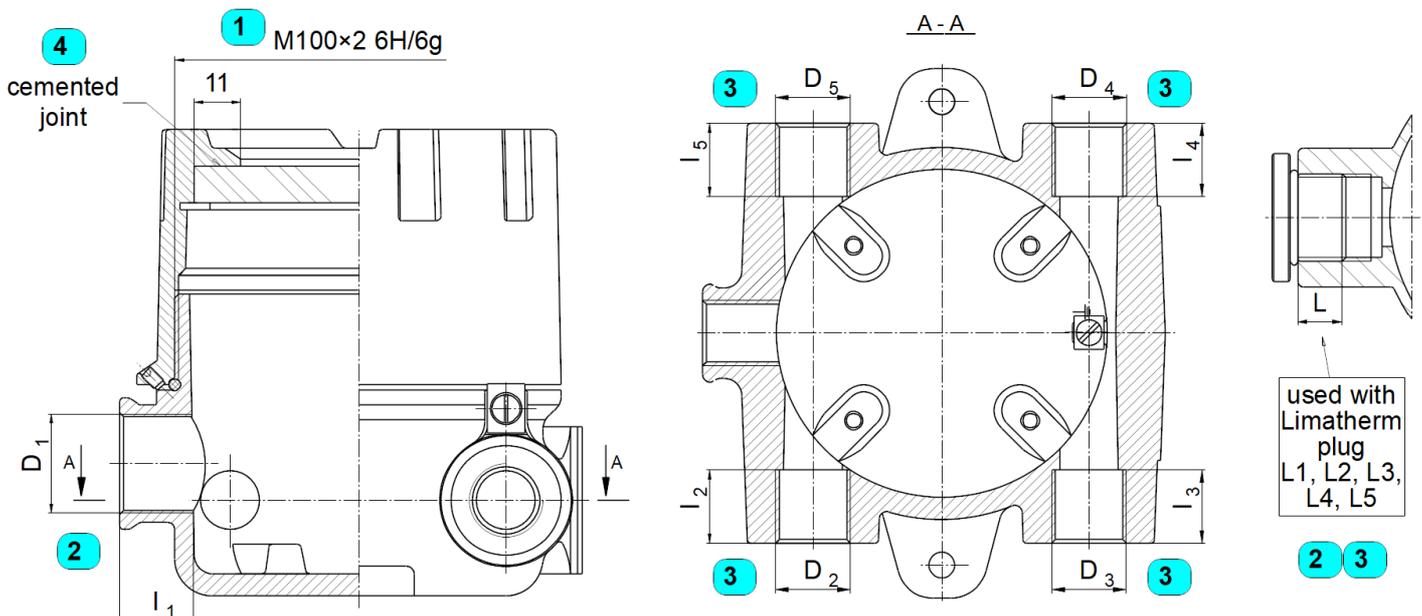
**! Devices installed inside of enclosure can have any lay-out, which ensures, that in any cross-section area will be least 40% (group IIC) of area free !**

**! The empty enclosure must be installed to avoid a risk from propagating brush discharges for application in explosive dust atmosphere !**

**! It is not allowed to install circuit breaker or contactors with oil filling and rotating apparatus producing turbulence inside of the enclosure !**

### 2. FLAMEPROOF JOINTS.

Flameproof joints are designed for volume  $500 < V \leq 2000 \text{ cm}^3$  group II C enclosures.



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Lp.	Connection type		Requirements of 60079-1	Achieved values					
1	M100x2 6H/6g		threads engaged $\geq 5$	9					
			depth of engagement $\geq 8$ mm	18,5mm					
2	D <sub>1</sub> proces opening	M20x1.5 6H M24x1.5 6H M25x1.5 6H	fit of thread	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 $\geq 8$ mm		should be ensured by customer, possible to reach: 19mm		10mm		
		M27x2 6H	fit of thread	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 $\geq 8$ mm		should be ensured by customer, possible to reach: 19mm		10mm		
		½NPTmod ¾NPTmod	threads provided on each part $\geq 5$	l <sub>1</sub>	10 male part should be ensured by customer	L <sub>1</sub>	-		
			threads engaged		should be ensured by customer, possible to reach: 5,0 ÷ 5,5		5		
		3	D <sub>2</sub> , D <sub>3</sub> , D <sub>4</sub> , D <sub>5</sub> conduit openings	M20x1.5 6H M24x1.5 6H M25x1.5 6H	fit of thread	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>	6H/6g
					threads engaged $\geq 5$		should be ensured by customer, possible to reach: 12,5		6,5
					depth of engagement $\geq 8$ mm		should be ensured by customer, possible to reach: 19mm		10mm
				½NPTmod ¾NPTmod	threads provided on each part $\geq 5$	l <sub>2</sub> , l <sub>3</sub>	10 male part should be ensured by customer	L <sub>2</sub> , L <sub>3</sub>	-
threads engaged	should be ensured by customer, possible to reach: 5,0 ÷ 5,5				5				
4	Cemented joint			min. length of joint 10mm	11mm				

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

**! Appropriate certify cable glands and blanking elements for direct entry have to be used !**

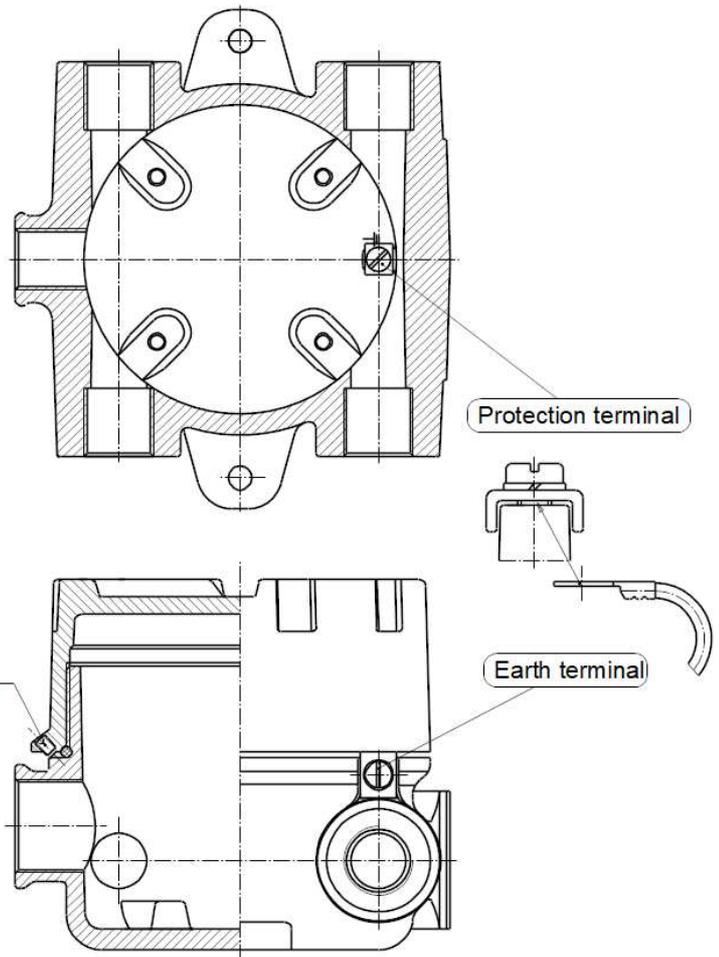
### 3. PRESSURE TEST.

Housing type	Overpressure static test value
XD-FI	80 bars
XD-FIHwin	80 bars
XD-FIwin, XD-FILwin	65 bars
XD-FIH	39 bars

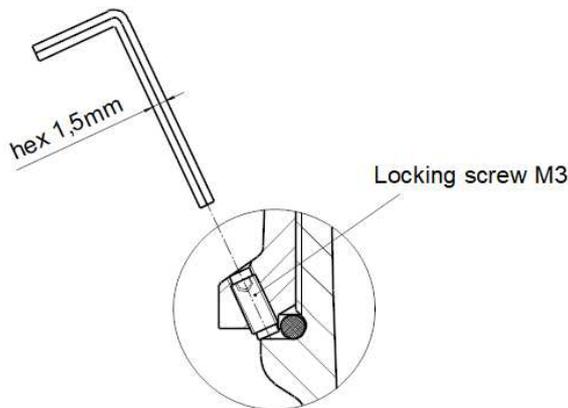
**4. EARTH AND PROTECTION TERMINALS.**

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Place	Type	Cable cross section [mm <sup>2</sup> ]	
		Stranded wire	Solid wire
Inside	Protection terminal	1.5	2.5
Outside	Earth terminal	4.0	6.0



**5. COVER LOCKING.**



Lock the cover by screw with hex socket using hex spanner with across flat 1,5mm.

**6. PROTECTION DEGREE IP.**

There are three connections of assembled device deciding about IP degree:

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

Threaded connection sealing	Possible IP
Without sealing - standard accuracy class thread	54
Use of a sealant, e.g. Loctite 577	68
Thread tightened with O-ring	68

If IP for each connection			IP of assembled device
1	2	3	
68		54	IP 54
		66	IP 66
		67	IP 67
		68	IP 68

**! ATTENTION !**

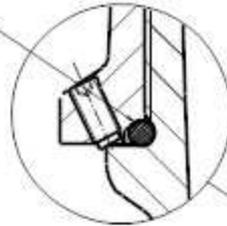
**Protection IP68 refers to depth 1,0m of submersion under water.**

**It is required min IP65 protection for instruments designed for dust zones.**

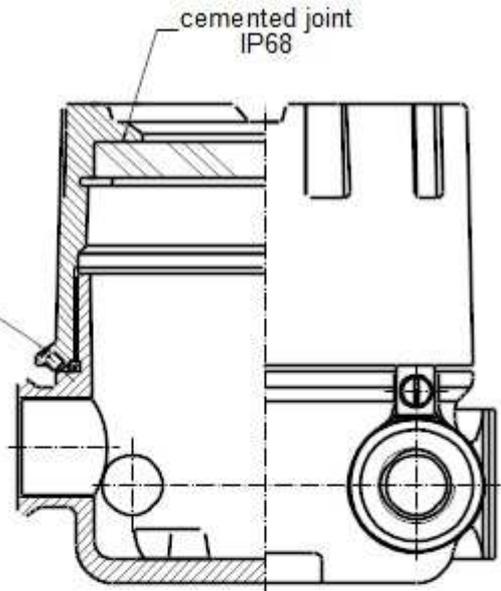
(Besides zone 22, non-conductive dust, where min IP54 protection is required)

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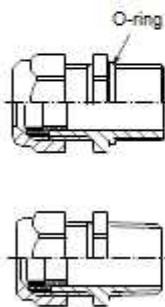
**1**  
 max. possible to achieve IP68  
 tighten up the cover with normal hand force until the end



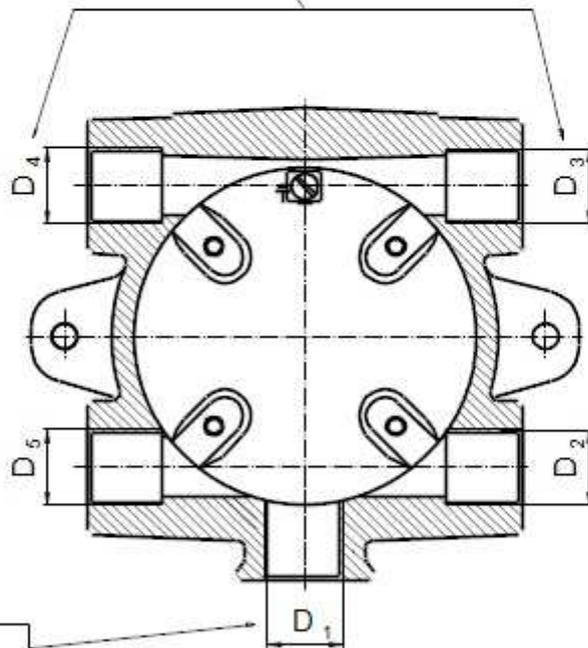
**2**  
 max. possible to achieve IP68  
 choose cable gland under cable diameter and proper tightness - proper IP  
 seal up thread connection  
 tighten up press cap with proper torque



Torque of cable gland in accordance with gland producer's manual

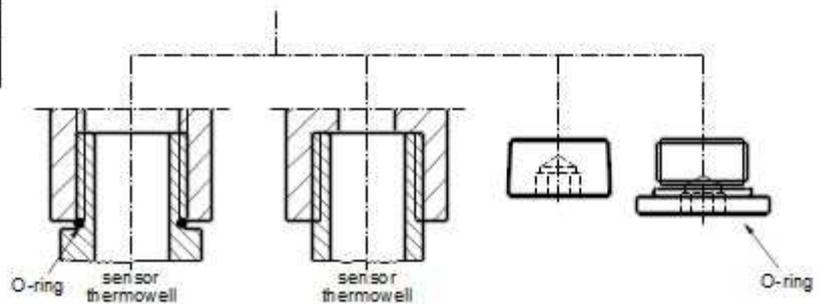


fill sealing fitting  
 flexible coupling



Torque of plug from 7 to 15 Nm

**3**  
 max. possible to achieve IP68  
 seal up thread connection



## 7. WAY OF MOUNTING

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### NOTES

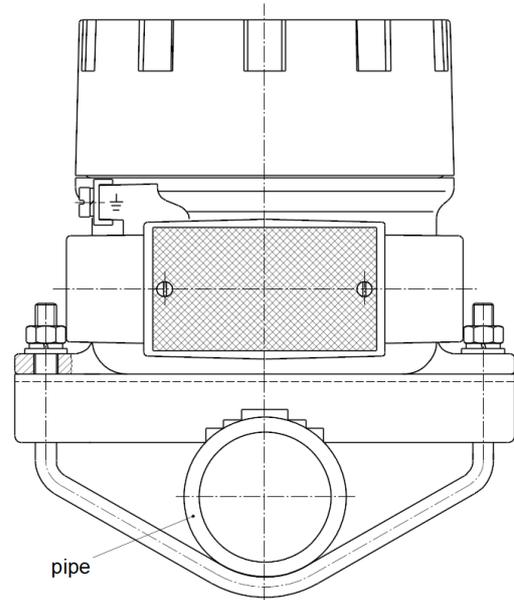
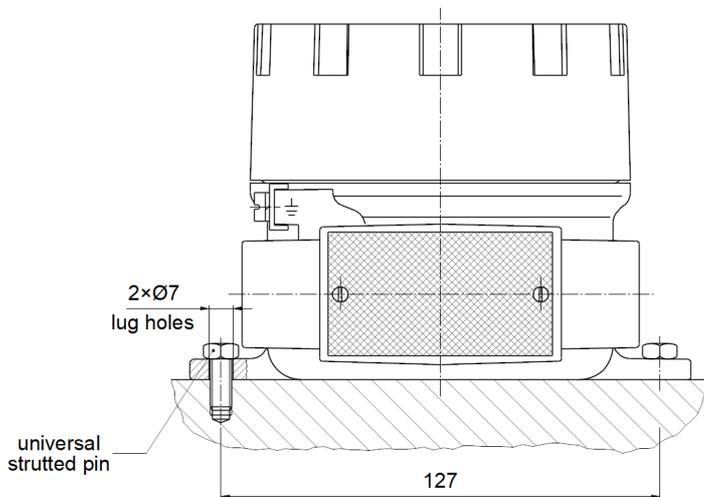
It is important to be careful when screw on or undo a cover. Thread surface should be free of any grains, pellets and other impurity, which cause seizing, and thread could be damaged.

**! 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.

### WAY OF FIXING to WALL and to PIPE



## 8. MARKING

Limatherm label with marking is put inside the housing.

The label can be glued on inside surface, it's up to customer.

Producer of assembled instrument should apply own nameplate with the marking of complete device.

Limatherm S.A. Type: XD-FI  
Tarnowska 1, 34-600 Limanowa, Poland  
1026 II2G Ex db IIC Gb  
II2D Ex tb IIIC Db  
FTZU 21 ATEX 0016U  
Ex db IIC Gb, Ex tb IIIC Db  
IECEx FTZU 21.0002U

Sticker  
with serial number

Place for customer's  
product nameplate  
glued or riveted with  
rivet pin 2x4 DIN 1476

