



N-L3858

Updated 04.09.2023



APPLICATION MANUAL

Flameproof Ex d
Universal Instrument Housing Type:
**XD-120L, XD-120Lwin, XD-120Lwin10,
XD-120, XD-120win, XD-120H, XD-120Hwin**



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.
10. Maintenance and repair.

NOTES OF SAFETY

The XD-120 series are designed to accommodate various electronic instruments. If used incorrectly it is possible that application-related dangers may arise.

The XD-120 universal instrument housing may be used by qualified and authorized company and people only, under strict observance of this Application Manual and relevant standards, legal requirements and where appropriate the certificate.

Only the empty XD-120 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 .

- Marking:

2014/34/EU	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/EU
EN 60079-0, EN 60079-1, EN 60079-31,
IEC 60079-0, IEC 60079-1, IEC 60079-31

- Servis temperature:

Housing type	T _{serv}	
	O-ring VMQ rubber	O-ring FKM rubber
XD-120L, XD-120, XD-120H	-40 to + 150 °C	-20 to + 200 °C
XD-120Lwin, XD-120win, XD-120Hwin	-40 to + 85 °C	-20 to + 85 °C

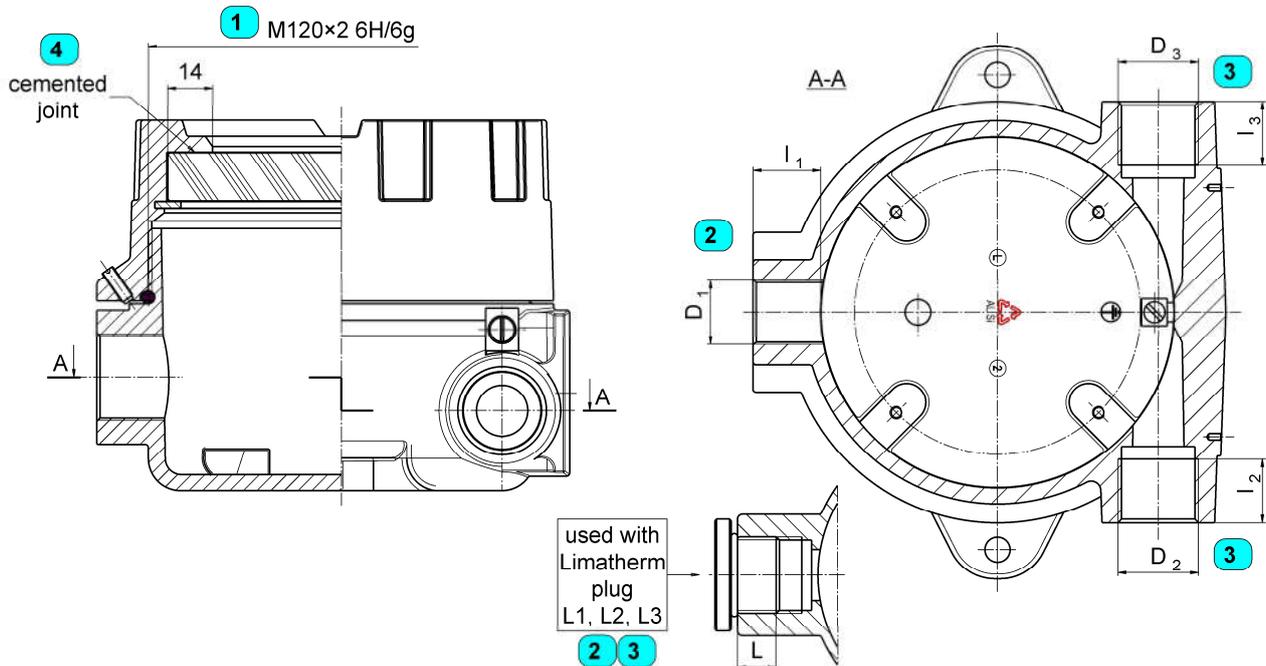
- Possible zone application

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

! An apparatus installed inside of the Ex component can have any layout, which ensures, that in any cross-section area shall be at least 40% of area free !
! Oil-filled circuit-breakers and contactors shall not be used !

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	M120×2 6H/6g		threads engaged ≥ 5	9					
			depth of engagement ≥ 8 mm	18,5mm					
2	D ₁ proces opening	M20×1.5 6H M24×1.5 6H M25×1.5 6H	fit of thread	l ₁	6g of male thread should be ensured by customer		L ₁	6H/6g	
			threads engaged ≥ 5		should be ensured by customer, possible to reach: 12,5			6,5	
			depth of engagement ≥ 8 mm		should be ensured by customer, possible to reach: 19mm			10mm	
		M27×2 6H	fit of thread	l ₁	6g of male thread should be ensured by customer		L ₁	6H/6g	
			threads engaged ≥ 5		should be ensured by customer, possible to reach: 9,5			5	
			depth of engagement ≥ 8 mm		should be ensured by customer, possible to reach: 19mm			10mm	
		½NPTmod ¾NPTmod	threads provided on each part ≥ 5	l ₁	9 male part should be ensured by customer		L ₁	-	
			threads engaged		should be ensured by customer, possible to reach: 5,0 ÷ 5,5			5	
		3	D ₂ , D ₃ conduit openings	M20×1.5 6H M24×1.5 6H M25×1.5 6H	fit of thread	l ₂ , l ₃	6g of male thread should be ensured by customer		L ₂ , L ₃
	threads engaged ≥ 5				should be ensured by customer, possible to reach: 12,5		6,5		
	depth of engagement ≥ 8 mm				should be ensured by customer, possible to reach: 19mm		10mm		
	½NPTmod ¾NPTmod			threads provided on each part ≥ 5	l ₂ , l ₃	9 male part should be ensured by customer		L ₂ , L ₃	-
threads engaged				should be ensured by customer, possible to reach: 5,0 ÷ 5,5		5			
4	Cemented joint			min. length of joint 10mm	14mm				

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

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

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

Each D₁, D₂ and D₃ opening can be plugged.

! The enclosure may be equipped with Ex-equipment cable glands or Ex- equipment blanking elements with type of Ex-protection according to Ex marking in certificate and with minimum IP code IP 6X !

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3. RPRESSURE TEST

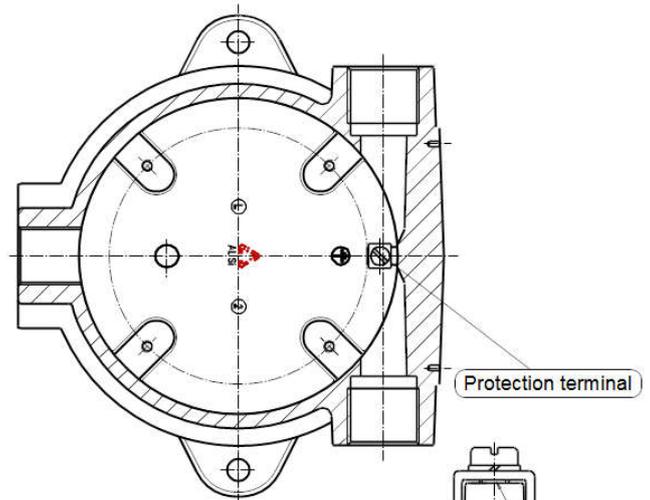
Enclosure was verified by over pressure static test 52 bar / 10s – 4× reference pressure.
The measured maximum reference pressure was 12,95 bar.

4. TEMPERATURE CLASSES, AMBIENT TEMPERATURE, MAX. POWER DISSIPATION

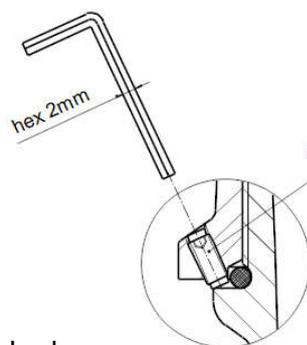
Maximum power dissipation [W]						
T _{amb}	Temp. class T6, or surface temp. 85° C	Position horizontally/vertically		Temp. class T5, or surface temp. 100°C	Position horizontally/vertically	
		Enclosure with low cover with window	Enclosure with high cover with window		Enclosure with low cover with window	Enclosure with high cover with window
40°C	Δ 0 ≤ 40 K	26,0 / 18,0	32,0 / 26,0	Δ 0 ≤ 55 K	36,0 / 27,0	51,0 / 40,0
55°C	Δ 0 ≤ 25 K	15,0 / 11,0	20,0 / 16,0	Δ 0 ≤ 40 K	26,0 / 18,0	32,0 / 26,0
70°C	Δ 0 ≤ 10 K	4,9 / 3,8	6,8 / 5,2	Δ 0 ≤ 25 K	15,0 / 11,0	20,0 / 16,0
85°C	N/A	-	-	Δ 0 ≤ 10 K	4,9 / 3,8	6,8 / 5,2

5. EARTH AND PROTECTION TERMINALS.

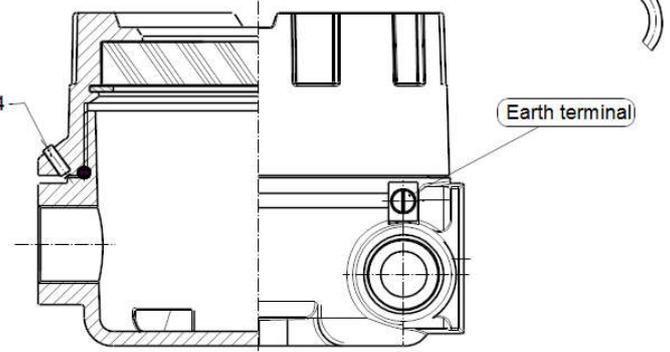
Place	Type	Cable cross section [mm ²]	
		Stranded wire	Solid wire
Inside	Protection terminal	1.5	2.5
Outside	Earth terminal	4.0	6.0



6. COVER LOCKING.



Lock the cover by screw with hex socked using hex spanner with across flat 2mm.



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7. PROTECTION DEGREE.

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

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

1

max. possible to achieve IP68

apply thin lubricant film evenly on the O-ring directly before assembling the cover in order to eliminate friction, and make slide for good contact between O-ring and cover on the whole circumference

tighten up the cover with normal hand force until the end

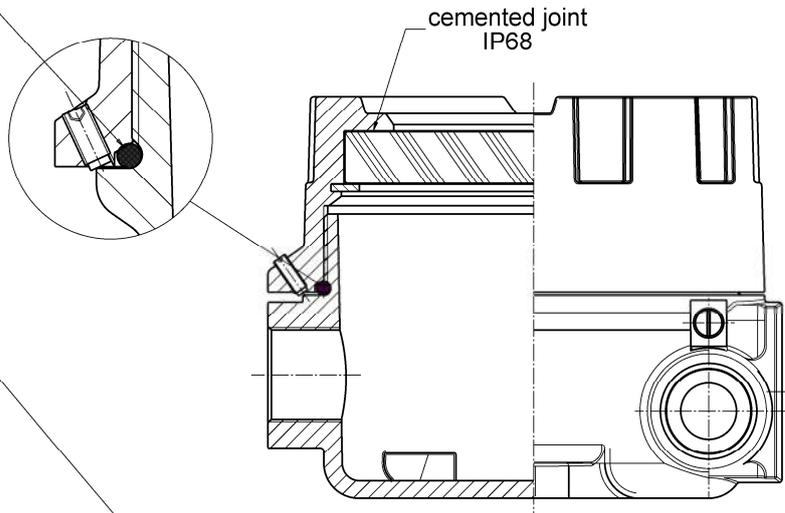
3

max. possible to achieve IP68

choose cable gland under cable diameter and proper tightness - proper IP

seal up thread connection

tighten up press cap of gland with proper torque

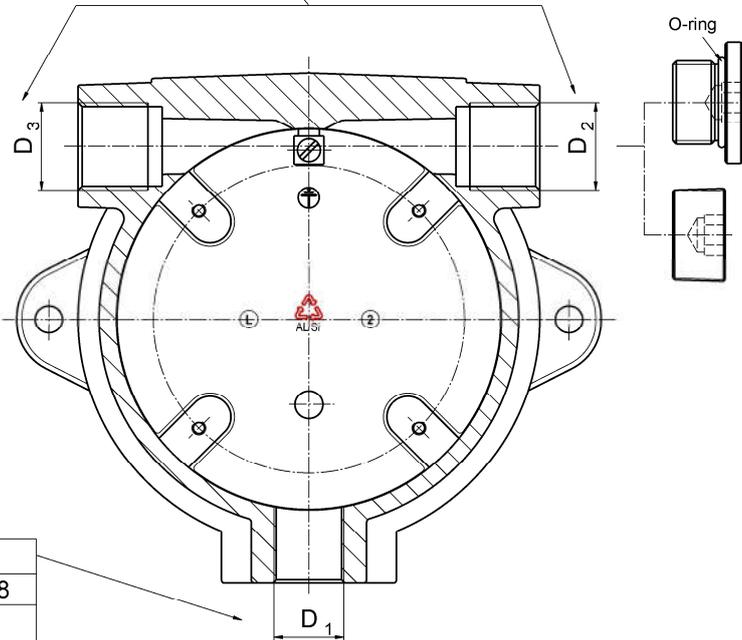


O-ring

fill sealing fitting

flexible coupling

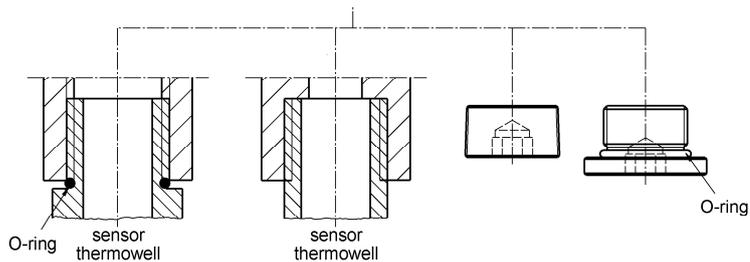
These components are not included as parts of the certificated product



2

max. possible to achieve IP68

seal up thread connection



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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
	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)

8. WAY OF MOUNTING

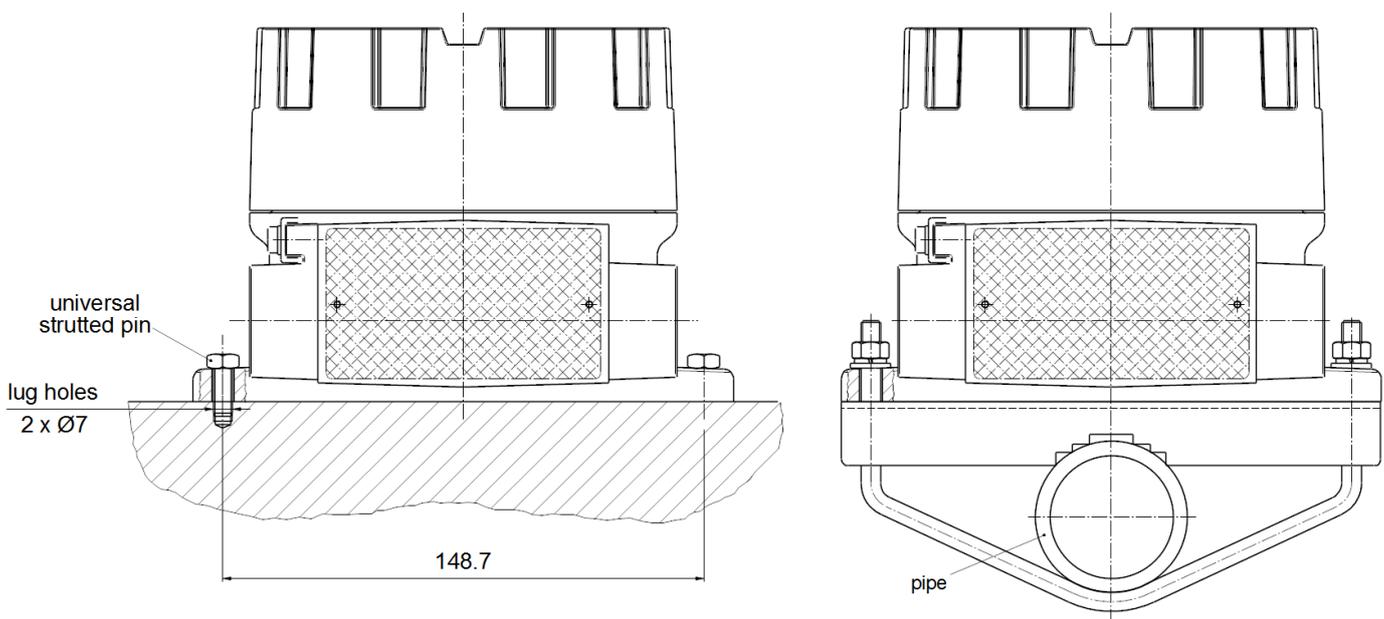
NOTES

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 box cover after operation in maximum temperature it can be blocked (does not give to open with the hand).

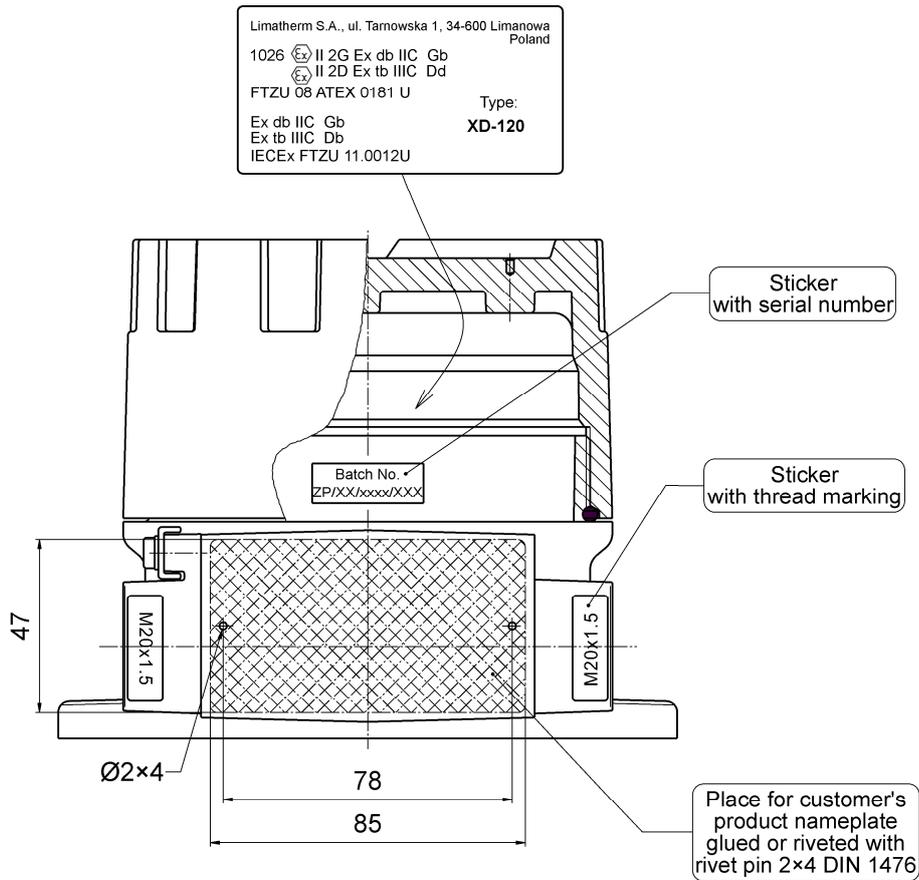
In such case keep cover tensioned with the hand to opening and hit delicate with rubber hammer into cover.



9. MARKING

Limatherm label with marking is put inside the housing.
 The label can be glued on the outside or inside surface, it's up to customer.
 Producer of assembled instrument should apply own label with the marking of complete sensor.

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10. MAINTENANCE and REPAIR

NOTES
It is recommended to change the O-ring if the cover has been opened during service work of the unit.
O-ring, if changed, has to be lubricated evenly on the whole circumference by a grease or oil for O-rings, or by technical Vaseline directly before reassembling the cover.
Cover, when opened after operation in maximum temperature, 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.