



APPLICATION MANUAL

Explosionproof universal instrument housing

Type: **XD-I, XD-Iwin, XD-ILwin**

Contents:

1. Destination.
2. Flameproof joints, process opening, conduit openings.
3. Carried out tests for non transmission of an internal ignition.
4. Earth and protection terminals.
5. Protection against water and dust ingress, cover locking.
6. Way of mounting.
7. Marking.

NOTES OF SAFETY

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

The XD-I... 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.

Only the empty XD-I... 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.

1. DESTINATION .

Universal instrument housing XD-I, XD-Iwin and XD-ILwin are designed to accommodate various electronic instruments or devices working in hazardous areas:

CERTIFICATIONS	STANDARDS	HAZARDOUS AREAS
	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 - 12.00.01 ANSI/ISA - 12.22.01 ANSI/IEC 60529	Class I, Zone 1, AEx d II C, T6, IP66
	CSA C22.2 No.0.4 CSA C22.2 No.0.5 CSA C22.2 No.25 CSA C22.2 No.30 CSA C22.2 No.94	Class I, Groups A, B, C, D Class II, Groups E, F, G Class III Type 4x
	CSA E60079-0 CSA E60079-1 CSA E60529	Class I, Ex d II C, IP66

Ambient temperature

Housing type	T_{amb}
	VMQ rubber (silicone)
XD-I	-40 to +212 °F (-40 to +100 °C)
XD-I win, XD-ILwin	-40 to +185 °F (-40 to +85 °C)

Possible application

USA and Canada		Europe	
Division	Protection Code	Zone	Protection Code
Division 1 Division 2	Explosionproof	Zone 0 , Zone 20	EEx d + EEx ia
		Zone 1 , Zone 21	EEx d
		Zone 2 , Zone 22	EEx d

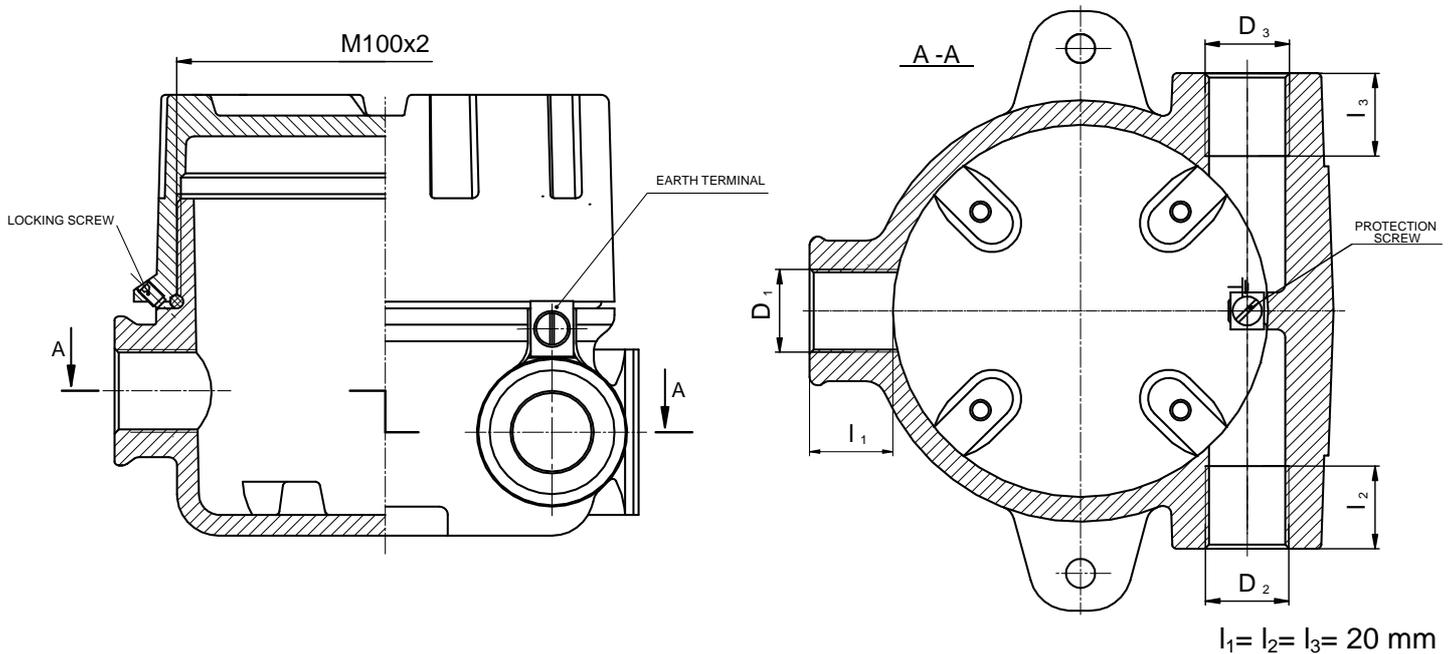
2. FLAMEPROOF JOINTS, PROCESS OPENINGS, CONDUIT OPENINGS.

There are four flameproof joints in XD-I and XD-Iwin housing:

1. on the cover thread M100x2;
2. on conduit openings D_3 , D_2 for cable gland:
threaded holes: M20x1.5; M24x1.5; M25x1.5; ½NPTmod; ¾NPTmod;
3. on process opening D_1 for thermowell or sensor:
threaded hole: M20x1.5; M24x1.5; M25x1.5; M27x2; ½NPT mod; ¾NPT mod.

All four flameproof joints are designed for :

- Volume $500 < V \leq 1500 \text{ cm}^3$
- Gas Group A



CYLINDRICAL THREADED JOINTS: COVER THREAD AND D_1 , D_2 , D_3			
STANDARD VALUE		ACHIEVED VALUE	
		Cover	D_1 , D_2 , D_3
FM 3615	<ul style="list-style-type: none"> • pitch $\geq 1.27 \text{ mm}$ • depth of engaged ≥ 8 • threads engaged $\geq 7 \text{ threads}$ 	<ul style="list-style-type: none"> • 2 mm • 20 mm • 10 th 	<ul style="list-style-type: none"> • 1.5 mm or 2 mm • 20 mm • 13 thds
CSA C22.2 No. 30	<ul style="list-style-type: none"> • pitch $\geq 1.27 \text{ mm}$ • threads engaged $\geq 8 \text{ Class 1 fit}$ • width of engaged $\geq 12.5 \text{ mm}$ 	<ul style="list-style-type: none"> • 2 mm • 10 th 6H/6g • 20 mm 	-
ANSI/ISA - 12.22.01	<ul style="list-style-type: none"> • pitch $\geq 0.7 \text{ mm}$ • depth of engaged $\geq 8 \text{ mm}$ • threads engaged $\geq 5 \text{ threads}$ 	<ul style="list-style-type: none"> • 2 mm • 10 th • 20 mm 	<ul style="list-style-type: none"> • 1.5 mm or 2 mm • 20 mm • 13 thds
CSA E60079-1	<ul style="list-style-type: none"> • pitch $\geq 0.7 \text{ mm}$ • depth of engaged $\geq 8 \text{ mm}$ • threads engaged $\geq 5 \text{ threads}$ 	<ul style="list-style-type: none"> • 2 mm • 10 th • 20 mm 	<ul style="list-style-type: none"> • 1.5 mm or 2 mm • 20 mm • 13 thds

TAPER THREADED JOINTS D_1, D_2, D_3		
STANDARD VALUE		ACHIEVED VALUE
		D_1, D_2, D_3
FM 3615	<ul style="list-style-type: none"> pitch ≥ 1.27 mm threads provide on each parts: ≥ 6 threads threads engaged ≥ 5 threads 	<ul style="list-style-type: none"> 1.814 mm 6 thds 5 thds <p>Standard plug gauge shall engage within 0 to $+3\frac{1}{2}$ turns of the gauging notch.</p>
CSA C22.2 No. 30	<ul style="list-style-type: none"> pitch ≥ 0.7 mm threads engaged ≥ 5 threads 	<ul style="list-style-type: none"> 1.814 mm 5 thds
ANSI/ISA - 12.22.01	<ul style="list-style-type: none"> pitch ≥ 0.9 mm threads provided on each part: ≥ 6 threads threads engaged ≥ 5 threads 	<ul style="list-style-type: none"> 1.814 mm 6 thds 5 thds
CSA E60079-1	<ul style="list-style-type: none"> pitch ≥ 0.9 mm threads provided on each part: ≥ 6 threads threads engaged ≥ 5 threads 	<ul style="list-style-type: none"> 1.814 mm 6 thds 5 thds

Each type of parallel threads: M20x1.5; M24x1.5; M25x1.5; M27x2 is adapted to create explosionproof joint. Also taper threads: 1/2NPTmod; 3/4NPTmod are modified acc. to standard **FM** and **CSA** and can create flameproof joint with threaded male part with standard cutting tolerance.

Process opening can be used for mounting sensor (e.g. gas sensor) or thermowell.

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

Each threaded hole D_1, D_2 and D_3 can be plugged.

3. CARRIED OUT TESTS FOR NON TRANSMISSION OF AN INTERNAL IGNITION

Process holes D_1	FM 3615 p. 4.3 CSA C22.2 p. 6.5
M20x1.5 M24x1.5 M25x1.5 M27x2 1/2 NPTmod 3/4 NPTmod	tested - together with plug
Conduit holes D_2, D_3	FM 3615 p. 4.3 CSA C22.2 p. 6.5
M20x1.5 M24x1.5 M25x1.5 1/2 NPTmod 3/4 NPTmod	tested - together with plugs

D_1, D_2, D_3 threads and fixed to them threaded male parts of sensor, thermowell, cable gland, fill sealing fittings, flexible couplings - must create flameproof joint.

mod = modified to meet standards: FM 3615, CSA C22.2 No.0.5

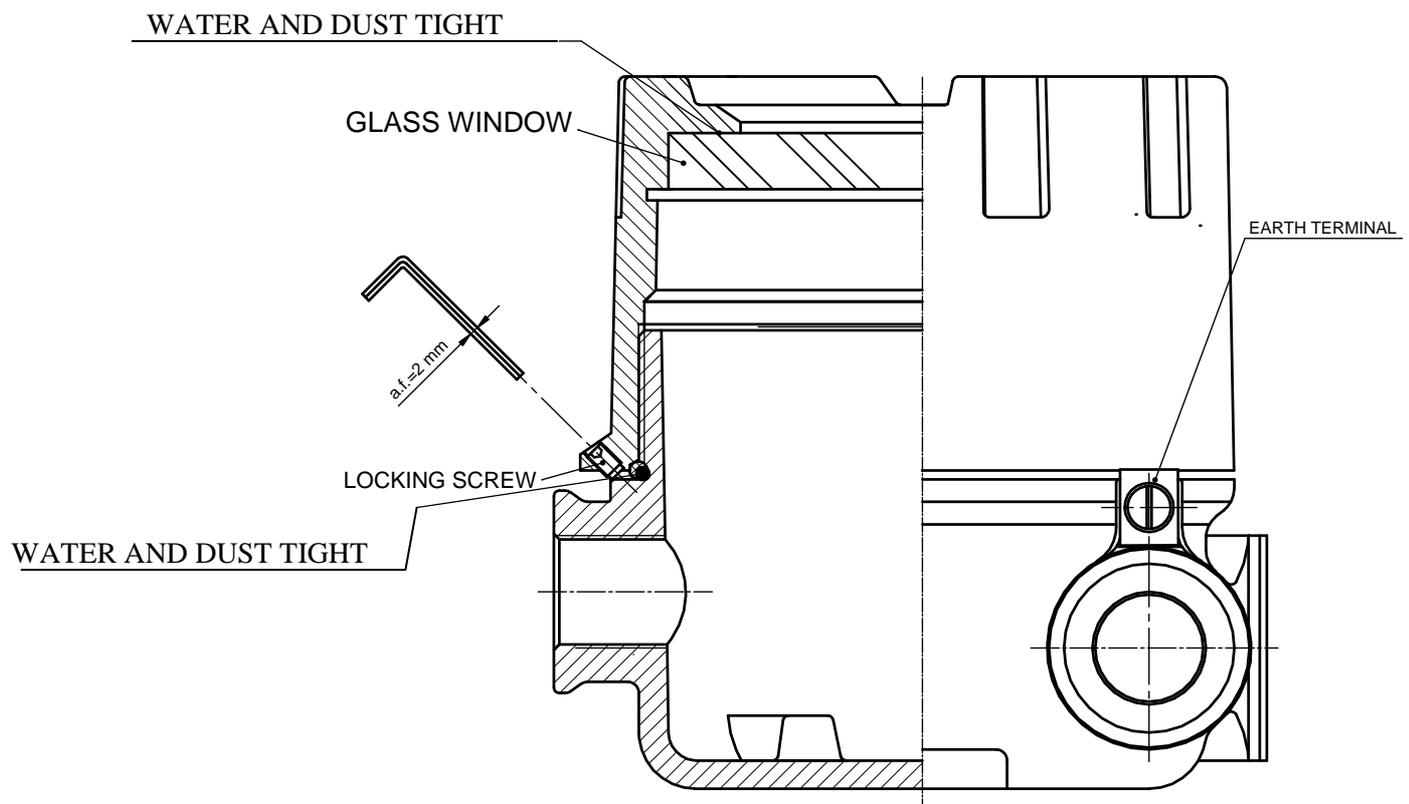
4. EARTH AND PROTECTION TERMINALS

To these terminals can be connected with both solid wire and standardised wire cables as shown in the table below.

Place	Type	AWG
Inside	Protection terminal	14
Outside	Earth terminal	10

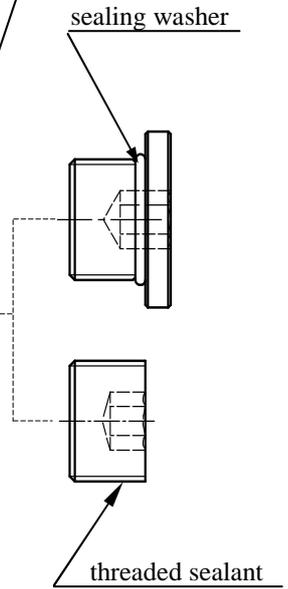
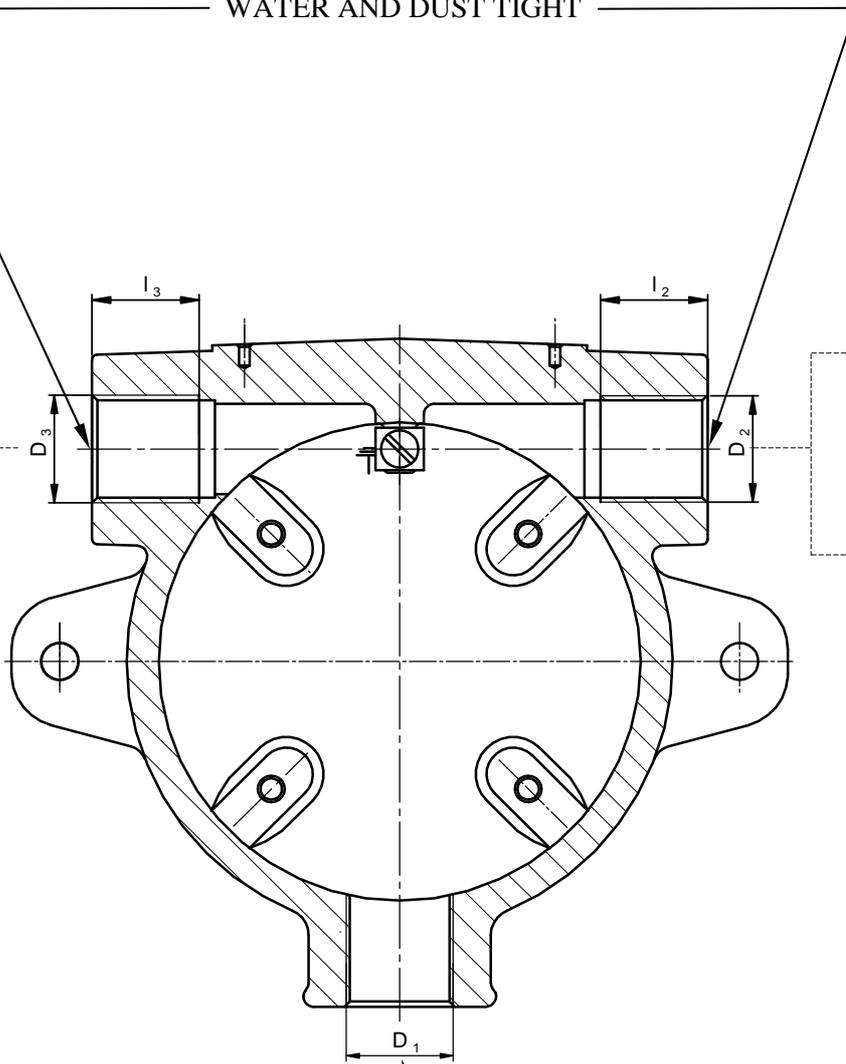
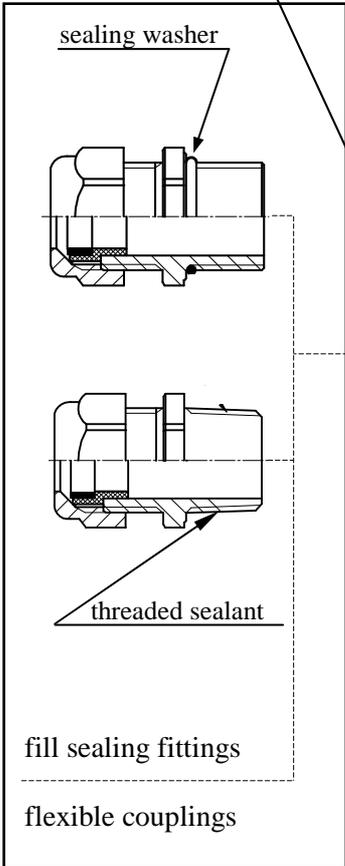
5. PROTECTION AGAINST WATER AND DUST INGRESS, COVER LOCKING (Enclosure type 4x)

There are three places deciding of water and dust tightness.

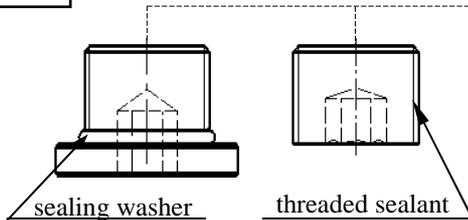


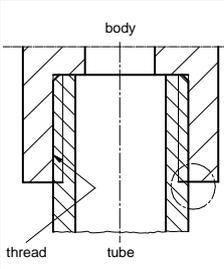
Cover is locked by screw with hex socket using hex spanner with across flat 2 [mm]. This screw is situated on the cover boss.

WATER AND DUST TIGHT



these components are not included as parts of the CSA and FM Approval certification

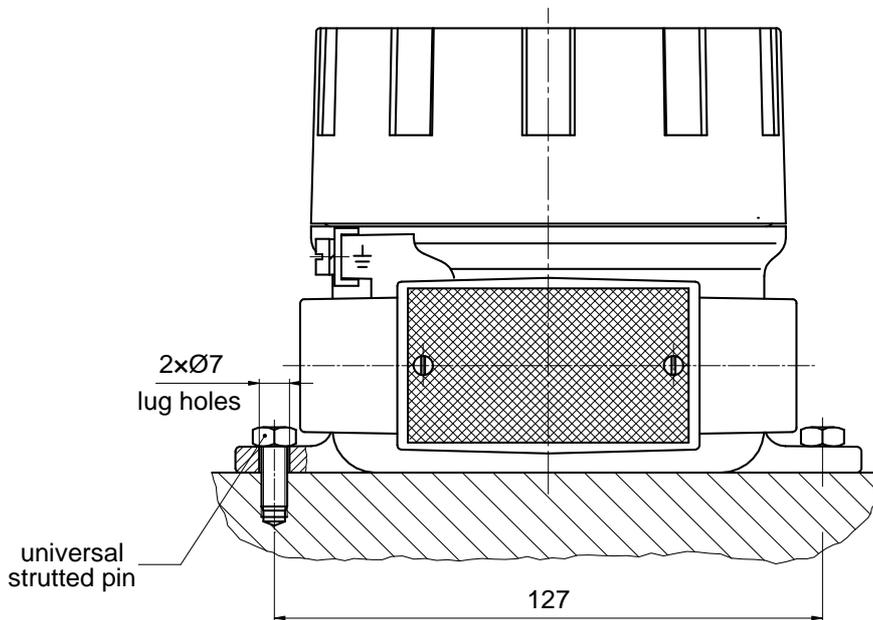


TIGHTEN TYPE	DESCRIPTION OF THE SOLUTION	PROTECTION AGAINST WATER AND DUST INGRESS
 <p>body</p> <p>thread</p> <p>tube</p>	1. Parallel and taper thread are manufactured in the standard accuracy class of manufacturing. 2. No gasket, no packing with any packing agent.	NO
	Threads are additionally packed with use of – for example – LOCTITE 577 agent.	YES
plugged		YES

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.

Way of fixing to the wall



7. MARKING.

According to FM 3600, FM 3615, Limatherm equips each housing with product nameplate on the outside surface of the body. Serial number label is glued on the inner surface of the body.

LIMATHERM 34-600 LIMANOWA POLAND	
INSTRUMENT HOUSING Type XD-I	
 CL. I. GR. A,B,C,D; CL. II. GR. E,F,G; CL. III.; TYPE 4X For CSA Class I, Group A, conduit seal is required within 18 inches	
 CL. I, ZONE 1, AEx d IIC, IP66 Ex d IIC Gb Ex tb IIIC Db IECEX FTZU 12.0017U	 II 2G Ex d IIC Gb II 2D Ex tb IIIC Db FTZU 03 ATEX 0207U
AMBIENT TEMP.: -40°C TO +100°C (-40°F TO 212°F)	

LIMATHERM 34-600 LIMANOWA POLAND	
INSTRUMENT HOUSING Type XD-Iwin	
 CL. I. GR. A,B,C,D; CL. II. GR. E,F,G; CL. III.; TYPE 4X For CSA Class I, Group A, conduit seal is required within 18 inches	
 CL. I, ZONE 1, AEx d IIC, IP66 Ex d IIC Gb Ex tb IIIC Db IECEX FTZU 12.0017U	 II 2G Ex d IIC Gb II 2D Ex tb IIIC Db FTZU 03 ATEX 0207U
AMBIENT TEMP.: -40°C TO +85°C (-40°F TO 185°F)	

LIMATHERM 34-600 LIMANOWA POLAND	
INSTRUMENT HOUSING Type XD-ILwin	
 CL. I. GR. A,B,C,D; CL. II. GR. E,F,G; CL. III.; TYPE 4X For CSA Class I, Group A, conduit seal is required within 18 inches	
 CL. I, ZONE 1, AEx d IIC, IP66 Ex d IIC Gb Ex tb IIIC Db IECEX FTZU 12.0017U	 II 2G Ex d IIC Gb II 2D Ex tb IIIC Db FTZU 03 ATEX 0207U
AMBIENT TEMP.: -40°C TO +85°C (-40°F TO 185°F)	

The Limatherm's metal label can be screwed on the outside surface or plastic label put on inside. It's up to customer.

Instruments producer should apply additional own label with the rest marking of complete sensor or transfer valuable information from Limatherm's label to sensor label.

To each batch of housing will be attached also this Application Manual with drawing of the marking label.

Places for product labels

