IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx CML 19.0113X**

Certificate history:

Status: **Current**

Issue No: 0

Date of Issue: 2021-04-22

Applicant: **AMPHENOL EEC, INC.**
1701 Birchwood Ave
Des Plaines, Illinois 60018
United States of America

Equipment: **Type EX-60*, EX-65*, EX-70* and EX-75* Range of Barrier Cable Glands and Stopper Boxes**

Optional accessory:

Type of Protection: **Ex db, Ex eb, Ex ta**

Marking: Ex db I Mb

Ex eb I Mb

Ex db IIC Gb

Ex eb IIC Gb

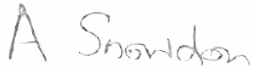
Ex ta IIIC Da

(-60°C to 135°C)

Approved for issue on behalf of the IECEx Certification Body: **A Snowdon MIET**

Position: **Assistant Certification Manager**

Signature: (for printed version)



Date: 2021-04-22

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Certificate issued by:

Eurofins E&E CML Limited
Unit 1, Newport Business Park
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Ellesmere Port, CH65 4LZ
United Kingdom

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Certificate No.: **IECEx CML 19.0113X** Page 2 of 3

Date of issue: 2021-04-22 Issue No: 0

Manufacturer: **AMPHENOL EEC, INC.**
1701 Birchwood Ave
Des Plaines, Illinois 60018
United States of America

Additional manufacturing locations:

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 equipment 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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
Edition:5.0

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

GB/CML/ExTR19.0211/00

Quality Assessment Report:

GB/SIR/QAR08.0010/09

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The EX-60*, EX-65*, EX70* and EX-75* Range of Barrier Cable Glands & Stopper Boxes are metallic and are intended for use with differing cables or conductors dependent on their type. They allow the entry of the cable or conductors into flameproof, increased safety, restricted breathing and dust protected enclosures without compromising the explosion protection provided by the enclosure, in accordance with relevant codes of practice. All types comprise of various entry thread sizes, which are dependent upon gland size and their cable sealing ability range.

Refer to Annex for full description.

SPECIFIC CONDITIONS OF USE: YES as shown below:
Refer to Annex for Specific Conditions of Use.

Annex:

Annex IECEx CML 19.0113X Iss 0.pdf

Annexe to:	IECEx CML 19.0113X, Issue 0
Applicant:	Amphenol EEC, Inc.
Apparatus:	Type EX-60*, EX-65*, EX-70* and EX-75* Range of Barrier Cable Glands and Stopper Boxes

Description

The EX-60*, EX-65*, EX70* and EX-75* Range of Barrier Cable Glands & Stopper Boxes are metallic and are intended for use with differing cables or conductors dependent on their type. They allow the entry of the cable or conductors into flameproof, increased safety, restricted breathing and dust protected enclosures without compromising the explosion protection provided by the enclosure, in accordance with relevant codes of practice. All types comprise of various entry thread sizes, which are dependent upon gland size and their cable sealing ability range.

The EX-60*, EX-65*, EX70* and EX-75* Range of Barrier Cable Glands & Stopper Boxes, when installed with the silicone O-ring provided by the manufacturer, have an ingress protection rating of IP66 and IP68 (tested at a depth of 100 m for 7 days).

Design Options for all Type EX-60*, EX-65*, EX70* and EX-75* Barrier Cable Glands and Stopper Boxes

The entry component and EX-75* conduit nut internal thread forms:

- ISO Metric to BS3643-1:2007 and BS 3643-3:2007 6g fit (male) 6H (female)
- NPT to ANSI/ASME B1.20.1:1983, gauging to clause 8
- NPSM to ANSI/ASME B1.20.1:1983, gauging to clause 9
- BSPT to BS 21:1985 (ISO 7/1) standard threads only clause 5.4, gauging to clause 5A, system A
- BSPP to BS 2779:1986 (ISO 228/1) class A full from external threads'
- PG to DIN 40430:1971
- ET to BS 31:1940 (1979) Table 'A'

Alternative material of construction is as follows and denoted by letter designation in the type number:

- Brass to BS EN 12164 / BS EN 12165 / BS EN 12168 CW614N CuZn39Pb3
- Ecobrass to C69300
- Stainless Steel to EN 10088-3 grades 316S11, 316S31 316L

Additionally, all metallic materials may be surface coated to limit electrolytic reaction between dissimilar materials, providing the coating does not alter the dimensions of the component part.

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The EX-70* Range of Barrier Cable Glands are suitable for use with unarmoured, braided and screened, circular cables; they comprise:

- A threaded entry body to tighten into an associated enclosure; this is fitted with a silicone O-ring and internally coated with a release agent.
- A ferrule, fitted with an external nitrile O-ring, which fits into the entry body to make a part chamber into which a two-part epoxy putty setting compound is applied to provide an inner seal around the conductors.
- A union nut that couples the entry body and ferrule together.
- A seal housing, enclosing a white silicone, elastomeric, cable outer sheath seal and a plastic skid washer, that is screwed and secured into the ferrule with adhesive.
- A back nut that screws into the seal housing to compress the outer sheath seal.

Type EX-70* Compound – Filled Cable Glands:

Gland Size	Standard Entry Threads		Max Diameter Over Cores	Max No. of Cores	Outer Sheath	
	Metric	NPT			Min	Max
16	M20	½”	10.4	15	3.4	8.4
20S	M20	½”	10.4	35	4.8	11.7
20	M20	½”	12.5	40	9.5	14.0
25	M25	¾”	17.8	60	11.7	20.0
32	M32	1”	23.5	80	18.1	26.3
40	M40	1 ¼”	28.8	130	22.6	32.2
50S	M50	1 ½”	34.2	200	28.2	38.2
50	M50	2”	39.4	400	33.1	44.1
63S	M63	2”	44.8	400	39.3	50.1
63	M63	2 ½”	50.0	425	46.7	56.0
75S	M75	2 ½”	55.4	425	52.3	62.0
75	M75	3”	60.8	425	58.0	68.0
80	M80	3”	64.4	425	61.9	72.0
85	M85	3”	69.8	425	69.1	78.0
90	M90	3 ½”	75.1	425	74.1	84.0
100	M100	3 ½”	80.5	425	81.8	90.0

Design options:

A brass continuity washer may be fitted in the 20S to 100 sizes that are used with lead inner sheathed cables, glands with this modification are designated with a ‘2’ in their type number.

The EX-65* Range of Barrier Cable Glands are suitable for use with, unarmoured, braided and screened, circular and non-circular cables. They may also be used as a line bushing for terminating flying leads or for the direct inter-connection of associated enclosures; they comprise:

- A threaded entry body to tighten into an associated enclosure; this is fitted with a silicone O-ring and internally coated with a release agent
- A ferrule, fitted with an external nitrile O-ring, which fits into the entry body to make a part chamber into which a two-part epoxy putty setting compound is applied to provide an inner seal around the conductors.
- A union nut that couples the entry body and ferrule together
- A back nut that is screwed and secured into the ferrule with adhesive.

Type EX-65* Compound filled Cable Glands

Gland Size	Standard Entry Threads		Max Diameter Over Cores	Max No. of Cores	Outer Sheath Max
	Metric	NPT			
20S	M20	½”	10.4	35	11.7
20	M20	½”	12.5	40	14.0
25	M25	¾”	17.8	60	20.0
32	M32	1”	23.5	80	26.3
40	M40	1 ¼”	28.8	130	32.2
50S	M50	1 ½”	34.2	200	38.2
50	M50	2”	39.4	400	44.1
63S	M63	2”	44.8	400	50.1
63	M63	2 ½”	50.0	425	56.0
75S	M75	2 ½”	55.4	425	62.0
75	M75	3”	60.8	425	68.0
80	M80	3”	64.4	425	72.0
85	M85	3”	69.8	425	78.0
90	M90	3 ½”	75.1	425	84.0
100	M100	3 ½”	80.5	425	90.0

Design option:

A brass continuity washer may be fitted in the 20S to 100 sizes that are used with lead inner sheathed cables, glands with this modification are designated with a ‘2’ in their type number.

The EX-60* Range of Barrier Cable Glands are suitable for use with circular, pliable wire, single wire and steel tape armoured cables along with braided/screened and unarmoured cables; they comprise:

- A threaded entry body to tighten into an associated enclosure, this fitted with a silicone O-ring and internally coated with a release agent.
- A cone, fitted with an external nitrile O-ring, which fits into the entry component to make a part chamber into which a two part epoxy putty setting compound is applied to provide an inner seal around the conductors.
- A clamp ring that secures cable armour to the cone and also provides earth protection.
- A mid-cap component that fastens to the entry body to captivate the clamp ring, cone and epoxy putty.
- A back nut, enclosing a white, silicone, elastomeric, cable outer sheath seal and skid washer, that screws onto the external thread of the mid cap.

Type EX-60* Compound-Filled Cable Glands:

Gland Size	Standard Entry Threads		Max Ø Over Cores	Max No. of Cores	Inner Sheath	Outer Sheath		Reduced Bore		Armour Dia/Thickness (Universal)
	Metric	NPT			Max	Min	Max	Min	Max	
16	M20	½”	10.4	15	11.7	8.4	13.5	6.7	10.3	0.15 – 1.25
20S	M20	½”	10.4	35	11.7	11.5	16.0	9.4	12.5	*0.15 – 1.25
20	M20	½”	12.5	40	14.0	15.5	21.1	12.0	17.6	**0.15 – 1.25
25	M25	¾”	17.8	60	20.0	20.3	27.4	16.8	23.9	0.15 – 1.6
32	M32	1”	23.5	80	26.3	26.7	34.0	23.2	30.5	0.15 – 2.0
40	M40	1 ¼”	28.8	130	32.2	33.0	40.6	28.6	36.2	0.2 – 2.0
50S	M50	1 ½”	34.2	200	38.2	39.4	46.7	34.8	42.4	0.2 – 2.5
50	M50	2”	39.4	400	44.1	45.7	53.2	41.1	48.5	0.2 – 2.5
63S	M63	2”	44.8	400	50.1	52.1	59.5	47.5	54.8	0.3 – 2.5
63	M63	2 ½”	50.0	425	56.0	58.4	65.8	53.8	61.2	0.3 – 2.5
75S	M75	2 ½”	55.4	425	62.0	64.8	72.2	60.2	68.0	0.3 – 2.5
75	M75	3”	60.8	425	68.0	71.1	78.0	66.5	73.4	0.3 – 2.5
80	M80	3”	64.4	425	72.0	77.0	84.0	71.9	79.4	0.45 – 3.15
85	M85	3”	69.8	425	78.0	79.6	90.0	75.0	85.4	0.45 – 3.15
90	M90	3 ½”	75.1	425	84.0	88.0	96.0	82.0	91.4	0.45 – 3.15

Gland Size	Standard Entry Threads		Max Ø Over Cores	Max No. of Cores	Inner Sheath	Outer Sheath		Reduced Bore		Armour Dia/Thickness (Universal)
	Metric	NPT			Max	Min	Max	Min	Max	
100	M100	3 ½”	80.5	425	90.0	92.0	102.0	87.4	97.4	0.45 – 3.15

Design options:

A brass continuity washer may be fitted in the 20S to 100 sizes that are used with lead inner sheathed cables, glands with this modification are designated with a ‘2’ in their type number.

The EX-60* size 20s and 20 cable glands to be used with an alternative, cone component; in this form, the glands are designated CX-C** (see details below) and are only suitable for braided cables.

Entry thread size	Gland Size	Max Ø Over Cores (mm)	Max No. of Cores	Max Inner Sheath (mm)	Outer Sheath (standard) (mm)		Braid dia.	
					Min	Max	Min	Max
M20 x 1.5	20S	10.4	8	11.7	11.5	16.0	0.15	0.35
M20 x 1.5	20	12.5	14	14.0	15.5	21.1	0.15	0.5

The EX-60* may be used with an alternative outer sheath seal that is red in colour and has a reduced bore size that accommodates an alternative range of outer sheath cable sizes; in this form, the glands are designated EX-60*R (see details below):

Entry thread size	Gland Size	Max Ø Over Cores (mm)	Max No. of Cores	Max Inner Sheath (mm)	Outer Sheath (standard) (mm)		Braid dia.	
					Min	Max	Min	Max
M20 x 1.5	20S	10.4	8	11.7	9.4	12.5	0.15	0.35
M20 x 1.5	20	12.5	14	14.0	12.0	17.6	0.15	0.5

The EX-75* Range of Conduit Stopper Boxes are suitable for use with circular cables, non-circular cables or conductors carried in conduit, providing a flameproof barrier entry into enclosures. Additionally, they may be used as a line bushing for terminating flying leads or for the direct inter-connection of associated enclosures; they comprise:

- a threaded entry body to tighten into an associated enclosure, this is fitted with a silicone O-ring and internally coated with a release agent.
- a ferrule, fitted with an external nitrile O-ring, which fits into the entry body to make a part chamber into which a two-part epoxy putty setting compound is applied to provide an inner seal around the conductors or flying leads.
- a union nut that couples the entry body and ferrule together
- a conduit nut that is screwed and secured into the ferrule with adhesive.

Stopper Box Size	Standard Entry Threads		Max Cable Diameter	Max Ø over cores	Max no of Cores	Standard male connection thread size		Standard female connection thread sizes	
	Metric	NPT				Metric	NPT	Metric	NPT
20	M20	½”	14.0	12.5	40	M20	½”	M20	½”
25	M25	¾”	20.0	17.8	60	M25	¾”	M25	¾”
32	M32	1”	26.3	23.5	80	M32	1”	M32	1”
40	M40	1 ¼”	32.2	28.8	130	M40	1 ¼”	M40	1 ¼”
50S	M50	1 ½”	38.2	34.2	200	M50	1 ½”	M50	1 ½”
50	M50	2”	44.1	39.4	400	M50	2”	M50	2”
63S	M63	2”	50.1	44.8	400	M63	2”	M63	2”
63	M63	2 ½”	56.0	50.0	425	M63	2 ½”	M63	2 ½”
75S	M75	2 ½”	62.0	55.4	425	M75	2 ½”	M75	2 ½”
75	M75	-	68.0*	60.8*	425	M75	-	M75	2 ½” *
75	-	3”	68.0	60.8	425	-	3”	-	3”
80	M80	3”	72.0	64.4	425	M80	3”	M80	3”
85	M85	3”	78.0	69.8	425	M85	3”	M85	3”
90	M90	3 ½”	84.0	75.1	425	M90	3 ½”	M90	3 ½”
100	M100	3 ½”	90.0	80.5	425	M100	3 ½”	M100	3 ½”
Note:	2 ½” NPT thread option (Max Cable Diameter = 65.0) (Max Diameter over Cores = 58.1) *								
	2 ½” NPSM thread option (Max Cable Diameter = 67.0) (Max Diameter over Cores = 59.9) *								

Notes:

Certificate IECEx SIR 07.0109X is superseded by certificate IECEx CML 19.0113X.

The product covered by Issue 0 of this certificate remains identical to that previously covered by IECEx SIR 07.0109X.

Where IECEx SIR 07.0109X is specified in other product certification, or other technical specifications, this certificate reference for the product shall be used in its place; updating of the other product certificate or technical specification is not required

Conditions of Manufacture

None.

Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment.

i. The cable glands/stopper boxes shall not be used in enclosures where the temperature, at the point of entry/mounting, is outside of the range -60°C to +135°C.

ii. The interface seals comply with the requirements of the standards listed on this certificate when the cable glands are fitted to a representative enclosure having a smooth flat mounting surface. In practice the interface between the male thread of the glands and their associated enclosure cannot be defined, therefore it is the users' responsibility to ensure that the appropriate ingress protection level is maintained at these interfaces.

iii. The threaded entry component threads without interface O-ring seals installed in an explosive dust atmosphere, within threaded entries, shall only be fitted into enclosures that have either:
   - parallel entries that will ensure that a minimum of 5 full threads of contact will be maintained, this is in accordance with clause 5.1.2 of IEC 60079-31:2013.
   - tapered entries that will ensure that a minimum of 3 ½ full threads of contact will be maintained, this is in accordance with clause 5.1.2 of IEC 60079-31:2013.

Components covered by Ex Certificates issued to older editions of Standards

None.