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 ETL 19.0040X**

Certificate history:
Issue 0 (2019-09-19)

Status: **Current**

Issue No: 1

Date of Issue: 2020-07-20

Applicant: **Amphenol Industrial Operations**
40-60 Delaware Avenue
Sidney, NY 13838. USA
United States of America

Equipment: **EXS-17***, EXS -18***, 'Starline' EX Range Hermetic Panel Mounted Receptacle**

Optional accessory:

Type of Protection: **Flameproof 'db', increased Safety 'eb', protection by enclosure 'tb'**

Marking: Ex db eb IIC T6 Gb

Ex db eb IIC T5 Gb

Ex db eb IIC T4 Gb

Ex tb IIIC T4 Db

Ex tb IIIC T5 Db

Ex tb IIIC T6 Db

Approved for issue on behalf of the IECEx Certification Body: **Todd L. Relyea**

Position: **Certification Officer**

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Intertek
3933 US Route 11 South
Cortland NY 13045-2995
United States of America

IECEx Certificate of Conformity

Certificate No.: **IECEx ETL 19.0040X**

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Manufacturer: **Amphenol Industrial Operations**
40-60 Delaware Ave
Sidney, NY 13838. USA
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 Reports:

GB/SIR/ExTR10.0143/00
GB/SIR/ExTR10.0201/00
GB/SIR/ExTR12.0248/00
GB/SIR/ExTR13.0064/00
GB/SIR/ExTR13.0144/00
GB/SIR/ExTR13.0144/01
GB/SIR/ExTR14.0061/00
GB/SIR/ExTR15.0073/00
GB/SIR/ExTR15.0117/00
GB/SIR/ExTR15.0282/00
GB/SIR/ExTR17.0130/00
GB/SIR/ExTR17.0241/00
US/ETL/ExTR19.0056/00
US/ETL/ExTR19.0056/01

Quality Assessment Report:

GB/SIR/QAR08.0010/07

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

Hermetic Panel Mount Receptacle EXS-17***, EXS -18***, 'Starline' EX Range Panel Mounted Receptacle

See Annex 1 for full product description and models.

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex 1 attached to this certificate for the Specific Conditions of Use.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
See attached annex.

Annex:

SFT-IECEx-OP-19f - Annex for IECEx Certificate of Conformity IECEx ETL 19.0040X 01.pdf

Annex to IECEx Certificate of Conformity

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General product information:

Hermetic Panel Mount Receptacle EXS-17***, EXS -18***, 'Starline' EX Range Panel Mounted Receptacle. These receptacles are a stainless-steel body intended to be mounted on a pressurized panel box. The receptacles and mating connectors form a plain spigot joint with their associated flameproof apparatus

The Shell bodies range in size (12, 16, 20, C20, 24, C24, 28, C28) each contain an insert assembly [insulator with contacts (pins/sockets)] at one end and a certified cable gland at the other. The plug and socket, when connected, form a flame path and are mechanically interlocked by means of a threaded nut retained by a grub screw. The connector shell size, pin configuration and rating are reflected in the individual type designations.
The 'Ex e' part of the coding really only applies to the interface so that the equipment can be connected to an Ex e enclosure.
Amperage is always limited to 1135A, if the shell size admits an Amperage that is higher than 1135A the temperature class is T4 and the limit is 1135A.
A de-rating is required for equipment with more than 3 conductors as indicated in the following tables and in section 15.

Standard Range
Ta = -40 ˚C to +45 ˚C = T6 (Amperage range: 0-259A), IIIC T85 ˚C
Ta = -40 ˚C to +55 ˚C = T5 (Amperage range: 259-408A), IIIC T95 ˚C
Ta = -40 ˚C to +55 ˚C = T4 (Amperage range: 408-1135A), IIIC T135 ˚C

Arctic Range
Ta = -60 ˚C to +45 ˚C = T6 (Amperage range: 0-259A), IIIC T85 ˚C
Ta = -60 ˚C to +55 ˚C = T5 (Amperage range: 259-408A), IIIC T95 ˚C
Ta = -60 ˚C to +55 ˚C = T4 (Amperage range: 408-1135A), IIIC T135 ˚C

	Connector Style	Description	Ambient temp (C)	Temp Class	Gas Marking	Dust Marking	Amperage restriction	CABLE/COND. RATING (MIN. TEMP.) DWG 10-838527-000
Non Arctic Range	17-H	Square flange	-40 to +40	T6	Ex db eb IIC T6 Gb	Ex tb IIIC T80°C Db IP66/68	0-259A Note A, B and C	90°C
	18-H6	Round flange, 6 hole						
	18-H8	Round flange, 8 hole						
	17-H	Square flange	-40 to +55	T5	Ex db eb IIC T5 Gb	Ex tb IIIC T95°C Db IP66/68	0-408A Note A, B and C	90°C
	18-H6	Round flange, 6 hole						
	18-H8	Round flange, 8 hole						
	17-H	Square flange	-40 to +55	T4	Ex db eb IIC T4 Gb	Ex tb IIIC T135°C Db IP66/68	0-1135A Note A, B and C	135°C
	18-H6	Round flange, 6 hole						
	18-H8	Round flange, 8 hole						
Arctic	17-H	Square flange	-60 to +40	T6	Ex db eb	Ex tb IIIC	0-259A	90°C

General product information:

Range	18-H6	Round flange, 6 hole			IIC T6 Gb	T80°C Db IP66/68	Note A, B and C	
	18-H8	Round flange, 8 hole						
	17-H	Square flange	-60 to +55	T5	Ex db eb IIC T5 Gb	Ex tb IIIC 95°C Db IP66/68	0-408A Note A, B and C	90°C
	18-H6	Round flange, 6 hole						
	18-H8	Round flange, 8 hole						
	17-H	Square flange	-60 to +55	T4	Ex db eb IIC T4 Gb	Ex tb IIIC T135°C Db IP66/68	0-1135A Note A, B and C	135°C
	18-H6	Round flange, 6 hole						
	18-H8	Round flange, 8 hole						

NOTE A:	WHEN USING CABLES WITH 3 CONDUCTORS OR LESS: AMPERAGE LIMITED TO SHELL SIZE AND NEVER GREATER THAN 1135A IN ANY CASE.
NOTE B:	WHEN USING CABLES WITH 3 CONDUCTORS OR MORE: MAXIMUM CURRENT IS DERATED ACCORDING TO NEC TABLE 310.15(B)(3)(a)
NOTE C:	AMPERAGE RESTRICTION IS BASED ON SINGLE PIN CONFIGURATION AND USED FOR DERATING ACCORDING TO CABLE TEMPERATURE AND AMBIENT TEMPERATURE

Electrical Ratings of the 'Starline' and EX-*-17/ EX-*-18 'Starline' Connectors

Shell Size	Max. Total Current
12	210 A
16	570 A
20/C20	1110 A
24/C24	1740 A
28/C28	1420 A

Pin Size	Max. Current
18 AWG	3 A
16 AWG	16 A
12 AWG	30 A
10 AWG	40 A
8 AWG	50 A
4 AWG	90 A
1/0 AWG	155 A
4/0 AWG	225 A
350 MCM	325 A
500 MCM	750 A
646 MCM	940 A
777 MCM	1135 A

Model Number Break Down

Ex	#	-	##	-	#	-	#	-	##	-	###	-	#	-	#	-	##
1	2		3		4		5		6		7		8		9		10

1	Starline Ex series Identification
2	Material S- Stainless Steel Omit for aluminum
3	Shell Type 17 RCPT Panel mount (potting adapter) 18 RCPT Circular panel mount 6 hole 18 RCTP Circular panel mount 8 hole (nonthreaded potting adapter)
4	omit
5	H- Hermetic H6 Hermetic 6 Hole H8 Hermetic 8 hole
6	Shell size – 12, 16, 20, C20, 24, C24, 28, C28
7	Contact insert
8	Contact gender P – Pin
9	Termination Style N- Crimp Omit for solder
10	Omit for Standard AR – Arctic temperature range

Design Options:

Panel mounted receptacles are suitable for fitting to increased safety (Ex e) enclosures when the internal free volume of the receptacle is filled with epoxy resin.

Details of change - Issue 0 to Issue 1

- Completed a temperature rise vs amperage verification testing.
- Removed product part number list and replaced it with a new table located in the general description section.
- Added de-rating information per NEC TABLE 310.15(B)(3)(a) to general description table as notes A, B, and C. The de-rating information was also added to the “Specific Conditions of Use” / “Schedule of Limitations”: section.
- Added amperage limits to ratings and general description: (Amperage range: 0-259A),
- (Amperage range: 259-408A), (Amperage range: 408-1135A),
- Updated drawing FROM: HERMETIC EXPLOSION PROOF PLUG-RECEPTACLE ASSEMBLY, 10-756552, Rev B, 10/9/2019 TO: HERMETIC EXPLOSION PROOF PLUG-RECEPTACLE ASSEMBLY, 10-756552, Rev B, 5/6/20

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Specific Conditions of Use:

i. The panel mounted variants may be installed in suitably certified and dimensioned flameproof equipment providing that the certification of this flameproof equipment will allow such installation. The plug connectors that mate with the EX Hermetic Receptacles, are covered under SIRA certificates, IECEx SIR 10.0064X / Sira 03ATEX1101X

ii. The panel mounted variants may be fitted in an increased safety enclosure when the free internal space is filled with epoxy resin and providing the certification of the enclosure will allow such installation. An electric strength test in accordance with IEC 60079-7:2007 Clause 7.1 will be performed on each unit after installation of the epoxy resin.

iii. The EXS-17 and EXS-18 range of panel-mounted variants may be installed in a suitably certified and dimensioned flameproof equipment providing that the certification of this flameproof equipment will allow such installation. They have the following dimensioned spigot joints and are suitable for Group IIA, IIB or IIC, dependent upon the associated apparatus entry dimensions.

iv. The Ex-18 range connector does not incorporate an external earth facility. It is the responsibility of the user or installer to ensure adequate earth continuity by means of guidance given within the anufacturer's installation instructions.

v. If an application requires special, continuity features, within certain connector components, seek factory opinion regarding conductive hardware options. Final configurations are the electrical system designers responsibility, as they best understand the intricacies that make up their particular electrical system, and the environment in which they exist.

vi. the rate current shall be reduced as per following indication:

WHEN USING CABLES WITH 3 CONDUCTORS OR MORE: MAXIMUM CURRENT IS DERATED ACCORDING TO NEC

Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

Number of Conductors[1]	Percent of Values in Table 310.15(B)(16) through Table 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4–6	80
7–9	70
10–20	50
21–30	45
31–40	40
41 and above	35

TABLE 310.15(B)(3)(a)

WHEN USING CABLES WITH 3 CONDUCTORS OR LESS: AMPERAGE LIMITED TO SHELL SIZE AND NEVER GREATER THAN 1135A IN ANY CASE

AMPERAGE RESTRICTION IS BASED ON SINGLE PIN CONFIGURATION AND USED FOR DERATING ACCORDING TO CABLE TEMPERATURE AND AMBIENT TEMPERATURE

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Conditions of Manufacture:

i. The connectors shall be marked as detailed in the following table based upon the cement compound and type of sealing devices.

Cement compound	Sealing devices	Minimum ambient temperature
Resin 50-3150FR/Cat 190	Fluorosilicone O-rings and Silicone gaskets	-60°C
Resin 50-3150FR/Cat 190	Buna (nitrile) rubber O-rings and gaskets	-40°C

Technical Documents

Title:	Drawing No.:	Rev. Level:	Date:
Amphenol Star-line Ex Assembly Instructions	L-2120-3	Rev J	11/13/2017
*HERMETIC EXPLOSION PROOF PLUG-RECEPTACLE ASSEMBLY	10-756552	B	5/6/20
Software, Label, Format ATEX/IECEx Starline IECEx Series	10-718222	A	8/20/2019

*Note: An * is included before the title of documents that are new or revised.*

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IECEx Certified Components on Which Conformance Depends					
Item	Description	Manufacturer	Type	Certificate No. / Standards*	Coding / Ratings
1	None				
2					
3					

* "No applicable Technical Differences" or "Technical Differences evaluated and found satisfactory – for detail see ExTR"

Required Manufacturer Routine Testing		
Test	Title/Description of Test	Standard and Clause
1	None	
2		
3		