IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.:	IECEx SIR 08.0029X	issue No.:8
Status:	**Current**	
Date of Issue:	**2016-11-21**	Page 1 of 5

Certificate history:
Issue No. 8 (2016-11-21)
Issue No. 7 (2015-6-2)
Issue No. 6 (2015-3-30)
Issue No. 5 (2014-9-24)
Issue No. 4 (2014-3-25)
Issue No. 3 (2013-12-12)
Issue No. 2 (2012-3-20)
Issue No. 1 (2008-11-18)
Issue No. 0 (2008-4-29)

Applicant: **Amphenol Industrial**
40-60 Delaware Street
Sidney
New York 13838
United States of America

Equipment: **Amphe-EX Range of Connectors and Associated Blanking Caps**
Optional accessory:

Type of Protection: **Flameproof, Increased Safety, Optical Radiation and Dust**

Marking: **Refer to certificate Annexe**

Approved for issue on behalf of the IECEx Certification Body: N Jones

Position: Certification Manager

Signature:
(for printed version)

Date: 2016-11-21

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 the Official IECEx Website.

Certificate issued by:
SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

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Manufacturer: **Amphenol Industrial**
40-60 Delaware Street
Sidney
New York 13838
United States of America

Additional Manufacturing location(s):

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 electrical apparatus 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 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition: 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-28 : 2015 Edition: 2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2013 Edition: 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2015 Edition: 5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical 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/SIR/ExTR08.0045/00
GB/SIR/ExTR08.0136/00
GB/SIR/ExTR12.0049/00
GB/SIR/ExTR13.0053/00
GB/SIR/ExTR14.0073/00
GB/SIR/ExTR14.0223/00
GB/SIR/ExTR15.0097/00
GB/SIR/ExTR15.0150/00
GB/SIR/ExTR16.0292/00

Quality Assessment Report:

GB/SIR/QAR08.0010/00

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Schedule

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

The Amphe-EX Connectors comprise a metallic bodied plug and receptacle shell that form in-line cable connections, alternatively, the plugs and receptacles can be used as an individual cable termination that is sealed with the attached, dedicated blanking cap. Two types of blanking caps are available, these can be either flameproof types for use with connectors fitted with energised contact sleeves or types for environmental use with connectors having non-energised contact pins. When connected together and mechanically interlocked by means of a threaded nut retained by a grub screw, the plug and receptacle shell form a spigotted flamepath. Each plug and receptacle shell is supplied with a suitably certified, ATEX cable gland that fits onto the main body of the device, internally, the main bodies each contain an insulator insert that houses solder type contact pins or sleves.

Design Options

- Alternative keying options.
- Alternative pin or sleeve contacts in either the plug or receptacle bodies.

The range of Amphe-EX Connectors comprises seven body (form) sizes each with a number of pin/socket size combinations between 2 and 79 contacts. The connector shell size, pin configuration and rating are reflected in the individual type designations.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to certificate Annexe

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EQUIPMENT(continued):

Ratings

Shell Size	**Maximum Total Current (A)**
9	48
11	64
13	90
15	125
17	154
19	191
21	217
Contact Size	**Maximum Current Rating (A)**
22D AWG	5
20 AWG	7.5
16 AWG	13
12 AWG	23
12 Co-ax	1 (for inner and intermediate contacts) 12 (for outer contact)
8 Co-ax	
8 Twin-ax	
Maximum Voltage	**Contact Patterns**
500 Vrms	9-5, 17-22, 21-75
550 V DC / 400 V AC	9-35, 9-94, 11-35, 13-35,15-35, 15-AC, 17-31, 17-35, 19-35, 21-35
550 V DC / 400 V AC	17-2, 19-31
500 V rms (8 Co-ax contacts)	
500 V rms (Twin-ax contacts)	
850 V DC / 600 V AC	9-98, 11-2, 11-5, 11-98, 11-99, 13-4, 13-8, 13-13, 13-98, 15-15, 15-18, 15-19, 15-97, 17-6, 17-26, 17-99, 19-32, 21-11, 21-39, 21-41
1250 V DC / 900 V AC	15-5, 17-8, 19-11, 21-16

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1 to Issue 4 – for changes refer to Issue 4

Issue 5 – this Issue introduced the following change:

1. 'Ex op is' coding was introduced; subsequently, the Special Conditions for Safe Use were reviewed and revised. The associated temperature class, maximum surface temperature and Ta maximum are given in the Table below:

Table 1: Application, Temperature Class, Max. Surface Temperature & Ta Max.	
T6 & T80°C (Ta = +40°C)	T4 & T130°C (Ta = +55°C)
Fibre optic source limited to a maximum signal power of 15 mW and a maximum irradiance of 5 mW/sq mm (surface area not exceeding 400 sq mm).	Fibre optic source limited to a maximum signal power of 35 mW and a maximum irradiance of 5 mW/sq mm (surface area not exceeding 400 sq mm).

Note: As part of this change, the Amphe-EX Range of Connectors were independently tested according to the requirements of IEC 60529 to meet IP X8 for 1 m for 60 minutes.
"In the case where EX op pr certified connectors are attached to Ex e enclosures, the EX op is power limitations for op is sources do not apply"

Issue 6 – this Issue introduced the following change:

1. The existing epoxy cement was replaced, thus allowing the lower ambient to be reduced from −20°C to −40°C. A Condition of Certification was amended as a result of this change.
2. The introduction of alternative O-rings made from Viton.
3. The Panel Mounted Receptacle Connectors - Shell configuration 02 were permitted to be marked with an upper ambient temperature limit of 55°C with a corresponding T5 temperature classification and T95°C dust temperature.

Issue 7 – this Issue introduced the following change:

1. The introduction of alternative flangeless shells styles "00" and "03. Used for Amphe-Ex connector shell sizes 09, 11, 13, 15, 17, 19 and 21.
2. The introduction of a new model number EXM-(a)(b)-19-68(e)(f)(g)(h)fitted with18 x #16 AWG pins, rated 850 V DC / 600 V AC max.

Issue 8 – this Issue introduced the following change:

1 Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079 0:2011 Ed.6, IEC 60079-1:2007 Ed.6, IEC 60079-7:2006 Ed.4, IEC 60079-28:2006 Ed.1 and IEC 60079-31:2013 Ed.2 were replaced by IEC 60079-0:2011 Ed.6, IEC 60079-1:2014 Ed.7, IEC 60079−7:2015 Ed.5 and IEC 60079-31:2013 Ed.2, the markings were updated accordingly to recognise the new standards.

Annex: IECEx SIR 08.0029X Issue 8 Annexe.pdf

Annexe to: IECEx SIR 08.0029X Issue 8

Applicant: Amphenol Industrial

Apparatus: Amphe-EX Range of Connectors & Associated Blanking Caps

Applicable Markings

Plug Connectors - Shell configuration 06

Ex db IIC T6 Gb (-40°C≤Ta≤+40°C)	Ex db IIC T5 Gb (-40°C≤Ta≤+55°C)
Ex op pr IIC T6 Gb (-40°C≤Ta≤+40°C)*	Ex op pr IIC T5 Gb (-40°C≤Ta≤+55°C)*
Ex op is IIC T6 Gb (-40°C≤Ta≤+55°C)*	Ex op is IIC T4 Gb (-40°C≤Ta≤+55°C)*
Ex tb IIIC Db T80°C IP6X (-40°C≤Ta≤+40°C)	Ex tb IIIC Db T95°C IP6X (-40°C≤Ta≤+55°C)

In-Line Receptacle Connectors - Shell configuration 01

Ex db IIC T6 Gb (-40°C≤Ta≤+40°C)	Ex db IIC T5 Gb (-40°C≤Ta≤+55°C)
Ex op pr IIC T6 Gb (-40°C≤Ta≤+40°C)*	Fx op pr IIC T5 Gb (-40°C≤Ta≤+55°C)*
Ex op is IIC T6 Gb (-40°C≤Ta≤+55°C)*	Ex op is IIC T4 Gb (-40°C≤Ta≤+55°C)*
Ex tb IIIC Db T80°C IP6X (-40°C≤Ta≤+40°C)	Ex tb IIIC Db T95°C IP6X (-40°C≤Ta≤+55°C)

Panel Mounted Receptacle Connectors - Shell configuration 02

Ex db eb IIC T6 Gb (-40°C≤Ta≤+40°C)	Ex db eb IIC T5 Gb (-40°C≤Ta≤+55°C)
Ex op pr IIC T6 Gb (-40°C≤Ta≤+40°C)*	Ex op pr IIC T5 Gb (-40°C≤Ta≤+55°C)*
Ex op is IIC T6 Gb (-40°C≤Ta≤+40°C)*	Ex op is IIC T4 Gb (-40°C≤Ta≤+55°C)*
Ex tb IIIC Db T80°C IP6X (-40°C≤Ta≤+40°C)	Ex tb IIIC Db T95°C IP6X (-40°C≤Ta≤+55°C)

* 'op pr' and 'op is' only apply to the Fibre Optic Models that use standard inserts that permit the use of Fibre Optic contacts.

Model Code Designations

Connectors: EXM-*(a)b –(c-d)(e)(f)(g)(h)*

Connector series type designation	EXM
Shell material *(a)*	A-Aluminium, B-Brass, S-Stainless steel
Shell configuration *(b)*	01 - In-line receptacle c/w blanking cap, 06 – In-line plug c/w blanking cap
Shell size *(c)*	Either: 9, 11, 13, 15, 17, 19 or 21
Insert arrangement *(d)*	e.g. 35
Contacts type *(e)*	P – Pin contacts, S – Sleeve contacts
Cable diameter range designation *(f)*	e.g. A
Keying position *(g)*	e.g. 01
Fibre Optic designator *(h)*	FO (this suffix gets added to the end of a part number when Fibre Optic contacts are supplied in standard catalogue inserts)

Blanking caps: EXM *-ab - c*

Blanking cap type designation	EXM
Cap Style *(a)*	A-Aluminium, B-Brass, S-Stainless steel
Assy type *(b)*	PC - plug assy, RC - receptacle assy
Shell size *(c)*	Either: 9, 11, 13, 15, 17, 19 or 21

Panel Mount connectors: EXM-*(a)b –(c-d)(e)(f)(g)(h)*

Connector series type designation	EXM
Shell material *(a)*	A-Aluminium, B-Brass, S-Stainless steel
Shell configuration *(b)*	02 - receptacle (panel mount)
Shell size *(c)*	Either: 9, 11, 13, 15, 17, 19 or 21
Insert arrangement *(d)*	e.g. 35
Contacts type (e)	P – Pin contacts, S – Sleeve contacts
Bulk head adaptor thread type *(f)*	e.g. M (Metric) or N (NPT)
Keying position *(g)*	e.g. 01
Fibre Optic designator (h)	FO (this suffix gets added to the end of a part number when Fibre Optic contacts are supplied in standard catalogue inserts)

Condition of Manufacture

1. The plugs and in-line receptacles shall be supplied with suitably ATEX certified cable glands that are rated at IP6X minimum and are acceptable for a temperature range at their point of mounting between -40°C to +84°C or -40°C to +99°C depending on the application.

Conditions of Certification

1. When a Connector half fitted with contact pins is not connected to an associated Plug or Receptacle, it shall not be energised, as per IEC 60079-0, clause 20.2.
2. When a Connector half fitted with contact sleeves is not connected to an associated Plug or Receptacle, it shall not be re-energised unless it is fitted with an explosion-proof-blanking cap.
3. Plugs and receptacles shall only be used with blanking caps or mating Connector halves certified under certificate number IECEx SIR 08.0029X.
4. This connector does not incorporate an internal or external earth facility; it is therefore the responsibility of the user/installer to provide adequate earth continuity using the guidance given in the manufacturer's installation instructions.
5. The user installed conductors fitted to the panel mount receptacles shall be suitable for a continuous operating temperature of at least 84°C when rated for a maximum ambient of 40°C and at least 99°C when rated for a maximum ambient of 55°C.

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6. The user installed conductors fitted to the panel mount receptacles are to be insulated at the point between the connections to the receptacle contacts and the associated terminals within associated enclosures to which they are fitted.
7. The interface between the panel mount receptacles and associated increased safety enclosure to which they may be fitted cannot be defined. Therefore it is the user's responsibility to ensure that the appropriate ingress protection level of the associated enclosure is maintained at this point
8. When equipment is used as Ex op is IIC, the fibre optic source supplying this equipment shall be suitably certified as compliant with IEC 60079-28:2006 and provide an inherently safe optical source (op is), EPL Gb, subsequently the following parameters apply:

Application, Temperature Class, Max. Surface Temperature & Ta Max.	
T6	T4
Fibre optic source limited to a maximum signal power of 15 mW and a maximum irradiance of 5 mW/sq mm (surface area not exceeding 400 sq mm).	Fibre optic source limited to a maximum signal power of 35 mW and a maximum irradiance of 5 mW/sq mm (surface area not exceeding 400 mm).

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