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 ITA 12.0009X	Issue No: 2	Certificate history:
			Issue No. 2 (2017-03-15)
Status:	**Current**	Page 1 of 4	Issue No. 1 (2014-02-27)
			Issue No. 0 (2013-03-08)
Date of Issue:	**2017-03-15**		

Applicant: **Amphenol Industrial Operations**
40-60 Delaware Avenue, Sidney
New York, 13838-1395
United States of America

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

Optional accessory:

Type of Protection: **d, e, tb**

Marking:

Ex d I Mb, Ex d IIC T.... Gb
Ex de I Mb, Ex de IIC T.... Gb
Ex tb IIIC T....°C Db
Tamb -20°C to +.....°C
Refer to Annex for Ex Marking Codes

Approved for issue on behalf of the IECEx Certification Body: James Bes

Position: Certification Authority

Signature:
(for printed version)

Date: 2017-03-15

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:

TUV Rheinland Australia Pty. Ltd
1/30 Kennington Drive
Tomago NSW 2322
Australia

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Manufacturer: **Amphenol Middle East**
C1-16 Warehouses
Ajman Free Zone
United Arab Emirates

Additional Manufacturing location(s):

Amphenol Industrial - Nogales Operations
Plant 4 "Tolteca"
Los Gavilanes 51, Parque
Industrial San Ramon
Nogales, Sonora 84090
Mexico

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 : 2007-10 Edition:5	Explosive atmospheres - Part 0:Equipment - General requirements
IEC 60079-1 : 2007-04 Edition:6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-31 : 2008 Edition:1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'
IEC 60079-7 : 2006-07 Edition:4	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:

AU/ITA/ExTR12.0012/00
AU/ITA/ExTR14.0001/00
GB/SIR/ExTR08.0045/00
GB/SIR/ExTR08.0136/00
GB/SIR/ExTR12.0049/00

Quality Assessment Report:

GB/SIR/QAR08.0010/05

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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. The Group I body is constructed of only stainless steel and for Group II and Group III the body can be constructed of stainless steel, aluminium alloy or brass. 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 cable gland that fits onto the main body of the device, internally, the main bodies each contain an insulator insert that houses solder type or crimp type contact pins or sleeves.

See Annex for further details.

SPECIFIC CONDITIONS OF USE: YES as shown below:

See annex for details

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

See annex for details

Annex:

IECEx ITA 12.0009X-2 Annex.pdf

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Annexe

Annexe for Certificate No.:	IECEx ITA 12.0009X	Issue No.:	2

Ex Marking Codes:

In-line Plugs and In-line receptacles:	In-line Plugs and In-line receptacles: (limited range, Refer to conditions of use)	Panel-mounted receptacles:
Ex d I Mb Ex d IIC T6 Gb Ex tb IIIC T80°C Db	Ex d I Mb Ex d IIC T5 Gb Ex tb IIIC T95°C Db Tamb -20°C to +55°C	Ex de I Mb Ex de IIC T6 Gb Ex tb IIIC T80°C Db

Description: In addition to the Equipment details provided in the Certificate:

Design Options

- Alternative body materials: Group I – stainless steel. Group II and Group III – stainless steel, aluminium alloy or brass.
- 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

Rating tables

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 500 V rms (8 Co-ax contacts) 500 V rms (Twin-ax contacts)	17-2, 19-31
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

Current rating per shell size and maximum current per pin size

Shell Size	Max. total current (A)
9	48
11	64
13	90
15	125
17	154
19	191
21	217

Pin Size	Max. current
22D AWG	5A
20 AWG	7.5 A
16 AWG	13 A
12 AWG	16 A (see conditions)
12 Co-ax	1 A (for inner and intermediate contacts)12 A (for outer contact)
8 Co-ax	
8 Twin-ax	

Nomenclature Model Code Designations

In-line Connectors: EXM- ***(a) b -(c-d) (e) (f)(g)***

Connector series type designation	EXM
Shell material *(a)*	A-Aluminium (excluded from Group I), B-Brass (excluded from Group I), 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

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

Connector series type designation	EXM
Shell material (a)	A-Aluminium (excluded from Group I), B-Brass (excluded from Group I), 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

Blanking caps: MEX-ab – c

Blanking cap type designations	MEX
Cap Style *(a)*	A-Aluminium (excluded from Group I), B-Brass (excluded from Group I), S-Stainless steel
Assv type *(b)*	PC - plug assv. RC - receptacle assy
Shell size *(c)*	Either: 9. 11. 13. 75, L7, 79 or 27

Manufacturers Drawings:

Manufacturers Drawing Title:	Drawing No.:	Rev. Level:	Date:
ASSEMBLY, AMPHE-EX SERIES SIRA AND TUV SUBMISSION DRAWING Sheets 1 to 9	10-838439	D	2012-11-28
2 mm METRIC "O" RING	10-838477	A	2008-04-06
2 mm METRIC "O" RING	10-838478	A	2008-04-07
SOFTWARE, LABEL, FORMATSTARLINE IECEx STAINLESS SERIES TUV MARKING, GRP 1 (MINING)	10-838394	C	2013-02-11

Conditions of Certification pertaining to Issue 0 of this Certificate:

Conditions of manufacture:

1) A copy of the relevant drawing, instructions and a copy of this Certificate must be provided with each enclosure.

2) Plugs and receptacles shall only be used with blanking caps or mating Connector halves covered by this Certificate

3) The optional aluminium and brass shells are not to be utilised for Group I environments

Conditions of Safe Use

1) The plugs and receptacles shall be fitted with suitably certified flameproof (Ex d) cable glands that are rated at IP6X minimum and are acceptable for a temperature range at their point of mounting between -20°C to +84°C for T6/T80°C temperature class or -20°C to +99°C for T5/T95°C temperature class

2) The electrical current that passes through each pin/socket shall not exceed 16A

3) In-line connectors that are supplied without a cable gland must be fitted with a suitably certified cable gland that fits onto the main body of the device by the end-user.

4) 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 60079-0-2007, clause 20.2.

5) 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

6) Plugs and receptacles shall only be used with blanking caps or mating Connector halves covered by this certificate

7) The panel mount receptacles shall only be used where the temperature at the point of entry in service on the associated enclosure is between -20°C to +84°C

8) This connector does not incorporate an internal 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.

9) 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.

10) 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

11) 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

Drawing list pertaining to Issue 0 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Rev. Level:	Date:
ASSEMBLY, AMPHE-EX SERIES SIRA AND TUV SUBMISSION DRAWING Sheets 1 to 9	10-838439	D	2012-11-28
2 mm METRIC "O" RING	10-838477	A	2008-04-06
2 mm METRIC "O" RING	10-838478	A	2008-04-07
SOFTWARE, LABEL, FORMATSTARLINE IECEx STAINLESS SERIES TUV MARKING, GRP 1 (MINING)	10-838394	C	2013-02-11

Variations permitted by Issue 1 of this Certificate:

Ex code marking has been revised, and assessed for compliance in report AU/ITA/ExTR14.0001/00. This revision includes inserting 'de' for Group I panel mounted receptacles and adding the surface temperature for the Group III marking.

Conditions pertaining to Issue 1 of this Certificate:

No variations from Issue 0

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Annexe

Annexe for Certificate No.:	IECEx ITA 12.0009X	Issue No.:	2

Drawing list pertaining to Issue 1 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Rev. Level:	Date:
Software Label Format Starline IECEx Stainless Series TUV MARKING, GRP1 (MINING)	10-838394	E	2014-02-11
Warning Label, Text Amphe-Ex Series Lanyard Mount Tab	10-838527	B	2012-02-13

Variations permitted by Issue 2 of this Certificate:

1) The components for the cable glands and connectors are manufactured at the Amphenol Optimize plant in Nogales Mexico and the product meant for Australia is then assembled, labelled and supplied by Amphenol Middle East plant in Ajman, UAE
2) Ex marking table moved from Page 1 of the certificate to the Annex.

Conditions pertaining to Issue 2 of this Certificate:

No variations from earlier issues of this certificate.