



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 07ATEX1229X** Issue: **9**

4 Equipment: **Amphe-EX Range of Connectors**

5 Applicant: **Amphenol Industrial**

6 Address: 40-60 Delaware Street, Sidney, New York 13838, USA

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2012+A11:2013 EN 60079-1:2014 EN 60079-7:2015 EN 60079-28:2015 EN 60079-31:2014

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 G D (This marking is applicable to all the configurations below)

Ex db IIC T6 Gb (-40°C≤Ta≤+40°C)

Ex op pr IIC T6 Gb (-40°C≤Ta≤+40°C)*

Ex op is IIC T6 Gb (-40°C≤Ta≤+55°C)*

Ex tb IIIC Db T80°C IP6X (-40°C≤Ta≤+40°C)

In-Line Receptacle Connectors - Shell configuration 01

Ex db IIC T6 Gb (-40°C≤Ta≤+40°C)

Ex op pr IIC T6 Gb (-40°C≤Ta≤+40°C)*

Ex op is IIC T6 Gb (-40°C≤Ta≤+55°C)*

Ex tb IIIC Db T80°C IP6X (-40°C≤Ta≤+40°C)

Ex db IIC T5 Gb (-40°C≤Ta≤+55°C)

Ex op pr IIC T5 Gb (-40°C≤Ta≤+55°C)*

Ex op is IIC T4 Gb (-40°C≤Ta≤+55°C)*

Ex tb IIIC Db T95°C IP6X (-40°C≤Ta≤+55°C)

Ex db IIC T5 Gb (-40°C≤Ta≤+55°C)

Ex op pr IIC T5 Gb (-40°C≤Ta≤+55°C)*

Ex op is IIC T4 Gb (-40°C≤Ta≤+55°C)*

Ex tb IIIC Db T95°C IP6X (-40°C≤Ta≤+55°C)

Project Number 1110

Signed:

Title: Director of Operations

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Panel Mounted Receptacle Connectors - Shell configuration 02

Ex db eb IIC T6 Gb (-40°C ≤ Ta ≤ +40°C)

Ex op pr IIC T6 Gb (-40°C ≤ Ta ≤ +40°C)*

Ex op is IIC T6 Gb (-40°C ≤ Ta ≤ +40°C)*

Ex tb IIIC Db T80°C IP6X (-40°C ≤ Ta ≤ +40°C)

Ex db eb IIC T5 Gb (-40°C ≤ Ta ≤ +55°C)

Ex op pr IIC T5 Gb (-40°C ≤ Ta ≤ +55°C)*

Ex op is IIC T4 Gb (-40°C ≤ Ta ≤ +55°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

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13 DESCRIPTION OF EQUIPMENT

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 sleeves.

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.

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 designations	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



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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 type 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)

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)
8 Co-ax	12 (for outer contact)
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 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



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Variation 1 - This variation introduced the following changes:

- i. The removal of the cable gland and cable adaptor from the receptacle connector and replacing them with an alternative cable adaptor that provides a male threaded spigot being internally sealed with a compound joint, thus becoming a panel mount receptacle for connection to an associated flameproof or reased safety enclosure.
- ii. Modifications to the connector product markings to include the marking applicable to EN 60079-7:2007.

Variation 2 - This variation introduced the following change:

- i. The Plug Connectors (Shell configuration 06) and the In-Line Receptacle Connectors (Shell configuration 01) were allowed to be used in a maximum ambient temperature of +55°C with a T5 temperature classification for gas and maximum surface temperature for dust of T99°C; the marking was changed accordingly in addition, a related special condition for safe use and a condition of certification were modified to recognise restrictions associated with this application.
- ii. A special condition for safe use that defined "the temperature at the point of entry in service on the associated enclosure" was removed.
- iii. The marking section was modified to clearly state the information applicable to each product type.

Variation 3 - This variation introduced the following change:

- i. The introduction of two, new models, the 15-USB (Universal Serial Bus insert type) rated at 5 V max. and the 19-RJF (Ethernet type insert) rated 2 lines at 48 V max..
- ii. The introduction of a Fibre Optic model, which uses standard inserts that permit the use of Fibre Optic contacts, which are designated by a 'FO' in the Type reference, hence the product description is updated accordingly. These models are suitable for the gas and dust applications previously considered and they have additionally been assessed against EN 60079-28:2007 and are suitable for 'op pr' use. The markings in section 12 were updated accordingly and new Special Conditions for Safe Use were introduced.
- iii. Following appropriate re-assessment to demonstrate compliance with the latest technical knowledge, EN 61241-0:2006 and EN 61241-1:2004 were replaced by EN 60079-31:2009.
- iv. Existing equipment codes were corrected to indicate T80°C instead of T84°C, T95°C instead of T99°C and addition of T80°C to the Panel mounted receptacle connectors.
- v. The product description is updated to show that the number of pin/socket size combinations is modified from between 6 and 79 contacts to between 2 and 79 contacts. These sizes have always been present and permitted on the Certification Drawings.

Variation 4 - This variation introduced the following change:

- i. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, the document previously listed in section 9, EN 60079-0:2006 was replaced by those currently listed, and the special condition for safe use, 15.1, was amended to recognise the new standard.



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Variation 5 - This variation introduced the following change:

- i. '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:

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/mm ² (surface area not exceeding 400 mm ²).	Fibre optic source limited to a maximum signal power of 35 mW and a maximum irradiance of 5 mW/mm ² (surface area not exceeding 400 mm ²).

Note: As part of this change, the Amphe-EX Range of Connectors were independently tested according to the requirements of EN 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"

Variation 6 - This variation introduced the following change:

- i. 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.
- ii. The introduction of alternative O-rings made from Viton.
- iii. 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.

Variation 7 - This variation introduced the following change:

- i. 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.
- ii. The introduction of a new model number EXM-(a)(b)-19-68(e)(f)(g)(h) fitted with 18 x #16 AWG pins, rated 850 V DC / 600 V AC max.

Variation 8 - This variation introduced the following change:

- i. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-28:2007 and IEC 60079-31:2013 Ed.2 were replaced by EN 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-7:2015, EN 60079-28:2015 and EN 60079-31:2014, the markings in section 12 were updated accordingly to recognise the new standards.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	28 April 2008	R51A14043A	The release of the prime certificate.
1	07 November 2008	R51L18293A	The introduction of Variation 1.
2	20 March 2012	R26405A/00	The introduction of Variation 2.



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Issue	Date	Report number	Comment
3	11 December 2013	R26405B/00 R51L18293C	This Issue covers the following changes: <ul style="list-style-type: none">Report R51L18293C replaced R51L18293A, as a result the associated change in Variation 1 was amended to retrospectively recognise that IEC 60079-0:2007 was used for guidance in respect of marking. The introduction of Variation 3.
4	20 March 2014	R33181A/00	The introduction of Variation 4.
5	04 September 2014	R70005715A	The introduction of Variation 5.
6	24 March 2015	R70004691A	The introduction of Variation 6.
7	02 June 2015	R70020493A	The introduction of Variation 7.
8	21 November 2016	R70048255A	This Issue covers the following changes: <ul style="list-style-type: none">EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. <i>(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)</i> The introduction of Variation 8.
9	15th October 2019	1110	<ul style="list-style-type: none">Transfer of certificate Sira 07ATEX1229X from Sira Certification Service to CSA Group Netherlands B.V..

- 15 **SPECIFIC CONDITIONS OF USE** (denoted by X after the certificate number)
- 15.1 When a Connector half fitted with contact pins is not connected to an associated Plug or Receptacle, it shall not be energised, as per EN 60079-0, clause 20.2.
- 15.2 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.
- 15.3 Plugs and receptacles shall only be used with blanking caps or mating Connector halves certified under certificate number Sira 07ATEX1229X.
- 15.4 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.
- 15.5 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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- 15.6 The user installed conductors fitted to the panel mount receptacles are to be insulated between connection to the receptacle contacts and associated terminals within associated enclosures to which they are fitted.
- 15.7 The interface between the panel mount receptacles and associated raised 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.
- 15.8 When equipment is used as Ex op is IIC, the fibre optic source supplying this equipment shall be suitably certified as compliant with EN 60079-28:2007 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/mm ² (surface area not exceeding 400 mm ²).	Fibre optic source limited to a maximum signal power of 35 mW and a maximum irradiance of 5 mW/mm ² (surface area not exceeding 400 mm ²).

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

Certificate Annexe



Certificate Number: Sira 07ATEX1229X
Equipment: Amphe-EX Range of Connectors
Applicant: Amphenol Industrial

Issue 0

Number	Sheet	Rev.	Date(Sira Stamp)	Description
10-838439	1 of 3	A	28 Apr 08	Mini Ex general arrangement drawing
10-838439	2 of 3	A	28 Apr 08	Mini Ex Dimensional & contact configuration detail drawing
10-838439	3 of 3	A	28 Apr 08	Mini Ex electrical ratings, product nomenclature and materials of constructions drawing
10-838477	1 of 1	A	28 Apr 08	O-ring seals drawing (2mm section)
10-838478	1 of 1	A	28 Apr 08	O-ring seals drawing (3mm section)
10-838524	1 of 1	A	28 Apr 08	Equipment name plate detail

Issue 1

Number	Sheets	Rev.	Date	Description
10-838439	1 of 5	B	20 Oct 08	Amphe-Ex in-line connectors general arrangement drawing
10-838439	2 of 5	B	20 Oct 08	Amphe-Ex bulk head connector general arrangement drawing
10-838439	3 of 5	B	20 Oct 08	Amphe-Ex Dimensional & contact configuration detail drawing
10-838439	4 of 5	B	20 Oct 08	Amphe-Ex electrical ratings, product nomenclature and materials of constructions drawing
10-838439	5 of 5	B	20 Oct 08	Amphe-Ex bulk head connector potting procedure
10-838524	1 of 1	B	15 Oct 08	Equipment name plate detail

Issue 2

Number	Sheets	Rev.	Date(Sira stamp)	Description
10-838524	1 of 1	C	14 Mar 12	Equipment name plate detail
10-838527	1 of 1	B	22 Feb 12	Warning label

Issue 3

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
10-838439	1 to 9	C	16 Oct 12	Assembly AMPHE-Ex SERIES
10-838524	1 of 1	D	22 Feb 13	Software Label, Format ATEX/IECEx AMPHE-Ex Series

Issue 4 No new drawings were introduced.

Issue 5

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
10-838528	1 to 2	P01	04 Sep 14	Software, Label Format, Apmhe-Ex IECEx, Stainless series

Issue 6

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
10-838528	1 to 2	P05	19 Mar 15	Software Label Format
10-838439	1 to 9	D	19 Mar 15	Assembly Amphe-Ex Series
10-838477	1 of 1	B	19 Mar 15	2 mm Metric "O" Ring
10-838478	1 of 1	B	19 Mar 15	3 mm Metric "O" Ring

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Certificate Annexe



Certificate Number: Sira 07ATEX1229X
Equipment: Amphe-EX Range of Connectors
Applicant: Amphenol Industrial

Issue 7

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
10-838439	1 to 9	E	21 Apr 15	Assembly AMPHE-Ex series

Issue 8

Drawing	Sheets	Rev.	Date(Sira stamp)	Title
10-838528	1 to 2	P06	23 Sept 2016	Label, AMPHE-Ex series

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