

CERTIFICATE OF CONFORMITY



- HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
- Certificate No:** FM17CA0040X
- Equipment:** Star-Line EX Series Plugs and Receptacles
(Type Reference and Name)
- Name of Listing Company:** Amphenol Industrial
- Address of Listing Company:** 40-60 Delaware Avenue
Sidney, NY 13838
USA
- The examination and test results are recorded in confidential report number:

3041480 dated 7th November 2012
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA-C22.2 No. 25:R2014, CSA-C22.2 No. 182.1:2007, CSA-C22.2 No. 182.3:2004,
CSA-C22.2 No. 60529:R2010, CAN/CSA-C22.2 No. 60079-0:2015, CAN/CSA-C22.2 No. 60079-1:2016,
CAN/CSA-C22.2 No. 60079-7:2016, CAN/CSA-C22.2 No. 60079-31:2015
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:**

Flameproof for Class I, Zone 1, Ex db IIC Gb, Flameproof with Increased Safety for Class I, Zone 1 Ex db eb IIC Gb and Dust-protected for Zone 21, Ex tb IIIC Db hazardous (classified) locations, indoors and outdoors (IP68).

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

28 August 2020

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0040X

11. The marking of the equipment shall include:

For EX Series and EX Series Hermetic Receptacles:

Class I, Zone 1, Ex db IIC * Gb; IP68
Class I, Zone 1, Ex db eb IIC * Gb; IP68
Zone 21, Ex tb IIIC ** Db; IP68

*The equipment temperature code markings for gas for EX Series and EX Series Hermetic Receptacles are as follows:

T6 Ta = -50°C to +40°C
T5 Ta = -50°C to +55°C
T4 Ta = -50°C to +55°C (for models with current rating 1135-1490 A)

**The equipment temperature code markings for dust for EX Series and EX Series Hermetic Receptacles are as follows:

T85°C Ta = -50°C to +40°C
T100°C Ta = -50°C to +55°C
T135°C Ta = -50°C to +55°C (for models with current rating 1135-1490 A)

For EX-18 Series:

Class I, Zone 1, Ex db eb IIC * Gb; IP68
Zone 21, Ex tb IIIC ** Db; IP68

*The equipment temperature code markings for gas for EX-18 Series are as follows:

T6 Ta = -20°C to +40°C (for models assembled using Hysol cement)
T6 Ta = -50°C to +40°C
T5 Ta = -50°C to +55°C
T4 Ta = -50°C to +55°C (for models with current rating 1135-1490 A)

**The equipment temperature code markings for dust for EX-18 Series are as follows:

T85°C Ta = -20°C to +40°C (for models assembled using Hysol cement)
T85°C Ta = -50°C to +40°C
T100°C Ta = -50°C to +55°C
T135°C Ta = -50°C to +55°C (for models with current rating 1135-1490 A)

The equipment lower ambient temperature is limited to -40°C when provided with BUNA rubber seals.

12. **Description of Equipment:**

The Star-Line EX Series connectors consist of an aluminum alloy, brass or stainless steel plug and socket used to form in-line cable connections. The bodies each contain insulators and contact pins or tubes in various configurations. The connector assembly consists of a cylindrical flamepath and cemented/epoxy filled joints. The plug and socket, when connected together, are mechanically interlocked by means of a threaded nut retained by a locking screw to maintain the cylindrical flamepath. The connectors are not intended for breaking the circuit and are marked to indicate that the circuit must be de-energized before separating. The product range consists of five body (shell) sizes with various pin/tube combinations. The shell size, pin/tube configuration and ratings are reflected in the individual model code designations. The panel-mount or bulkhead-mount receptacles are suitable for use with flameproof enclosures and, when filled with cement/epoxy, are suitable for use with increased safety enclosures. The current and voltage (600 V maximum) ratings will vary based on the conductor sizes and pin/tube configurations and will be marked according to the manufacturer's

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guidelines as well as NEC and CEC de-rating practices. Blanking caps are provided for when connections are not in use. The connectors are intended for use in a range of various ambient temperatures depending on construction and configuration.

EXa-b-c-d-e-fgh-x. Star-Line EX Series Plugs and Receptacles.

a = Material B, S or BLANK.

b = Shell type 13, 15 or 17.

c = Cable adapter style 1, 2, 3, 4 or 5.

d = Grommet A, ASIS, B, BSIS, C, CSIS, C2, C2SIS, D, DSIS, E or ESIS.

e = Shell size 12, 16, 20, 24, 28, C20, C24 or C28.

f = Contact insert 12, 14, 15, 16, 17, 18, R18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 35, 36, 37, 38, 40, 42, R42, 43, R44, 46, 47, 48, 49, 50, 53, 55, 56, 59, 70, 72, 74, 75, 79, 81, 83, 84, 310, 312, 313, R313, 314, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 339, 341, 342, 344, 345, 346, 348, 349, 350, 352, 353, 354, 355, 358, 359, 362, 371, 373, R373, 374, 375, 376, 377, 378, 379, 381, 384, 385, 386, R386, 387, 388, 389, R444, 535, R535, 613, 614, 616, 621, 622, 623, 624, 627, 628, 632, 633, 635, 638, 640, 642, 643, 646, 648, 649, 650, 651, 653, 654, 655, 658, 659, 672, 673, 674, 675, 676, 677, 680, 681, 685, 686, 687 or 688.

g = Contact gender P or S.

h = Termination style N, R or BLANK.

x = Options not affecting safety.

EXa-18-1-b-c-def-x. Star-Line EX Panel Mount Receptacle.

a = Material B, S or BLANK.

b = Grommet A, ASIS, B, BSIS, C, CSIS, C2, C2SIS, D, DSIS, E or ESIS.

c = Shell size 12, 16, 20, 24, 28, C20, C24 or C28.

d = Contact insert 12, 14, 15, 16, 17, 18, R18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 35, 36, 37, 38, 40, 42, R42, 43, R44, 46, 47, 48, 49, 50, 53, 55, 56, 59, 70, 72, 74, 75, 79, 81, 83, 84, 310, 312, 313, R313, 314, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 339, 341, 342, 344, 345, 346, 348, 349, 350, 352, 353, 354, 355, 358, 359, 362, 371, 373, R373, 374, 375, 376, 377, 378, 379, 381, 384, 385, 386, R386, 387, 388, 389, R444, 535, R535, 613, 614, 616, 621, 622, 623, 624, 627, 628, 632, 633, 635, 638, 640, 642, 643, 646, 648, 649, 650, 651, 653, 654, 655, 658, 659, 672, 673, 674, 675, 676, 677, 680, 681, 685, 686, 687 or 688.

e = Contact gender P or S.

f = Termination style N, R or BLANK.

x = Options not affecting safety.

EXS-a-b-c-d-e-P-f-g. Star-Line EX Series Hermetic Receptacle.

a = Shell type 17 or 18.

b = Cable adapter styles 2, 3, 4 or BLANK.

c = Hermetic type H, H6 or H8.

d = Shell size 12, 16, 20, 24, 28, C20, C24 or C28.

e = Contact insert 12, 14, 15, 16, 17, 18, R18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 35, 36, 37, 38, 40, 42, R42, 43, R44, 46, 47, 48, 49, 50, 53, 55, 56, 59, 70, 72, 74, 75, 79, 81, 83, 84, 310, 312, 313, R313, 314, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 339, 341, 342, 344, 345, 346, 348, 349, 350, 352, 353, 354, 355, 358, 359, 362, 371, 373, R373, 374, 375, 376, 377, 378, 379, 381, 384, 385, 386, R386, 387, 388, 389, R444, 535, R535, 613, 614, 616, 621, 622, 623, 624, 627, 628, 632, 633, 635, 638, 640, 642, 643, 646, 648, 649, 650, 651, 653, 654, 655, 658, 659, 672, 673, 674, 675, 676, 677, 680, 681, 685, 686, 687 or 688.

f = Termination style R or BLANK.

g = Zone 1 protection D or BLANK.

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SCHEDULE



Canadian Certificate Of Conformity No: FM17CA0040X

13. Specific Conditions of Use:

1. Models with a current rating of 1135-1490 A have a temperature code marking of T4 or T135°C for an ambient temperature range of -40°C to +55°C.
2. Models assembled using Hysol cement are rated for an ambient temperature range of -20°C to +40°C.
3. Flamepath joints are not intended to be repaired.
4. Assemblies constructed of brass are not for use in acetylene atmospheres.
5. The equipment low ambient temperature is limited to -40°C when provided with BUNA rubber seals.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
7 th November 2012	Original Issue.
12 th February 2016	<u>Supplement 1:</u> Report Reference: 3051995 dated 12 th February 2016 (Reissued 24 th February 2016). Description of the Change: Alternate potting compound added, expanded ambient temperature ranges and model code corrections.
2 nd May 2017	<u>Supplement 2:</u> Report Reference: RR208361 dated 2 nd May 2017. Description of the Change: Updated markings and standards to latest editions.
28 th August 2020	<u>Supplement 3:</u> Report Reference: PR455428 dated 28 th August 2020. Description of the Change: Addition of hermetic receptacle option. Revised ambient temperature ranges.

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CERTIFICATE OF CONFORMITY




1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM17US0072X
3. **Equipment:** Star-Line EX Series Plugs and Receptacles
(Type Reference and Name)
4. **Name of Listing Company:** Amphenol Industrial
5. **Address of Listing Company:** 40-60 Delaware Avenue
Sidney, NY 13838
USA
6. The examination and test results are recorded in confidential report number:

3041480 dated 7th November 2012
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, ANSI/ISA 60079-0:2013, ANSI/UL 60079-1:2015,
ANSI/UL 60079-7:2017, ANSI/ISA 60079-31:2015, ANSI/UL 1682:2007, ANSI/IEC 60529:2004
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. **Equipment Ratings:**

Flameproof for Class I, Zone 1, AEx db IIC Gb, Flameproof with Increased Safety for Class I, Zone 1 AEx db eb IIC Gb and Dust-protected for Zone 21, AEx tb IIIC Db hazardous (classified) locations, indoors and outdoors (IP68).

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

28 August 2020

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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11. The marking of the equipment shall include:

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Class I, Zone 1, AEx db IIC * Gb; IP68
Class I, Zone 1, AEx db eb IIC * Gb; IP68
Zone 21, AEx tb IIIC ** Db; IP68

*The equipment temperature code markings for gas for EX Series and EX Series Hermetic Receptacles are as follows:

T6 Ta = -50°C to +40°C
T5 Ta = -50°C to +55°C
T4 Ta = -50°C to +55°C (for models with current rating 1135-1490 A)

**The equipment temperature code markings for dust for EX Series and EX Series Hermetic Receptacles are as follows:

T85°C Ta = -50°C to +40°C
T100°C Ta = -50°C to +55°C
T135°C Ta = -50°C to +55°C (for models with current rating 1135-1490 A)

For EX-18 Series:

Class I, Zone 1, AEx db eb IIC * Gb; IP68
Zone 21, AEx tb IIIC ** Db; IP68

*The equipment temperature code markings for gas for EX-18 Series are as follows:

T6 Ta = -20°C to +40°C (for models assembled using Hysol cement)
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12. **Description of Equipment:**

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guidelines as well as NEC and CEC de-rating practices. Blanking caps are provided for when connections are not in use. The connectors are intended for use in a range of various ambient temperatures depending on construction and configuration.

EXa-b-c-d-e-fgh-x. Star-Line EX Series Plugs and Receptacles.

a = Material B, S or BLANK.

b = Shell type 13, 15 or 17.

c = Cable adapter style 1, 2, 3, 4 or 5.

d = Grommet A, ASIS, B, BSIS, C, CSIS, C2, C2SIS, D, DSIS, E or ESIS.

e = Shell size 12, 16, 20, 24, 28, C20, C24 or C28.

f = Contact insert 12, 14, 15, 16, 17, 18, R18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 35, 36, 37, 38, 40, 42, R42, 43, R44, 46, 47, 48, 49, 50, 53, 55, 56, 59, 70, 72, 74, 75, 79, 81, 83, 84, 310, 312, 313, R313, 314, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 339, 341, 342, 344, 345, 346, 348, 349, 350, 352, 353, 354, 355, 358, 359, 362, 371, 373, R373, 374, 375, 376, 377, 378, 379, 381, 384, 385, 386, R386, 387, 388, 389, R444, 535, R535, 613, 614, 616, 621, 622, 623, 624, 627, 628, 632, 633, 635, 638, 640, 642, 643, 646, 648, 649, 650, 651, 653, 654, 655, 658, 659, 672, 673, 674, 675, 676, 677, 680, 681, 685, 686, 687 or 688.

g = Contact gender P or S.

h = Termination style N, R or BLANK.

x = Options not affecting safety.

EXa-18-1-b-c-def-x. Star-Line EX Panel Mount Receptacle.

a = Material B, S or BLANK.

b = Grommet A, ASIS, B, BSIS, C, CSIS, C2, C2SIS, D, DSIS, E or ESIS.

c = Shell size 12, 16, 20, 24, 28, C20, C24 or C28.

d = Contact insert 12, 14, 15, 16, 17, 18, R18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 35, 36, 37, 38, 40, 42, R42, 43, R44, 46, 47, 48, 49, 50, 53, 55, 56, 59, 70, 72, 74, 75, 79, 81, 83, 84, 310, 312, 313, R313, 314, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 339, 341, 342, 344, 345, 346, 348, 349, 350, 352, 353, 354, 355, 358, 359, 362, 371, 373, R373, 374, 375, 376, 377, 378, 379, 381, 384, 385, 386, R386, 387, 388, 389, R444, 535, R535, 613, 614, 616, 621, 622, 623, 624, 627, 628, 632, 633, 635, 638, 640, 642, 643, 646, 648, 649, 650, 651, 653, 654, 655, 658, 659, 672, 673, 674, 675, 676, 677, 680, 681, 685, 686, 687 or 688.

e = Contact gender P or S.

f = Termination style N, R or BLANK.

x = Options not affecting safety.

EXS-a-b-c-d-e-P-f-g. Star-Line EX Series Hermetic Receptacle.

a = Shell type 17 or 18.

b = Cable adapter styles 2, 3, 4 or BLANK.

c = Hermetic type H, H6 or H8.

d = Shell size 12, 16, 20, 24, 28, C20, C24 or C28.

e = Contact insert 12, 14, 15, 16, 17, 18, R18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 35, 36, 37, 38, 40, 42, R42, 43, R44, 46, 47, 48, 49, 50, 53, 55, 56, 59, 70, 72, 74, 75, 79, 81, 83, 84, 310, 312, 313, R313, 314, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 339, 341, 342, 344, 345, 346, 348, 349, 350, 352, 353, 354, 355, 358, 359, 362, 371, 373, R373, 374, 375, 376, 377, 378, 379, 381, 384, 385, 386, R386, 387, 388, 389, R444, 535, R535, 613, 614, 616, 621, 622, 623, 624, 627, 628, 632, 633, 635, 638, 640, 642, 643, 646, 648, 649, 650, 651, 653, 654, 655, 658, 659, 672, 673, 674, 675, 676, 677, 680, 681, 685, 686, 687 or 688.

f = Termination style R or BLANK.

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SCHEDULE

US Certificate Of Conformity No: FM17US0072X

13. Specific Conditions of Use:

1. Models with a current rating of 1135-1490 A have a temperature code marking of T4 or T135°C for an ambient temperature range of -40°C to +55°C.
2. Models assembled using Hysol cement are rated for an ambient temperature range of -20°C to +40°C.
3. Flamepath joints are not intended to be repaired.
4. Assemblies constructed of brass are not for use in acetylene atmospheres.
5. The equipment low ambient temperature is limited to -40°C when provided with BUNA rubber seals.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
7 th November 2012	Original Issue.
12 th February 2016	<u>Supplement 1:</u> Report Reference: 3051995 dated 12 th February 2016 (Reissued 24 th February 2016). Description of the Change: Alternate potting compound added, expanded ambient temperature ranges and model code corrections.
2 nd May 2017	<u>Supplement 2:</u> Report Reference: RR208361 dated 2 nd May 2017. Description of the Change: Updated markings and standards to latest editions.
28 th August 2020	<u>Supplement 3:</u> Report Reference: PR455428 dated 28 th August 2020. Description of the Change: Addition of hermetic receptacle option. Revised ambient temperature ranges. FM 3600 updated to the 2018 edition.

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