CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**

2. **Certificate No:** **FM20CA0032X**

3. **Equipment:**
   (Type Reference and Name) **MIAD9ab, MI9Eb, Q45AD9ab, Q459Eb, SMI30a, T30AD9FF150, T30AD9FF150Q Photoelectric Sensor.**

4. **Name of Listing Company:** **Banner Engineering Corp**

5. **Address of Listing Company:** **9714 Tenth Ave N, Minneapolis, Minnesota 55441, USA**

6. The examination and test results are recorded in confidential report number:

   3046293 dated 21st August 2014

7. 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. 0:2020, CSA C22.2 No. 213:2017, CSA C22.2 No. 60079-0:2019, CSA C22.2 No. 60079-11:2014, CSA C22.2 No. 61010-1:2012

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:

    See Annex.

11. The marking of the equipment shall include:

    See Annex.

12. **Description of Equipment:**

    See Annex.

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

25 July 2023
Date

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

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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

13. **Specific Conditions of Use:**

    Parts of the enclosure are non-conducting and may generate an ignition-capable level of ESD. Cleaning of the equipment shall be done only with a damp cloth.

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
21 August 2014	Original Issue.
7 December 2020	Supplement 1: Report Reference: – RR223900 dated 7th December 2020. Description of the Change: Corrected errors in Model codes. Added missing Specific conditions of use. Updated Certificate with new format and unique certificate number. Updated to CSA C22.2 61010-1:2012, CSA C22.2 60079-0:2019, CSA C22.2 213-17:R2019, CSA C22.2 60079-11:R2014. Removed CSA C22.2 No. 157 and CSA C22.2 142.
27 January 2022	Supplement 2: Report Reference: – RR229362 dated 27th January 2022. Description of the Change: Partial Delist of obsolete models SMI91a and SMI912a.
25 July 2023	Supplement 3: Report Reference: RR237220 dated 25 July 2023. Description of the Change(s): Changes to control drawing related to FM 7745 approval.

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ANNEX

MI9Eb Photoelectric Sensor

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G using Entity parameters in accordance with drawing 39616
Intrinsically Safe for Class I, Zone 0, Ex ia IIC Ga using Entity parameters in accordance with drawing 39616
Non-Incendive for Class I, Division 2, Groups A, B, C, D
T code of T5 and an ambient temperature rating of -40°C to +70°C

Markings:

IS, CL I, II, III, Div 1, ABCDEFG; T5 -40°C ≤ Ta ≤ +70°C; Entity 39616
Ex ia IIC T5 Ga -40°C ≤ Ta ≤ +70°C; Entity 39616
NI, CL I, Div 2, ABCD; T5 -40°C ≤ Ta ≤ +70°C

Description of Equipment:

The MI9Eb Series Photoelectric sensors either emit or receive a light signal depending on the sensor type (emitter, receiver or combined emitter/receiver unit). The sensors consist of one circuit board, fully encapsulated in a molded plastic case equipped with either a connector or a cable. The case measures approximately 2.25 in. (57mm) x 1.25 in. (32mm) x 0.5 in. (12.5mm). The sensors use a cable/connector assembly which threads onto the sensor connector or are provided with an attached cable. The operating temperature range is -40°C to +70°C.
Entity Parameters:
V_{Max}= 15 V dc, I_{Max}= 60 mA, P_i= 225 mW, C_i= 0.3 µF, L_i= 0 mH.

All other protection techniques, the electronic connection has the following values:
5 ≤ U ≤ 15 V dc; I = 60 mA

Model Code Options:

b = Connection method Q or blank

MIAD9ab Photoelectric Sensor

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G using Entity parameters in accordance with drawing 39616
Intrinsically Safe for Class I, Zone 0, Ex ia IIC Ga using Entity parameters in accordance with drawing 39616
Non-Incendive for Class I, Division 2, Groups A, B, C, D
T code of T5 and an ambient temperature rating of -40°C to +70°C

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Markings:

IS, CL I, II, III, Div 1, ABCDEFG; T5 -40°C ≤ Ta ≤ +70°C; Entity 39616
Ex ia IIC T5 Ga -40°C ≤ Ta ≤ +70°C; Entity 39616
NI, CL I, Div 2, ABCD; T5 -40°C ≤ Ta ≤ +70°C

Description of Equipment:

The MIAD9 Series Photoelectric sensors either emit or receive a light signal depending on the sensor type (emitter, receiver or combined emitter/receiver unit). The sensors consist of one circuit board, fully encapsulated in a molded plastic case equipped with either a connector or a cable. The case measures approximately 2.25 in. (57mm) x 1.25 in. (32mm) x 0.5 in. (12.5mm). The sensors use a cable/connector assembly which threads onto the sensor connector or are provided with an attached cable. The operating temperature range is -40°C to +70°C.
Entity Parameters:
V_{Max}= 15 V dc, I_{Max}= 60 mA, P_i= 225 mW, C_i= 0.3 µF, L_i= 0 mH.

All other protection techniques, the electronic connection has the following values:
5 ≤ U ≤ 15 V dc; I = 60 mA

Model Code Options:
a = Sensing mode D, W, F, LV, LVAG, CV, CV2 or R.
b = Connection method Q or blank.

Q459Eb Photoelectric Sensor

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G using Entity parameters in accordance with drawing 38343
Intrinsically Safe for Class I, Zone 0, AEx ia IIC Ga using Entity parameters in accordance with drawing 38343
Non-Incendive for Class I, Division 2, Groups A, B, C, D
T code of T5 and an ambient temperature rating of -40°C to +70°C

Markings:

IS CL I, II, III, Div 1, ABCDEFG; T5 -40°C ≤ Ta ≤ +70°C; Entity 38343
Ex ia IIC T5 Ga -40°C ≤ Ta ≤ +70°C; Entity 38343
NI, CL I, Div 2, ABCD; T5 -40°C ≤ Ta ≤ +70°C

Description of Equipment:

The photoelectric sensors either emit and receive a light signal with the same unit The sensors consist of one circuit board, fully encapsulated in a molded plastic case equipped with either a connector or a cable. The case measures approximately 2.5 in. (63.5mm) x 1.75 in. (44mm) x 1.75 in. (44mm). The sensors use a cable/connector assembly

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which threads onto the sensor connector or are provided with an attached cable. The operating temperature range is -40°C to +70°C.
Entity Parameters:
V_{Max}= 15 V dc, I_{Max}= 60 mA, P_i= 225 mW, C_i= 0.3 µF, L_i= 0 mH.

Model Code Options:
b = Connection method Q or blank.

Q45AD9ab Photoelectric Sensor

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G using Entity parameters in accordance with drawing 38343
Intrinsically Safe for Class I, Zone 0, AEx ia IIC Ga using Entity parameters in accordance with drawing 38343
Non-Incendive for Class I, Division 2, Groups A, B, C, D
T code of T5 and an ambient temperature rating of -40°C to +70°C

Markings:

IS CL I, II, III, Div 1, ABCDEFG; T5 -40°C ≤ Ta ≤ +70°C; Entity 38343
Ex ia IIC T5 Ga -40°C ≤ Ta ≤ +70°C; Entity 38343
NI, CL I, Div 2, ABCD; T5 -40°C ≤ Ta ≤ +70°C

Description of Equipment:

The Q45AD9ab Photoelectric sensors either emit and receive a light signal with the same unit The sensors consist of one circuit board, fully encapsulated in a molded plastic case equipped with either a connector or a cable. The case measures approximately 2.5 in. (63.5mm) x 1.75 in. (44mm) x 1.75 in. (44mm). The sensors use a cable/connector assembly which threads onto the sensor connector or are provided with an attached cable. The operating temperature range is -40°C to +70°C
Entity Parameters:
V_{Max}= 15 V dc, I_{Max}= 60 mA, P_i= 225 mW, C_i= 0.3 µF, L_i= 0 mH.

All other protection technics, the electronic connection has the following values:
5 ≤ U ≤ 15 V dc; I = 60 mA

Model Code Options:
a = Sensing mode D, DL, F, FP, FV, LV, LP, CV, CV4 or R.
b = Connection method Q or blank.

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SMI30a

Equipment Ratings:

Intrinsically Safe for Class I, Zone 1, AEx ib IIC Gb using Entity parameters in accordance with drawing 35331,
Non-Incendive for Class I, II, III, Division 2, Groups A, B, C, D, and G.
T code of T5 and an ambient temperature rating of -40°C to +70°C:

Markings:

Ex ib IIC T5 Gb -40°C ≤ Ta ≤ +70°C; Entity 35331
NI, CL I, II, III, Div 2, ABCDG; T5 -40°C ≤ Ta ≤ +70°C;

Description of Equipment:

The SMI30 Series Photoelectric sensors either emit or receive a light signal depending on the sensor type (emitter or receiver). The sensors consist of one or two circuit boards, fully encapsulated in a threaded plastic case (barrel) which is equipped with a connector. The case measures approximately 3.87 in. (100mm) long and 1.16 in. (30mm) diameter. The sensors use a cable/connector assembly which threads onto the sensor connector. The operating temperature range is -40°C to +70°C.
Entity Parameters:
V_{Max}= 30 V, I_{Max}= 350 mA, P_i= 750 mW, C_i= 0, L_i= 0.

All other protection technics, the electronic connection has the following values:
10 ≤ U ≤ 30 V dc; I = 25 mA

Model Code Options:
a = 6EQ, 6EBQ, 6ECQ, 6EYCQ, AN6RQ, AN6RBQ, AN6RCQ, RN6RQ, RN6RBQ, RN6RCQ, 6EYQ, N6RYQ, AN6RYCQ, RN6RYQ, RN6RYCQ.

T30AD9FF150 Photoelectric Sensor

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G using Entity parameters in accordance with drawing 41685,
Intrinsically Safe for Class I, Zone 0, AEx ia IIC Ga using Entity parameters in accordance with drawing 41685
T code of T6 and an ambient temperature rating of -40°C to +70°C

Markings:

IS, CL I, II, III, Div 1, ABCDEFG; T6 -40°C ≤ Ta ≤ +70°C; Entity 41685
Ex ia IIC T6 Ga -40°C ≤ Ta ≤ +70°C; Entity 41685

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Description of Equipment:

The T30 Series Photoelectric sensors either emit and receive a light signal with the same unit The sensors consist of one circuit board, fully encapsulated in a molded plastic case equipped with either a connector or a cable. The case measures approximately 1.5 in. (38mm) diameter x 1.75 in. (44mm) long. The sensors use a cable/connector assembly which threads onto the sensor connector or are provided with an attached cable. The operating temperature range is -40°C to +70°C.
Entity Parameters:
V_{Max}= 30 V, I_{Max}= 35 mA, C_i= 0, L_i= 0.

All other protection techniques, the electronic connection has the following values:
5 ≤ U ≤ 15 V dc; I = 35 mA

T30AD9FF150Q Photoelectric Sensor

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, and G using Entity parameters in accordance with drawing 41685,
Intrinsically Safe for Class I, Zone 0, AEx ia IIC Ga using Entity parameters in accordance with drawing 41685
T code of T6 and an ambient temperature rating of -40°C to +70°C

Markings:

IS, CL I, II, III, Div 1, ABCDEFG; T6 -40°C ≤ Ta ≤ +70°C; Entity 41685
Ex ia IIC T6 Ga -40°C ≤ Ta ≤ +70°C; Entity 41685

Description of Equipment:

The T30 Series Photoelectric sensors either emit and receive a light signal with the same unit The sensors consist of one circuit board, fully encapsulated in a molded plastic case equipped with either a connector or a cable. The case measures approximately 1.5 in. (38mm) diameter x 1.75 in. (44mm) long. The sensors use a cable/connector assembly which threads onto the sensor connector or are provided with an attached cable. The operating temperature range is -40°C to +70°C.
Entity Parameters:
V_{Max}= 30 V, I_{Max}= 35 mA, C_i= 0, L_i= 0.

All other protection techniques, the electronic connection has the following values:
5 ≤ U ≤ 15 V dc; I = 35 mA

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