CERTIFICATE OF CONFORMITY

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** **FM18US0176X**
3. **Equipment:** **Model C2 series, U2, C16, Z16, HLC, PW series, RSC, RTN, SP4, Z6 series and Z7 load cells**
   (Type Reference and Name)
4. **Name of Listing Company:** **Hottinger Brüel & Kjaer GmbH**
5. **Address of Listing Company:** **Im Tiefen See 45**
   Darmstadt 64293
   Germany
6. The examination and test results are recorded in confidential report number:

   3060655 dated 19th February 2019

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

   FM 3600:2018 FM 3610:2018, FM 3810:2018, ANSI/ISA 60079-0:2013, ANSI/UL 60079-11:2014, 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.

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

30 March 2021
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
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE

US Certificate Of Conformity No: FM18US0176X

10. Equipment Ratings:

Intrinsically Safe for Class I, II, and III, Division 1, Groups A, B, C, D, E, F and G: T4 for -30°C ≤ Ta ≤ 40°C ambient*;
AEx ia for Class I, Zone 0, Group IIC, T4; -30°C ≤ Ta ≤ 40°C*;
AEx ia for Zone 20, Group IIIC, T125°C; -30°C ≤ Ta ≤ 40°C*;
IP67.
*For the models C16 and Z16, the minimum ambient temperature is -50°C; for the models PW25 and PW27, the minimum ambient temperature is -10°C.

11. The marking of the equipment shall include:

IS / I, II, III / 1 / A, B, C, D, E, F, G / T4; -30°C ≤ Ta ≤ 40°C*,
I / 0 / AEx ia / IIC / T4; -30°C ≤ Ta ≤ 40°C / Ga*;
20 / AEx ia / IIIC / T125°C; -30°C ≤ Ta ≤ 40°C / Da*;
IP67.

*For the models C16 and Z16, the minimum ambient temperature is marked as -50°C; for the models PW25 and PW27, the minimum ambient temperature is -10°C.

12. **Description of Equipment:**

General - HBM Load Cells and Sensors are precision primary weighing devices used in industrial scales. They are transducers that are used to create an electrical signal whose magnitude is directly proportional to the force being measured.

Construction – The heart of the load cell are spring elements made of steel or aluminum, on which strain gages are applied for sensing the deflection. The strain gages are protected against environmental influences by a stainless steel housing or by potting with silicon rubber.

Ratings – See Table below.

Pi (W)	Ui (V)	Ii (mA)
1.3	16	666
1.3	17	533
1.3	18	429
1.3	19	364
1.3	20	309
1.3	21	262

SCHEDULE

US Certificate Of Conformity No: FM18US0176X

1.3	22	224
1.3	23	193
1.3	24	168

BT-Z-W-G-S-LLLL-TT-OV-C-E series. Load cell.

BT = Base type C2, U2, C16, Z16, HLC, PW, RSC, RTN, SP4, Z6, VBB or Z7
Z = Safety variants
I = Intrinsic safety
N or blank = Not I.S. variant.
W = Load cell material
S = stainless steel;
A = aluminum;
W = tool nickel (nickel-coated).
G = Enclosure
H = welded;
P = potted.
S = Screen connection
S = connected to cell;
C or C1 = connected to cell via 1 nF capacitor;
C2 = connected to cell via 2.2 nF capacitor;
C5 = connected to cell via 4.7 nF capacitor;
N or blank = not connected.
LLLL = Connection
V = 4-cable method and cable length in m;
S = 6-cable method and cable length in m;
P4 = 4-pole plug and cable length in m;
P6 = 6-pole plug and cable length in m.
TT = Temperature coding
10 = min. ambient temperature of -10°C;
25 = min. ambient temperature of -25°C;
30 = min. ambient temperature of -30°C;
50 = min. ambient temperature of -50°C (only for C16 and Z16).
OV = Over-voltage protection
blank = no circuit for over-voltage protection
OV1 = response voltage < 500V;
OV2 = response voltage > 500V;
C = Coating
C = insulating coated. Not for use in EPL Ga (zone 0) and EPL Da (zone 20);
blank = not coated.

SCHEDULE

US Certificate Of Conformity No: FM18US0176X

E = Earth connection
E = earth connection outside in place;
blank = no earth connection.

Each load cell model is available in the following configurations.

Type /Family I.S. :	Ex-String (see left: General type Plate) BT -Z-W-G-S-LLLL-TT-OV-C-E
C16	C16-I-S-H-S-S***-50---E
	C16-I-S-H-S-S***-50-OV1--E
C2	C2 -I-S-H-S-S***-30---E
C2A	C2 -I-S-H-S-S***-30---E
HLC	HLC-I-S-H-S-S***-30---
PW10	PW -I-A-P-S-S***-30---
PW12	PW -I-A-P-S-S***-30---
PW15	PW -I-S-P-S-S***-30---
PW15AH	PW -I-S-H-S-S***-30---
PW15PH	PW -I-S-H-S-P6**-30---
PW16	PW -I-A-P-S-S***-30---
PW22	PW -I-A-P-S-S***-30---
PW25	PW -I-S-H-S-S***-10---
PW27	PW -I-S-H-S-S***-10---
PW29	PW -I-S-H-S-S***-30---
PW4L	PW -I-A-P-S-V***-30---
PWS	PW -I-S-P-S-S***-30---
PWS[1)]	PW –I-S-H-N-S***-30---
PWS[1)]	PW –I-S-P-N-S***-30---
RSC	RSC-I-S-H-S-S***-30---
RTN	RTN-I-S-H-S-V***-30---E
RTN[1)]	RTN-I-S-H-C1-V***-30---E
SP4	PW -I-A-P-S-S***-30---
U2	U2 -I-S-H-S-S***-30---E
Z16	Z16-I-S-H-S-S***-50---E

	Z16-I-S-H-S-S***-50-OV1--E
Z6	Z6 -I-S-H-S-S***-30---
Z6[1)]	VBB -I-S-H-S-S***-30---
Z6R	Z6 -I-S-H-S-S***-30---
Z7	Z7 -I-W-P-S-S***-30---
	Z7 -I-S-P-S-S***-30---

1) Customized version for Private Labeler, VBB identical to Z6.

13. **Specific Conditions of Use:**

1. A portion of the enclosure is non-conducting and, under certain extreme conditions, may generate an ignition-capable level of electrostatic charges. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.

2. The load cell models PWxx and SP4 (with option W = A) contain aluminum and are considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation to preclude impact or friction.

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
19th February 2019	Original Issue.
19th September 2019	Supplement 1 Report Reference: RR219546 19th September 2019. Description of the Change: Changing the entity parameters. Adding variants to models RTN, Z6 and PWS.
12th February 2021	Supplement 2 Report Reference: RR226207 dated 12th February 2021. Description of the Change: Company name change.
30th March 2021	Supplement 3

SCHEDULE

US Certificate Of Conformity No: FM18US0176X

	Report Reference: RR227444 dated 30th March 2021. Description of the Change: Correction of error in Supplement 2.

CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** **FM18CA0144X**
3. **Equipment:** **Model C2 series, U2, C16, Z16, HLC, PW series, RSC, RTN, SP4, Z6 series and Z7 load cells**
   (Type Reference and Name)
4. **Name of Listing Company:** **Hottinger Brüel & Kjaer GmbH**
5. **Address of Listing Company:** **Im Tiefen See 45**
   Darmstadt 64293
   Germany
6. The examination and test results are recorded in confidential report number:

   3060655 dated 19th February 2019
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

   CAN/CSA-C22.2 No. 61010-1:2012, CAN/CSA-C22.2 No. 60079-0:2015,
   CAN/CSA-C22.2 No. 60079-11:2014, CSA-C22.2 No. 60529:R2015,
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.

Certificate issued by:

J. E. Marquedant
VP, Manager - Electrical Systems

12 February 2021
Date

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE

Canadian Certificate Of Conformity No: FM18CA0144X

10. Equipment Ratings:

Ex ia for Class I, Zone 0, Group IIC, T4; -30°C ≤ Ta ≤ 40°C*;
Ex ia for Zone 20, Group IIIC, T125°C; -30°C ≤ Ta ≤ 40°C*,
IP67.
*For the models C16 and Z16, the minimum ambient temperature is -50°C; for the models PW25 and PW27, the minimum ambient temperature is -10°C.

11. The marking of the equipment shall include:

I / 0 / Ex ia / IIC / T4; -30°C ≤ Ta ≤ 40°C / Ga*;
20 / Ex ia / IIIC / T125°C; -30°C ≤ Ta ≤ 40°C / Da*;
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Construction – The heart of the load cell are spring elements made of steel or aluminum, on which strain gages are applied for sensing the deflection. The strain gages are protected against environmental influences by a stainless steel housing or by potting with silicon rubber.

Ratings – See Table below.

Pi (W)	Ui (V)	Ii (mA)
1.3	16	666
1.3	17	533
1.3	18	429
1.3	19	364
1.3	20	309
1.3	21	262
1.3	22	224

SCHEDULE

Canadian Certificate Of Conformity No: FM18CA0144X

1.3	23	193
1.3	24	168

BT-Z-W-G-S-LLLL-TT-OV-C-E series. Load cell.

BT = Base type C2, U2, C16, Z16, HLC, PW, RSC, RTN, SP4, Z6, VBB or Z7

Z = Safety variants
- I = Intrinsic safety
- N or blank = Not I.S. variant.

W = Load cell material
- S = stainless steel;
- A = aluminum;
- W = tool nickel (nickel-coated).

G = Enclosure
- H = welded;
- P = potted.

S = Screen connection
- S = connected to cell;
- C or C1 = connected to cell via 1 nF capacitor;
- C2 = connected to cell via 2.2 nF capacitor;
- C5 = connected to cell via 4.7 nF capacitor;
- N or blank = not connected.

LLLL = Connection
- V = 4-cable method and cable length in m;
- S = 6-cable method and cable length in m;
- P4 = 4-pole plug and cable length in m;
- P6 = 6-pole plug and cable length in m.

TT = Temperature coding
- 10 = min. ambient temperature of -10°C;
- 25 = min. ambient temperature of -25°C;
- 30 = min. ambient temperature of -30°C;
- 50 = min. ambient temperature of -50°C (only for C16 and Z16).

OV = Over-voltage protection
- blank = no circuit for over-voltage protection
- OV1 = response voltage < 500V;
- OV2 = response voltage > 500V;

C = Coating
- C = insulating coated. Not for use in EPL Ga (zone 0) and EPL Da (zone 20);
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E = Earth connection

SCHEDULE

Canadian Certificate Of Conformity No: FM18CA0144X

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Each load cell model is available in the following configurations.

Type /Family I.S. :	Ex-String (see left: General type Plate) BT -Z-W-G-S-LLLL-TT-OV-C-E
C16	C16-I-S-H-S-S***-50---E
	C16-I-S-H-S-S***-50-OV1--E
C2	C2 -I-S-H-S-S***-30---E
C2A	C2 -I-S-H-S-S***-30---E
HLC	HLC-I-S-H-S-S***-30---
PW10	PW -I-A-P-S-S***-30---
PW12	PW -I-A-P-S-S***-30---
PW15	PW -I-S-P-S-S***-30---
PW15AH	PW -I-S-H-S-S***-30---
PW15PH	PW -I-S-H-S-P6**-30---
PW16	PW -I-A-P-S-S***-30---
PW22	PW -I-A-P-S-S***-30---
PW25	PW -I-S-H-S-S***-10---
PW27	PW -I-S-H-S-S***-10---
PW29	PW -I-S-H-S-S***-30---
PW4L	PW-I-A-P-S-V***-30---
PWS	PW -I-S-P-S-S***-30---
PWS[1)]	PW –I-S-H-N-S***-30---
PWS[1)]	PW –I-S-P-N-S***-30---
RSC	RSC-I-S-H-S-S***-30---
RTN	RTN-I-S-H-S-V***-30---E
RTN[1)]	RTN-I-S-H-C1-V***-30---E
SP4	PW -I-A-P-S-S***-30---
U2	U2 -I-S-H-S-S***-30---E
Z16	Z16-I-S-H-S-S***-50---E
	Z16-I-S-H-S-S***-50-OV1--E

Z6	Z6 -I-S-H-S-S***-30---
Z6[1)]	VBB -I-S-H-S-S***-30---
Z6R	Z6 -I-S-H-S-S***-30---
Z7	Z7 -I-W-P-S-S***-30---
	Z7 -I-S-P-S-S***-30---

1) Customized version for Private Labeler,
VBB identical to Z6.

13. **Specific Conditions of Use:**

1. A portion of the enclosure is non-conducting and, under certain extreme conditions, may generate an ignition-capable level of electrostatic charges. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
2. The load cell models PWxx and SP4 (with option W = A) contain aluminum and are considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation to preclude impact or friction.

14. **Test and Assessment Procedure and Conditions:**

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

15. **Schedule Drawings**

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Certificate issued by:

J. E. Marquedant
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19th September 2019
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SCHEDULE

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SCHEDULE

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	C16-I-S-H-S-S***-50-OV1--E
C2	C2 -I-S-H-S-S***-30---E
C2A	C2 -I-S-H-S-S***-30---E
HLC	HLC-I-S-H-S-S***-30---
PW10	PW -I-A-P-S-S***-30---
PW12	PW -I-A-P-S-S***-30---
PW15	PW -I-S-P-S-S***-30---
PW15AH	PW -I-S-H-S-S***-30---
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PW22	PW -I-A-P-S-S***-30---
PW25	PW -I-S-H-S-S***-10---
PW27	PW -I-S-H-S-S***-10---
PW29	PW -I-S-H-S-S***-30---
PW4L	PW -I-A-P-S-V***-30---
PWS	PW -I-S-P-S-S***-30---
PWS[1)]	PW –I-S-H-N-S***-30---
PWS[1)]	PW –I-S-P-N-S***-30---
RSC	RSC-I-S-H-S-S***-30---
RTN	RTN-I-S-H-S-V***-30---E
RTN[1)]	RTN-I-S-H-C1-V***-30---E
SP4	PW -I-A-P-S-S***-30---
U2	U2 -I-S-H-S-S***-30---E
Z16	Z16-I-S-H-S-S***-50---E

SCHEDULE

US Certificate Of Conformity No: FM18US0176X

	Z16-I-S-H-S-S***-50-OV1--E
Z6	Z6 -I-S-H-S-S***-30---
Z6[1)]	VBB -I-S-H-S-S***-30---
Z6R	Z6 -I-S-H-S-S***-30---
Z7	Z7 -I-W-P-S-S***-30---
	Z7 -I-S-P-S-S***-30---

1) Customized version for Private Labeler, VBB identical to Z6.

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   FM 3600:2018 FM 3610:2018, FM 3810:2018, ANSI/ISA 60079-0:2013, ANSI/UL 60079-11:2014, 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.

Certificate issued by:

J. E. Marquedant
VP, Manager - Electrical Systems

19 February 2019
Date

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

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

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10. Equipment Ratings:

Intrinsically Safe for Class I, II, and III, Division 1, Groups A, B, C, D, E, F and G: T4 for -30°C ≤ Ta ≤ 40°C ambient;
AEx ia for Class I, Zone 0, Group IIC, T4; -30°C ≤ Ta ≤ 40°C*;
AEx ia for Zone 20, Group IIIC, T125°C; -30°C ≤ Ta ≤ 40°C*;
IP67.
*For the models C16 and Z16, the minimum ambient temperature is -50°C; for the models PW25 and PW27, the minimum ambient temperature is -10°C.

11. The marking of the equipment shall include:

IS / I, II, III / 1 / A, B, C, D, E, F, G / T4; -30°C ≤ Ta ≤ 40°C*,
I / 0 / AEx ia / IIC / T4; -30°C ≤ Ta ≤ 40°C / Ga*;
20 / AEx ia / IIIC / T125°C; -30°C ≤ Ta ≤ 40°C / Da*;
IP67.

*For the models C16 and Z16, the minimum ambient temperature is marked as -50°C; for the models PW25 and PW27, the minimum ambient temperature is -10°C.

12. **Description of Equipment:**

General - HBM Load Cells and Sensors are precision primary weighing devices used in industrial scales. They are transducers that are used to create an electrical signal whose magnitude is directly proportional to the force being measured.

Construction – The heart of the load cell are spring elements made of steel or aluminum, on which strain gages are applied for sensing the deflection. The strain gages are protected against environmental influences by a stainless steel housing or by potting with silicon rubber.

Ratings – Ui = 17.5V, Ii = 484 mA, Pi = 1.25W.

BT-Z-W-G-S-LLLLTT-OV-C-E series. Load cell.

BT = Base type C2, U2, C16, Z16, HLC, PW, RSC, RTN, SP4, Z6 or Z7
Z = Safety variants
I = Intrinsic safety
N or blank = Not I.S. variant.
W = Load cell material
S = stainless steel;

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A = aluminum;
W = tool nickel (nickel-coated).

G = Enclosure
H = welded;
P = potted.

S = Screen connection
S = connected to cell;
C or C1 = connected to cell via 1 nF capacitor;
C2 = connected to cell via 2.2 nF capacitor;
C5 = connected to cell via 4.7 nF capacitor;
N or blank = not connected.

LLLL = Connection
V = 4-cable method and cable length in m;
S = 6-cable method and cable length in m;
V = 4-cable method and cable length in m;
P4 = 4-pole plug and cable length in m;
P6 = 6-pole plug and cable length in m.

TT = Temperature coding
10 = min. ambient temperature of -10°C;
25 = min. ambient temperature of -25°C;
30 = min. ambient temperature of -30°C;
50 = min. ambient temperature of -50°C (only for C16 and Z16).

OV = Over-voltage protection
blank = no circuit for over-voltage protection
OV1 = response voltage < 500V;
OV2 = response voltage > 500V;

C = Coating
C = insulating coated. Not for use in EPL Ga (zone 0) and EPL Da (zone 20);
blank = not coated.

E = Earth connection
E = earth connection outside in place;
blank = no earth connection.

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Each load cell model is available in the following configurations.

Type /Family I.S. :	Ex-String (see left: General type Plate) BT -Z-W-G-S-LLLL-TT-OV-C-E
C16	C16-I-S-H-S-S***-50---E
	C16-I-S-H-S-S***-50-OV1--E
C2	C2 -I-S-H-S-S***-30---E
C2A	C2 -I-S-H-S-S***-30---E
HLC	HLC-I-S-H-S-S***-30---
PW10	PW -I-A-P-S-S***-30---
PW12	PW -I-A-P-S-S***-30---
PW15	PW -I-S-P-S-S***-30---
PW15AH	PW -I-S-H-S-S***-30---
PW15PH	PW -I-S-H-S-P6**-30---
PW16	PW -I-A-P-S-S***-30---
PW22	PW -I-A-P-S-S***-30---
PW25	PW -I-S-H-S-S***-10---
PW27	PW -I-S-H-S-S***-10---
PW29	PW -I-S-H-S-S***-30---
PW4L	PW -I-A-P-S-V***-30---
PWS	PW -I-S-P-S-S***-30---
RSC	RSC-I-S-H-S-S***-30---
RTN	RTN-I-S-H-S-V***-30---E
SP4	PW -I-A-P-S-S***-30---
U2	U2 -I-S-H-S-S***-30---E
Z16	C16-I-S-H-S-S***-50---E
	C16-I-S-H-S-S***-50-OV1--E
Z6	Z6 -I-S-H-S-S***-30---
Z6R	Z6 -I-S-H-S-S***-30---
Z7	Z7 -I-W-P-S-S***-30---
	Z7 -I-S-P-S-S***-30---

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13. **Specific Conditions of Use:**

1. A portion of the enclosure is non-conducting and, under certain extreme conditions, may generate an ignition-capable level of electrostatic charges. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.

2. The load cell models PWxx and SP4 (with option W = A) contain aluminum and are considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation to preclude impact or friction.

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
19th February 2019	Original Issue.