UTILCELL
CELULAS DE CARGA - LOAD CELLS

CELULAS DE CARGA PARA ATMÓSFERAS EXPLOSIVAS
EXPLOSIVE ATMOSPHERES LOAD CELLS
WÄGEZELLES FÜR EXPLOSIVE ATMOSPHÄREN
CAPTEURS POUR ATMOSPHERES EXPLOSIVES

140-160-190-260-300-350-480-630-740

INSTRUCCIONES DE INSTALACIÓN
INSTALLATION INSTRUCTIONS
INSTALLATIONSANLEITUNG
INSTRUCTIONS D'INSTALLATION

UTILCELL
CELULAS DE CARGA - LOAD CELLS

TÉCNICAS DE ELECTRÓNICA Y AUTOMATISMOS, S.A.

UTILCELL Célula de carga / Load Cell / Wägezelle / Capteur
Modelo / Model / Modell / Modèle:
140-160-190-260-300-350-480-630-740

CARACTERÍSTICAS / CHARACTERISTICS / TECHNISCHE DATEN / CARACTÉRISTIQUES

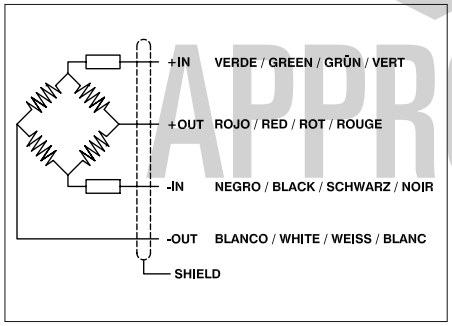
Tensión de alimentación nominal / Nominal input voltage / Nom. Speisespannung / Tension d'alimentation nominale: 10V

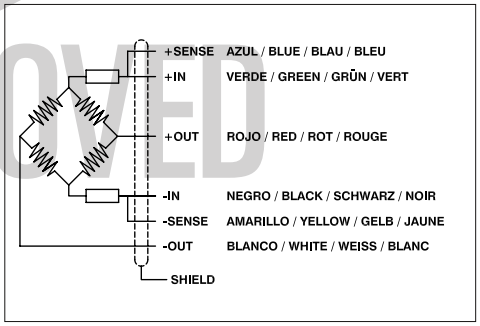
Resistencia de entrada / Input impedance / Eingangswiderstand / Impédance d'entrée:

140-160-190-260-630:	400±20 Ω
300-350:	400±20...1150±60 Ω
480:	800±30 Ω
740:	800±30 Ω

Resistencia de salida / Output impedance / Ausgangswiderstand / Impédance de sortide:

140-160-190-260-630:	350±3 Ω
300-350:	350±3...1000±10 Ω
480:	700±5 Ω
740:	705±5 Ω





Nota: Código de colores indicado a título de ejemplo. Cada caso tendrá indicado el código de colores que le corresponda / Note: Color coding showed as an example. Each case shall have its corresponding coding / Hinweis: Die Farbcodierung ist nur beispielhaft angegeben und hängt von der individuellen Ausführung ab / Note: le code de couleur est indiqué à titre d'exemple. Dans chaque cas sera mentionné le code de couleur qui correspond

INSTRUCCIONES DE SEGURIDAD / SAFETY INSTRUCTIONS / SICHERHEITSANWEISUNGEN / INSTRUCTIONS DE SÛRETÉ

Este equipo puede ser utilizado con el modo de protección: **IS (Instrinsic Safety)** / This equipment may be used with safety mode: **IS (Intrinsic Safety)** / Dieses Gerät kann mit der Zündschutzart verwendet werden: **IS (Intrinsic Safety)** / Cet équipe peut être utilisée avec le mode de protection: **IS (Intrinsic Safety)**

Como equipo de Clase I División 1 Designaciones de grupo A, B, C y D; y Clases II y III División 1 Designaciones de grupo E, F y G / As equipment of Class I Division 1 Group designations A, B, C and D; and Classes II and III Division 1 Group designations E, F and G / Als Gerät der Klasse I Division 1 Gruppenbezeichnungen A, B, C und D; und Klassen II und III Division 1 Gruppenbezeichnungen E, F und G / Comme équipe du Catégorie I Division 1 Désignations de groupe A, B, C et D; et Catégories II et III Division 1 Désignations de groupe E, F et G

En un circuito con los siguientes Parámetros específicos del modo de protección / In a circuit with the following Type of protection specific parameters / In einen Stromkreis mit den spezifischen Kenngrössen der Zündschutzart / Dans un circuit avec les suivants Paramètres spécifiques de la mode de protection

Ui [V]	Ii [A]	Pi [W]	Ci [pF]	Li [mH]
15	0.288	1.08	0	0
13	0.332	1.08	0	0

Y con el Marcado de protección / And with the Protective mark / Und mit Kennzeichnung der Eigensicherheit / Et avec le Marcage de protection

IS/I/1/ABCD/T4
IS/II,III/1/EFG/T4
IP66(mod. 140-160-190a) / IP67(mod. 350a-350n-480n-630) / IP68(mod. 190i-260-300-350i-480i-740)
Ta: -25°C to +60°C
FM ctrl. drw. HM-0811

Amparado por los certificados FM17US0192X y FM17CA0103X emitidos por FM Approvals LLC(1) / Covered by certificates LOM FM17US0192X and FM17CA0103X emmited by FM Approvals LLC(1) / Abgedeckt durch die Testbescheinigung FM17US0192X und FM17CA0103X ausgestellt durch die FM Approvals LLC(1) / Couvert par les certificats FM17US0192X et FM17CA0103X émis par FM Approvals LLC(1)

(1) El uso de las cajas suma Utilcell modelos 89092 (8 cels.) y 89093 (4 cels.) queda amparado por estos certificados / Use of Utilcell junction boxes models 89092 (8 cells) and 89093 (4 cells) is covered by these certificates / Die Verwendung von Utilcell-Verteilerkästen der Modelle 89092 (8 Zellen) und 89093 (4 Zellen) wird durch diese Zertifikate abgedeckt / L'utilisation des boîtes de jonction Utilcell modèles 89092 (8 capteurs) et 89093 (4 capteurs) est couvert par ces certificats

Condiciones especiales para un uso seguro: ver certificados y FM control drawing HM-0811 / Special conditions for a safe use: see certificates and FM control drawing HM-0811 / Besondere Bedingungen für die sichere Anwendung: siehe Zertifikate und und FM control drawing HM-0811 / Conditions spéciales pour une utilisation sûre: voir les certificats et y FM control drawing HM-0811

NOTA: La capacitancia y la inductancia del cable debe de ser considerada. Sinó se conocen sus valores se pueden tomar con los siguientes valores: Ci = 60 pF/ft (196 pF/m) y Li = 0.2 µH/ft (0.656 µH/m) / NOTE: Cable capacitance and inductance has to be considered. If their values are not known the following values may be used: Ci = 60 pF/ft (196 pF/m) and Li = 0.2 µH/ft (0.656 µH/m) / HINWEIS: Die Kapazität und Induktivität des Kabels müssen berücksichtigt werden. Wenn ihre Werte nicht bekannt sind, können die folgenden Werte verwendet werden: Ci = 60 pF/ft (196 pF/m) und Li = 0,2 µH/ft (0,656 µH/m) / REMARQUE: la capacité du câble et de l'inductance doit être considérée avec. Si leurs valeurs ne sont pas connues, les suivantes valeurs peuvent être utilisées: 60 pF/ft (196 pF/m) et Li = 0.2 µH/ft (0.656 µH/m)

CERTIFICATE OF CONFORMITY

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** **FM17US0192X**
3. **Equipment: (Type Reference and Name)** **Load cell, models 140, 160, 190, 260, 300, 350, 480, 630 and 740**
4. **Name of Listing Company:** **Tecnicas De Electronica Y Automatismos S.A.**
5. **Address of Listing Company:** **C/ Espronceda 176-180, 08018-Barcelona, Spain**
6. The examination and test results are recorded in confidential report number:

   3059529 dated 4th December 2017
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

   FM Class 3600:2011, FM Class 3610:2015, FM Class 3810:2005
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:

    Intrinsically Safe for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G hazardous (classified) locations, indoors and outdoors, with an ambient temperature rating of T4 for -25°C ≤ Ta ≤ +60°C, IP66, IP67, IP68.

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

4 December 2017
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

SCHEDULE

US Certificate Of Conformity No: FM17US0192X

11 The marking of the equipment shall include:

IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C,
IP66 (models 140, 160, 190a); IP67 (models 350a, 350n, 480n, 630); IP68 (models 190i, 260, 300, 350i, 480i, 740).

12 **Description of Equipment:**

General – All of the load cells are transducers that create an electrical signal whose magnitude is directly proportional to the force applied. Electrical components are inside the load cell, protected using different systems: silicone coating, welded or screwed housing. The degree of protection against the ingress of foreign objects depends on the model and variant, and can be IP66, IP67 or IP68.
The operating principle of the load cells is by strain gauges glued onto an elastic body. The load cells work by bending beam, shear beam, or compression, depending on the model. The strain gauges form a full Wheatstone bridge.
Model 190 has the variants 190a protected with silicone coating and 190i which is welded. Model 350 has variants 350a and 350n protected with silicone coating and 350i which is welded. Model 480 has variants 480n protected with silicone coating and 480i which is welded.

Construction – The construction material can be aluminum, alloy steel or stainless steel.

Ratings – Ui = 15V, Ii = 0.288A, Pi = 1.08W;
Ui = 13V, Ii = 0.332A, Pi = 1.08W.

140 series. Load cell.

14XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP66.

XXX = Capacity (kg): 001, 003, 005, 007, 008, 010, 015, 020, 030, 050, 075, 100 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

160 series. Load cell.

16XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP66.

XXX = Capacity (kg): 015, 020, 030, 050, 075, 100, 150 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);

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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: FM17US0192X

c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

190 series. Load cell.

19XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP66 (190a), IP68 (190i).

XXX = Capacity (kg): 015, 020, 030, 050, 075, 120, 200, 250, 350, 400 (other capacities in t, kg, lb or kN may exist);
a = Variation: i (190i), Blank (190a);
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires for 190a, 6 wires for 190i), 4, 4H or 4W (4 wires for 190i), 6, 6H or 6W (6 wires for 190a);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

260 series. Load cell.

26XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP68.

XXX = Capacity (kg): 002, 003, 005, 007, 010, 015, 020, 030, 035, 050, 075, 120, 200 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

300 Series Load Cell.

30XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP68.

XXX = Capacity (kg): 005, 010, 015, 020, 030, 050, 075, 100, 150, 200, 250, 300, 500 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

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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: FM17US0192X

350 Series Load Cell.

3FXXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67 (350n/350a), IP68 (350i).

XXX = Capacity (kg): 300, 500, 750, 001, 015, 002, 003, 005, 007, 010 (other capacities in t, kg, lb or kN may exist);
a = Variation: i, n (F = 5), a (F = 7, A = blank);
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires for 350a/350n, 6 wires for 350i), 4, 4H or 4W (4 wires for 350i), 6, 6H or 6W (6 wires for 350a/350n);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

35aXXXbcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67 (350n/350a), IP68 (350i).

XXX = Capacity (kg): 250, 500, 750, 1K, 1.5K, 2K, 2.5K, 4K, 5K, 10K (other capacities in t, kg, lb or kN may exist);
a = Variation: i (350i), n (350n), a (350a);
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires for 350a/350n, 6 wires for 350i), 4, 4H or 4W (4 wires for 350i), 6, 6H or 6W (6 wires for 350a/350n);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

480 Series Load Cell.

48XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67 (480n), IP68 (480i).

XXX = Capacity (klb): 010, 015, 020, 025, 030, 040, 050, 060, 075, 100, 125 (other capacities in t, kg, lb or kN may exist);
a = Variation: i, n;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (6 wires), 4, 4H or 4W (4 wires);
d = Impedance: Blank (700 Ω), 1K (1000 Ω);
e = Other options.

630 Series Load Cell.

63XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67.

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SCHEDULE

US Certificate Of Conformity No: FM17US0192X

XXX = Capacity (kg): 050, 100, 250, 500, 001, 025 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

740 Series Load Cell.

74XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP68.

XXX = Capacity (t): 010, 015, 020, 025, 030, 035, 040, 050, 060, 070, 100, 150, 200, 300, 400, 500, 600, 800, 900, 1000 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (6 wires), 4, 4H or 4W (4 wires);
d = Impedance: Blank (700 Ω), 1K (1000 Ω);
e = Other options.

13 **Specific Conditions of Use:**

The load cell model 140 and junction boxes 89092 and 89093 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 prevent 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
4th December 2017	Original Issue.

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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CERTIFICATE OF CONFORMITY

1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** **FM17CA0103X**
3. **Equipment: (Type Reference and Name)** **Load cell, models 140, 160, 190, 260, 300, 350, 480, 630 and 740**
4. **Name of Listing Company:** **Tecnicas De Electronica Y Automatismos S.A.**
5. **Address of Listing Company:** **C/ Espronceda 176-180, 08018-Barcelona, Spain**
6. The examination and test results are recorded in confidential report number:

   3059529 dated 4th December 2017
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. 60079-0:2011, CAN/CSA-C22.2 No. 60079-11:2014, CAN/CSA-C22.2 No. 61010-1:2012, CSA-C22.2 No. 60529:R2010
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:

    Intrinsically Safe for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G hazardous (classified) locations, indoors and outdoors, with an ambient temperature rating of T4 for -25°C ≤ Ta ≤ +60°C, IP66, IP67, IP68.

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

4 December 2017
Date

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

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SCHEDULE

Canadian Certificate Of Conformity No: FM17CA0103X

11. The marking of the equipment shall include:

    IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C,
    IP66 (models 140, 160, 190a); IP67 (models 350a, 350n, 480n, 630); IP68 (models 190i, 260, 300, 350i, 480i, 740).
12. **Description of Equipment:**

    General – All of the load cells are transducers that create an electrical signal whose magnitude is directly proportional to the force applied. Electrical components are inside the load cell, protected using different systems: silicone coating, welded or screwed housing. The degree of protection against the ingress of foreign objects depends on the model and variant, and can be IP66, IP67 or IP68.
    The operating principle of the load cells is by strain gauges glued onto an elastic body. The load cells work by bending beam, shear beam, or compression, depending on the model. The strain gauges form a full Wheatstone bridge.
    Model 190 has the variants 190a protected with silicone coating and 190i which is welded. Model 350 has variants 350a and 350n protected with silicone coating and 350i which is welded. Model 480 has variants 480n protected with silicone coating and 480i which is welded.

    Construction – The construction material can be aluminum, alloy steel or stainless steel.

    Ratings – Ui = 15V, Ii = 0.288A, Pi = 1.08W;
    Ui = 13V, Ii = 0.332A, Pi = 1.08W.

    140 series. Load cell.

    14XXXabcde. Load cell.
    IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
    IP66.

    XXX = Capacity (kg): 001, 003, 005, 007, 008, 010, 015, 020, 030, 050, 075, 100 (other capacities in t, kg, lb or kN may exist);
    a = Variation: Not applicable;
    b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
    c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
    d = Impedance: Blank (350 Ω), 1K (1000 Ω);
    e = Other options.

    160 series. Load cell.

    16XXXabcde. Load cell.
    IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
    IP66.

    XXX = Capacity (kg): 015, 020, 030, 050, 075, 100, 150 (other capacities in t, kg, lb or kN may exist);
    a = Variation: Not applicable;
    b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
    c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);

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SCHEDULE

Canadian Certificate Of Conformity No: FM17CA0103X

d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

190 series. Load cell.

19XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP66 (190a), IP68 (190i).

XXX = Capacity (kg): 015, 020, 030, 050, 075, 120, 200, 250, 350, 400 (other capacities in t, kg, lb or kN may exist);
a = Variation: i (190i), Blank (190a);
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires for 190a, 6 wires for 190i), 4, 4H or 4W (4 wires for 190i), 6, 6H or 6W (6 wires for 190a);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

260 series. Load cell.

26XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP68.

XXX = Capacity (kg): 002, 003, 005, 007, 010, 015, 020, 030, 035, 050, 075, 120, 200 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

300 Series Load Cell.

30XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP68.

XXX = Capacity (kg): 005, 010, 015, 020, 030, 050, 075, 100, 150, 200, 250, 300, 500 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

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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: FM17CA0103X

350 Series Load Cell.

3FXXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67 (350n/350a), IP68 (350i).

XXX = Capacity (kg): 300, 500, 750, 001, 015, 002, 003, 005, 007, 010 (other capacities in t, kg, lb or kN may exist);
a = Variation: i, n (F = 5), a (F = 7, A = blank);
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires for 350a/350n, 6 wires for 350i), 4, 4H or 4W (4 wires for 350i), 6, 6H or 6W (6 wires for 350a/350n);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

35aXXXbcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67 (350n/350a), IP68 (350i).

XXX = Capacity (kg): 250, 500, 750, 1K, 1.5K, 2K, 2.5K, 4K, 5K, 10K (other capacities in t, kg, lb or kN may exist);
a = Variation: i (350i), n (350n), a (350a);
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires for 350a/350n, 6 wires for 350i), 4, 4H or 4W (4 wires for 350i), 6, 6H or 6W (6 wires for 350a/350n);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

480 Series Load Cell.

48XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP67 (480n), IP68 (480i).

XXX = Capacity (klb): 010, 015, 020, 025, 030, 040, 050, 060, 075, 100, 125 (other capacities in t, kg, lb or kN may exist);
a = Variation: i, n;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (6 wires), 4, 4H or 4W (4 wires);
d = Impedance: Blank (700 Ω), 1K (1000 Ω);
e = Other options.

630 Series Load Cell.

63XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Drawing #HM-0811;
IP67.

SCHEDULE

Canadian Certificate Of Conformity No: FM17CA0103X

XXX = Capacity (kg): 050, 100, 250, 500, 001, 025 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (4 wires), 6, 6H or 6W (6 wires);
d = Impedance: Blank (350 Ω), 1K (1000 Ω);
e = Other options.

740 Series Load Cell.

74XXXabcde. Load cell.
IS / I, II, III / 1 / ABCDEFG / T4 for -25°C ≤ Ta ≤ +60°C; Control Drawing #HM-0811;
IP68.

XXX = Capacity (t): 010, 015, 020, 025, 030, 035, 040, 050, 060, 070, 100, 150, 200, 300, 400, 500, 600, 800, 900, 1000 (other capacities in t, kg, lb or kN may exist);
a = Variation: Not applicable;
b = Cable Type: Blank (PVC) P or PUR (Polyurethane);
c = Cable conductors: Blank (6 wires), 4, 4H or 4W (4 wires);
d = Impedance: Blank (700 Ω), 1K (1000 Ω);
e = Other options.

13. **Specific Conditions of Use:**

The load cell model 140 and junction boxes 89092 and 89093 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 prevent 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**

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
4th December 2017	Original Issue.

GENERAL NOTES

1. INSTALLATION SHOULD BE IN ACCORDANCE WITH:
-ANSI/ISA RP12.06.01, "RECOMMENDED PRACTICE FOR WIRING METHODS FOR HAZARDOUS (CLASSIFIED) LOCATIONS INSTRUMENTATION PART 1: INTRINSIC SAFETY" FOR GUIDANCE ON THE INSTALLATION OF INSTRINSICALLY SAFE APPARATUS AND SYSTEMS
-IN U.S. THE NATIONAL ELECTRICAL CODE ANSI/NFPA 70 AND IN CANADA THE CANADIAN ELECTRICAL CODE CSA C22.1, PART 1, APPENDIX F
2. ONLY DEVICES THAT HAVE FM ENTITY APPROVAL WITH PROPER ENTITY PARAMETERS MAY BE USED
3. BARRIER MANUFACTURERS INSTALLATION DRAWINGS MUST BE FOLLOWED WHEN INSTALLING THESE EQUIPMENTS
4. ALL BARRIERS SHALL BE CONNECTED TO INSTALLATION GROUND
5. JUNCTION BOX MANUFACTURERS INSTALLATION DRAWINGS MUST BE FOLLOWED WHEN INSTALLING THESE EQUIPMENTS
6. ELECTRICAL EQUIPMENT CONNECTED MUST NOT USE OR GENERATE MORE THAN 250V RMS OR DC
7. ALL WIRING HAS DISTRIBUTED INDUCTANCE AND CAPACITANCE. THE MAXIMUM PERMITTED CABLE PARAMETERS FOR THE PARTICULAR BARRIER MUST NOT BE EXCEEDED. IF THE INDUCTANE AND CAPACITANCE OF THE CABLE USED ARE NOT KNOWN, 0.656 μH/m (0.2 μH/ft) AND 196 pF/m (60 pF/ft) MAY BE USED AS A CONSERVATIVE CRITERIA FOR DETERMINATION OF CABLE EFFECTS
8. LOAD CELL MODELS COVERED BY THIS DRAWING:
140 160 190 260 300 350 480 630 740
9. JUNCTION BOXES COVERED BY THIS DRAWING:
UTILCELL MODELS 89092 AND 89093
10. APPLICATIONS NOT REQUIRING EXCITATION SENSING, SHALL EITHER TERMINATE AND INSULATE UNUSED SENSE WIRES OR CONNECT THE SENSING LEADS TO THE EXCITATION LEAD OF THE SAME POLARITY
11. STANDARD LOAD CELL MODEL 140 AND JUNCTION BOXES 89092, 89093 CONTAIN ALUMINUM AND IS CONSIDERED TO CONSTITUTE A POTENTIAL RISK OF IGNITION BY IMPACT OR FRICTION. CARE MUST BE TAKEN INTO ACCOUNT DURING INSTALLATION AND USE TO PREVENT IMPACT OR FRICTION
12. NON STANDARD VARIANTS OF ANY MODEL MADE OF ALUMINUM SHALL FULFILL POINT 11.
13. LOAD CELLS HAVE TO BE CONNECTED TO INSTALLATION GROUND. THAT SHALL BE ACHIEVED THROUGH MOUNTING BOLTS, MOUNTING ACCESSORIES, OR OTHER MEANS THAT ASSURE CONNECTION. GROUNDING CONNECTIONS MUST BE COMPLIANT WITH THE NATIONAL ELECTRICAL CODE FOR THE U.S., AND WITH THE CANADIAN ELECTRICAL CODE FOR CANADA

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF LOAD CELL AND/OR OTHER ELEMENTS MAY IMPAIR INTRINSIC SAFETY
WARNING - EXPLOSION HAZARD - TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING

GENERAL HAZARDOUS (CLASSIFIED) LOCATION:
INTRINSICALLY SAFE CLASS I DIV 1 GROUP A-B-C-D TEMP. CLASS T4
INTRINSICALLY SAFE CLASS II,III DIV 1 GROUP E-F-G TEMP. CLASS T4

Permissible ambient temperature and temperature code:
T4 Ta: -25°C to +60°C

Ui [V]	Ii [A]	Pi [W]	Ci [pF]	Li [mH]
15	0.288	1.08	0	0
13	0.332	1.08	0	0

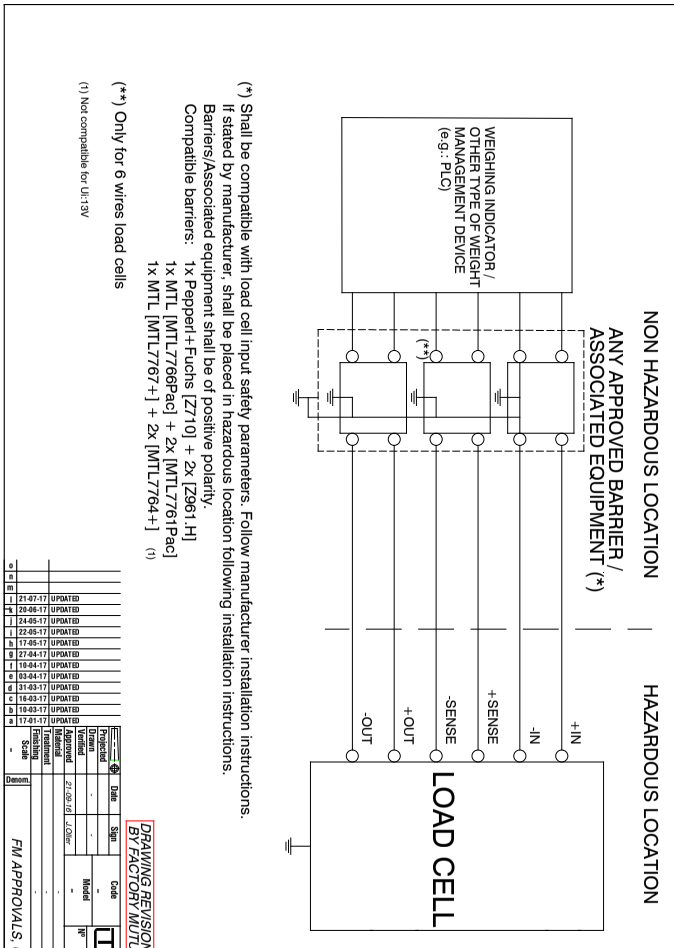
DRAWING REVISIONS MUST BE APPROVED BY FACTORY MUTUAL PRIOR TO RELEASE

	Date	Sign	Code
Projected	-	-	-
Drawn	-	-	
Verified	-	-	Model
Approved	21-09-16	J.Oller	-
Material	-		
Treatment	-		
Finishing	-		
Scale -	Denom.		

UTILCELL CELULAS DE CARGA - LOAD CELLS
Nº HM-0811 Sheet 1 of 6
Dimensions without tolerance ±0.1
Chamfers not dimensioned 1x45°
Dimensions in mm.

FM APPROVALS, CONTROL DRAWING

l	21-07-17	UPDATED
k	20-06-17	UPDATED
j	24-05-17	UPDATED
i	22-05-17	UPDATED
h	17-05-17	UPDATED
g	27-04-17	UPDATED
f	10-04-17	UPDATED
e	03-04-17	UPDATED
d	31-03-17	UPDATED
c	16-03-17	UPDATED
b	10-03-17	UPDATED
a	17-01-17	UPDATED



(*) Shall be compatible with load cell input safety parameters. Follow manufacturer installation instructions. If stated by manufacturer, shall be placed in hazardous location following installation instructions.
Barriers/Associated equipment shall be of positive polarity.
Compatible barriers: 1x Pepperl+Fuchs [Z710] + 2x [Z961.H]
1x MTL [MTL7766Pac] + 2x [MTL761Pac]
1x MTL [MTL7767+] + 2x [MTL764+] (1)

(**) Only for 6 wires load cells

(1) Not compatible for Ui:13V

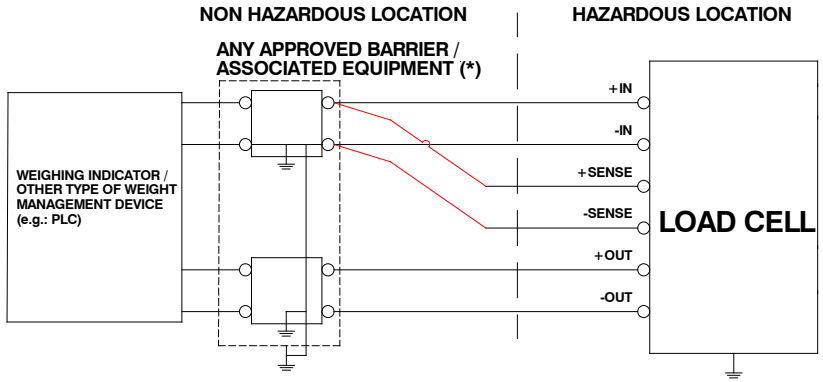
e		
m		
l	21-07-17	UPDATED
k	20-06-17	UPDATED
j	24-05-17	UPDATED
i	22-05-17	UPDATED
h	17-05-17	UPDATED
g	27-04-17	UPDATED
f	10-04-17	UPDATED
e	03-04-17	UPDATED
d	31-03-17	UPDATED
c	16-03-17	UPDATED
b	10-03-17	UPDATED
a	17-01-17	UPDATED

	Date	Sign	Code
Projected	-	-	-
Drawn	-	-	
Verified	-	-	Model
Approved	21-09-16	J.Oller	-
Material	-		
Treatment	-		
Finishing	-		
Scale -	Denom.		

FM APPROVALS, CONTROL DRAWING

UTILCELL CELULAS DE CARGA - LOAD CELLS
Nº HM-0811 Sheet 2 of 6
Dimensions without tolerance ±0.1
Chamfers not dimensioned 1x45°
Dimensions in mm.

DRAWING REVISIONS MUST BE APPROVED BY FACTORY MUTUAL PRIOR TO RELEASE



(*) Shall be compatible with load cell input safety parameters. Follow manufacturer installation instructions.
If stated by manufacturer, shall be placed in hazardous location following installation instructions.
Barriers/Associated equipment shall be of positive polarity.
Compatible barriers: 1x Pepperl+Fuchs [Z710] + 1x [Z961.H]
1x MTL [MTL7766Pac] + 1x [MTL7761Pac]
1x MTL [MTL7767+] + 1x [MTL7764+] (1)
1x STAHL [9002/11-130-360-001] + 1x [9002/11-120-024-001] (2)

(1) Not compatible for Ui:13V
(2) Not compatible for Ui:15V

DRAWING REVISIONS MUST BE APPROVED BY FACTORY MUTUAL PRIOR TO RELEASE

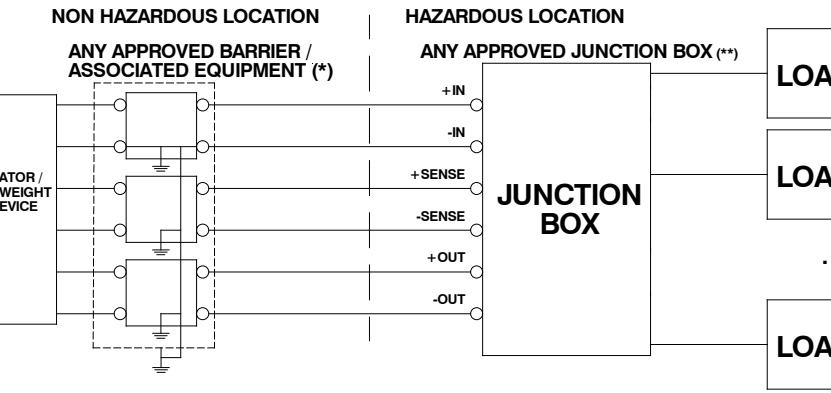
BARRIER PARAMETERS:

Manufacturer	Model	Uo [V]	Io [mA]	Po [mW]	Ri. min [ohm]
Pepperl+Fuchs	Z710	9.56	195	470	49
Pepperl+Fuchs	Z961.H	8.7	25	50	352.8
MTL	MTL7766Pac	12	157	471	76.4
MTL	MTL7761Pac	9	26	58	351.5
MTL	MTL7767+	15	150	560	100
MTL	MTL7764+	12	12	36	1000
STAHL	9002/11-130-360-001	13	321	1040	45
STAHL	9002/11-120-024-001	12	12	40	1043

Rev	Date	Description
a	17-01-17	UPDATED
b	10-03-17	UPDATED
c	16-03-17	UPDATED
d	31-03-17	UPDATED
e	03-04-17	UPDATED
f	10-04-17	UPDATED
g	27-04-17	UPDATED
h	17-05-17	UPDATED
i	22-05-17	UPDATED
j	24-05-17	UPDATED
k	20-06-17	UPDATED
l	27-07-17	UPDATED

	Date	Sign	Code
Projected			-
Drawn	-	-	
Verified			Model
Approved	21-09-16	J.Oller	-
Material			-
Treatment			-
Finishing			-
Scale			-

UTILCELL CELULAS DE CARGA - LOAD CELLS
Nº HM-0811
Sheet 6 of 6
Dimensions without tolerance ±0.1
Chamfers not dimensioned 1x45°
Dimensions in mm.
Denom. FM APPROVALS, CONTROL DRAWING



(*) Shall be compatible with junction box and load cell input safety parameters. Follow manufacturer installation instructions.
If stated by manufacturer, shall be placed in hazardous location following installation instructions.
Barriers/Associated equipment shall be of positive polarity.
Compatible barriers: 1x Pepperl+Fuchs [Z710] + 2x [Z961.H]
1x MTL [MTL7766Pac] + 2x [MTL7761Pac]
1x MTL [MTL7767+] + 2x [MTL7764+] (1)

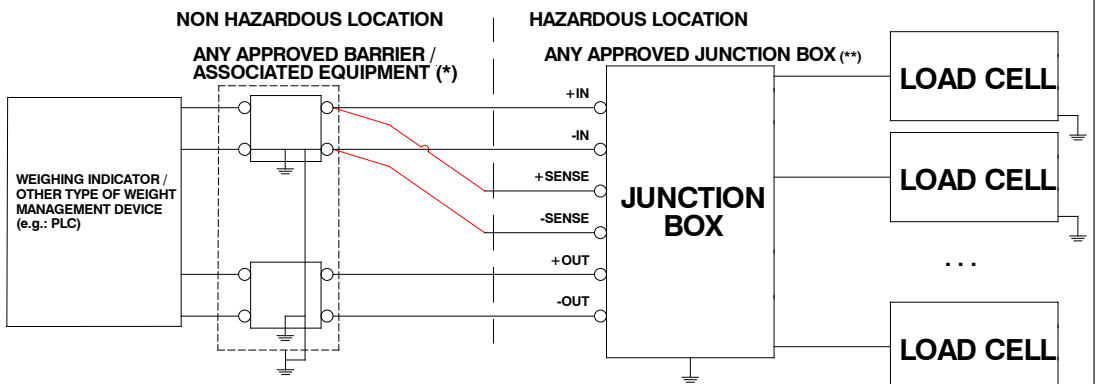
(1) Not compatible for Ui:13V

(**) Non approved (non active) junction box shall be used if placed in non hazardous location

DRAWING REVISIONS MUST BE APPROVED BY FACTORY MUTUAL PRIOR TO RELEASE

	Date	Sign	Code
Projected			-
Drawn	-	-	
Verified			Model
Approved	21-09-16	J.Oller	-
Material			-
Treatment			-
Finishing			-
Scale			-

UTILCELL CELULAS DE CARGA - LOAD CELLS
Nº HM-0811
Sheet 3 of 6
Dimensions without tolerance ±0.1
Chamfers not dimensioned 1x45°
Dimensions in mm.
Denom. FM APPROVALS, CONTROL DRAWING



(*) Shall be compatible with junction box and load cell input safety parameters. Follow manufacturer installation instructions.
If stated by manufacturer, shall be placed in hazardous location following installation instructions.
Barriers/Associated equipment shall be of positive polarity.
Compatible barriers: 1x Pepperl+Fuchs [Z710] + 1x [Z961.H]
1x MTL [MTL7766Pac] + 1x [MTL7761Pac]
1x MTL [MTL7767+] + 1x [MTL7764+] (1)
1x STAHL [9002/11-130-360-001] + 1x [9002/11-120-024-001] (2)

(1) Not compatible for Ui:13V
(2) Not compatible for Ui:15V

(**) Non approved (non active) junction box shall be used if placed in non hazardous location

DRAWING REVISIONS MUST BE APPROVED BY FACTORY MUTUAL PRIOR TO RELEASE

	Date	Sign	Code
Projected			-
Drawn	-	-	
Verified			Model
Approved	21-09-16	J.Oller	-
Material			-
Treatment			-
Finishing			-
Scale			-

UTILCELL CELULAS DE CARGA - LOAD CELLS
Nº HM-0811
Sheet 5 of 6
Dimensions without tolerance ±0.1
Chamfers not dimensioned 1x45°
Dimensions in mm.
Denom. FM APPROVALS, CONTROL DRAWING