



Level Sensor / Füllstandssensor / Capteur de niveau LM80

Safety Specifications / Sicherheitstechnische Daten / Spécifications de Sécurité

Manufacturer / Hersteller / Fabricant

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SM/LM80-EN-FR-DE Rev. D

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English



Important

This safety-relevant information is an excerpt from the operating instructions, the Type Examination and EC Type-Examination certificates for the product. It is mandatory that you read and comply with these documents.



Sira 07ATEX9180X: II 2D Ex tb IIIC T85°C Db;
Sira 07ATEX4179X: II 3G Ex nA nC IIC T4 Gc; Ex op is IIC T4 Gc;
IECEX SIR 12.0120X: Ex nA nC IIC T4 Gc; Ex op is IIC T4 Gc; Ex tb IIIC T85°C Db
Ambient temperature: $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
 $-40^{\circ}\text{C} \leq T_a \leq +45^{\circ}\text{C}$ with heated lenses option AC & SC

Laser Warning

The LM80 Level Sensor is a class 1M instrument during normal operation. However, at installation and after a restart a pointing laser is activated during 2 minutes to allow positioning of the LM80 Level Sensor. During these 2 minutes the LM80 Level Sensor is a 3R laser product.

During standard operation:



Class 1M laser (905nm) is safe for all conditions of use except when passed through magnifying optics such as microscopes and telescopes. Do not view directly with optical instruments (binoculars or telescopes).

During 2 minutes after startup:



Class 3R laser radiations (635nm, 2mW output power) are present at the bottom side of the instrument, i.e. originate from the pointing laser. Do not look in the laser beam.



Use of controls or adjustment of performance of procedures other than those specified herein may result in hazardous radiation exposure.

SPECIAL CONDITIONS FOR SAFE USE

Unless specifically approved, no connection shall be made to the D connector (RS232) inside the hazardous area.

Appropriate insulated lugs or ferrules shall be used for external connections to the terminal blocks and external and internal earth. The flat washer shall be incorporated between the enclosure body and the lug to prevent corrosion from occurring.

Only glands that have been suitably certified by a notified body and are appropriate for the application shall be used for cable entry into the enclosure.

External transient protection of up to 40% (44 V) of the maximum supply voltage ($32\text{ V} \times 1.4 \leq 44\text{ V}$) shall be incorporated in the power supply line to the equipment.

The lenses shall not be exposed to direct sunlight.

To make sure the electrical compartment is not too easily accessible, the compartment lid has to be firmly tightened by means of a tool that is inserted in the slot of the top of the cover.

Under certain extreme circumstances, exposed plastic (including powder coating) and unearthed metal parts of the enclosure may store an ignition-capable level of electrostatic charge. Therefore, the user/installer shall implement precautions to prevent the buildup of electrostatic charge, e.g. locate the equipment where a charge-generating mechanism (such as wind-blown dust) is unlikely to be present and clean with a damp cloth.



Deutsch



Wichtig

Diese Sicherheitstechnischen Daten sind ein Auszug aus der Betriebsanleitung und der Baumusterprüfungsbescheinigung des Produktes. Diese sind zwingend zu beachten.



Sira 07ATEX9180X: II 2D Ex tb IIIC T85°C Db;
Sira 07ATEX4179X: II 3G Ex nA nC IIC T4 Gc; Ex op is IIC T4 Gc;
IECEX SIR 12.0120X: Ex nA nC IIC T4 Gc; Ex op is IIC T4 Gc; Ex tb IIIC T85°C Db
Ambient temperature: $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
 $-40^{\circ}\text{C} \leq T_a \leq +45^{\circ}\text{C}$ mit beheiztem Glas (AC und SC)

Lasersicherheit

Der LM80 Füllstandssensor ist ein Klasse 1M Instrument während des normalen Betriebes. Doch bei der Installation und nach einem Neustart wird ein Laser 2 Minuten lang aktiviert, um die Positionierung des LM80 Füllstandssensores zu ermöglichen. Während diesen 2 Minuten ist der LM80 Füllstandssensor ein 3R Laserprodukt.

Im Standardbetrieb:



Ein Klasse 1M Laser (905nm) ist für alle Verwendungsbedingungen sicher, solange keine optischen Instrumente, wie Lupen oder Ferngläser verwendet werden.

Während der ersten 2 Minuten nach dem Einschalten:



Klasse 3R Laserstrahlungen (635 nm, 2 mW Ausgangsleistung) sind an der Unterseite des Gerätes vorhanden. Diese stammen von dem Positionierungslaser. Nicht in den Laserstrahl blicken.



Die Verwendung von anderen Bedienelementen oder Verfahren, als die, die hier angegebenen sind, kann zu einer gefährlichen Strahlenbelastung führen.

BESONDERE BEDINGUNGEN FÜR DIE SICHERE VERWENDUNG

Sofern nicht ausdrücklich genehmigt ist, darf keine Verbindung zum D-Anschluss (RS232) innerhalb des explosionsgefährdeten Bereiches erfolgen.

Geeignete isolierte Kabelschuhe oder Aderendhülsen müssen für externe Verbindungen zu den Reihenklemmen und zu den externen und internen Erdungsanschlüssen verwendet werden. Die Unterlegscheibe wird zwischen dem Gehäusekörper und der Lasche installiert, um jegliche Korrosion zu verhindern.

Nur Kabelverschraubungen, die durch eine zugelassene Stelle zertifiziert wurden und die sich für die Anwendung eignen, können zur Kabeleinführung in das Gehäuse eingesetzt werden.

Externer Überspannungsschutz von bis zu 40% (44 V) der maximalen Versorgungsspannung ($32 \text{ V} \times 1,4 \leq 44 \text{ V}$) muss in der Stromversorgung des Geräts aufgenommen werden.

Die Linsen dürfen nicht direktem Sonnenlicht ausgesetzt werden.

Um sicherzustellen, dass das elektrische Abteil nicht zu leicht zugänglich ist, muss der Deckel des Füllstandssensores mittels eines Werkzeuges, das in den Schlitz der Oberseite der Abdeckung eingefügt wird, festgezogen werden.

Unter bestimmten extremen Umständen können freiliegender Kunststoff (einschließlich der Pulverbeschichtung) und nicht geerdete Metallteile des Gehäuses eine zündfähige elektrostatische Ladung speichern. Deshalb sollte der Anwender/Installateur Vorsichtsmaßnahmen treffen, um den Aufbau von elektrostatischer Ladung zu vermeiden, z. B. einen Installationsort in der Anlage wählen, an dem Ladungserzeugung (wie wehender Staub) unwahrscheinlich ist und mit einem feuchten Tuch reinigen.



Français



Important

Cette information concernant la sécurité est un extrait du manuel d'utilisation, des attestations d'examen de type ainsi que les attestations d'examen CE de type du produit. Il est obligatoire de lire et de se conformer à ces documents.



Sira 07ATEX9180X: II 2D Ex tb IIIC T85°C Db;
Sira 07ATEX4179X: II 3G Ex nA nC IIC T4 Gc; Ex op is IIC T4 Gc;
IECEX SIR 12.0120X: Ex nA nC IIC T4 Gc; Ex op is IIC T4 Gc; Ex tb IIIC T85°C Db
Température: $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
 $-40^{\circ}\text{C} \leq T_a \leq +45^{\circ}$ avec lentille chauffante (AC et SC)

Avertissement du laser

Le capteur de niveau LM80 est un produit de classe 1M pendant le fonctionnement normal. Toutefois, lors de l'installation et après un redémarrage un laser de pointage est activé pendant 2 minutes pour permettre le positionnement du capteur de niveau LM80. Au cours de ces 2 minutes, le capteur à niveau LM80 est un produit laser de type 3R.

Pendant l'utilisation normale :



Un laser de classe 1M (905 nm) est sans danger dans toutes les conditions d'utilisation, sauf lorsqu'il passe à travers d'une optique grossissante comme un microscope et un télescope. Ne pas regarder directement avec des instruments optiques (jumelles ou télescope).

Pendant 2 minutes après le démarrage :



Des rayonnements laser de classe 3R (635nm, 2 mW de puissance de sortie) sont présents sur la face inférieure de l'instrument, provenant du laser de pointage. Ne pas regarder dans le faisceau laser



L'utilisation de procédures de commandes ou de réglages de la performance autres que celles spécifiées ici peuvent entraîner une exposition à des radiations dangereuses.

CONDITIONS SPECIALES POUR UNE UTILISATION SÉCURITAIRE

Sauf lorsque spécifiquement autorisé, aucun raccordement ne doit être fait sur le connecteur D (RS232) à l'intérieur de la zone dangereuse.

Des cosses isolées ou des férules doivent être utilisées pour les connexions externes aux borniers et aux mises à la terre internes et externes. La rondelle plate doit être installée entre le corps de l'enceinte et la cosse pour empêcher la corrosion.

Seuls les presse-étoupes qui ont été convenablement certifiés par un organisme notifié et qui sont appropriés pour l'application doivent être utilisés pour l'entrée du câble dans l'enceinte.

Une protection externe contre les transitoires jusqu'à 40% (44 V) de la tension d'alimentation maximale ($32\text{ V} \times 1,4 \leq 44\text{ V}$) doit être incorporée dans la ligne d'alimentation électrique de l'équipement.

Les lentilles ne doivent pas être exposées directement au soleil.

Pour s'assurer que le compartiment électrique ne soit pas trop facilement accessible, le couvercle du compartiment doit être serré fermement à l'aide d'un outil qui est inséré dans la fente de la partie supérieure du couvercle.

Dans certaines circonstances extrêmes, des plastiques exposés (y compris le revêtement de poudre) et les parties métalliques qui ne sont pas reliées à la terre peuvent stocker un niveau de charge électrostatique qui est potentiellement inflammable. Par conséquent, l'utilisateur/installateur doit mettre en œuvre les précautions nécessaires pour éviter l'accumulation de charges électrostatiques, par exemple, placer l'équipement où une génération de charge (tel que la poussière soufflée par le vent) est peu susceptible et nettoyer avec un chiffon humide.



1 **TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 07ATEX4179X** Issue: **5**

4 Equipment: **LM80 Laser Distance Measuring Instrument**

5 Applicant: **ABB Inc.**

6 Address: 585 Charest Boulevard East
Suite 300
Québec
Québec G1K 9H4
Canada

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

8 Sira Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements that relate to the design of Category 3 equipment, which is intended for use in potentially explosive atmospheres. These Essential Health and Safety Requirements are given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

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 of this certificate, has been assessed by reference to:

EN 60079-0:2012

EN 60079-15:2010

EN 60079-28:2007

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:



II 3G

Ex nA nC IIC T4 Gc

Ex op is IIC T4 Gc

Ta = -40°C to +60°C

(With heated lenses option (AC & SC): -40°C ≤ Ta ≤ +45°C)

Project Number 30104

A C Smith
Certification Manager

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SCHEDULE

TYPE EXAMINATION CERTIFICATE

Sira 07ATEX4179X

Issue 5

13 DESCRIPTION OF EQUIPMENT

The Laser Level and Distance measuring device model LM80series consists of a power source, electronics and optical elements housed in a cylindrical, powder coated, aluminium enclosure that consists of three parts: a screw-on cover (for the terminal compartment), the main body and the front plate. The enclosure has two compartments, the terminal compartment at the top and the electronics/optical compartment at the bottom.

The LM80 is powered from:

Input: 18 — 32 V DC (24 V typical) 0.4 A peak, 0.2 A continuous.

Input: 18V — 32 V DC (24 V typical) 0.52 A peak, 0.32 A continuous (with heated lenses option (AC & SC)).

Inside the terminal compartment, provision is made for a six way terminal strip for electrical connections (power, 4-20 mA current loop and contact relays) as well as a nine way "D" connector. This nine way "D" connector is used for initial setup and configuration of the device, not intended for permanent connection and may not be used in the during hazardous area is present.

A 1/2" NPT (or M20 x 1.5 mm) gland entry is provided for the electrical connection on the side of the main body into the terminal compartment.

The screw-on cover has a M80 x 20 mm internal threaded section, which fits onto the main body. A groove accommodated nitrile O-ring is provided on the main body for sealing the cover. This O-ring is under compression once lid is fit (screwed) onto the main body to ensure the effectiveness of the enclosure sealing.

Four, M5 x 30 stainless steel cap screws secure the front plate to the main body, the front face accommodates a nitrile O-ring to provide an effective seal with the main body. This O-ring is under compression once the front plate is fixed (by the four screws) onto the main body to ensure the effectiveness of the enclosure sealing. Two plastic lenses, approximate diameters 50 mm and 25 mm, are mounted in the front plate using nitrile O-rings. The lenses are kept in position with the O-rings mounted from the inside of the enclosure with separate optical mountings (lens tubes) and screws. Those O-ring are under compression once the optical mountings are fixed in place inside the main body to ensure the effectiveness of the enclosure sealing.

The purge point has no bearing on the explosion protection, as it does not enter into the enclosure or have any electronic components associated with it.

Product variations/options:

- Front plate material option
Description: The model LM80 is being produced with different front plate materials to accommodate different process interface needs. The different options are aluminium or stainless steel.

The mechanical design of the options in regard to sealing against the main body as well as the sealing of the lenses is identical.
- Screw-on cover and main body material option



SCHEDULE

TYPE EXAMINATION CERTIFICATE

Sira 07ATEX4179X
Issue 5

Description: The LM80 is being produced with different screw-on cover and main body materials to accommodate different mounting location needs. The different options are aluminium or stainless steel.

The mechanical design of the options in regard to sealing against the front plate and the screw on cover is identical.

- Front plates process interface option

Description: The model LM80 front plate is being produced in a Triclover version option to accommodate different process interface needs. The mechanical design of the option in regard to sealing against the main body as well as the sealing of the lenses is identical.

- Threading of cable gland option

Description: A ½" NPT or M20 x 1.5 mm gland entry is provided for the connection on the side of the main body into the terminal compartment. A suitably certified ½" NPT or M20 x 1.5mm cable gland being certified to either Ex e or Ex n and having an IP rating of at least IP64 shall be used.

Note: Default threads are ½" NPT. The threads provided will be mark into the installation instruction as request by IEC 60079-0:2011 Clause 16.2.

Those different threading designs are identical in regard to sealing against the main body

- Heated lenses option (for non-condensing optics) (AC & SC option)

Description: The model LM80 is being produced with heated lenses version option to accommodate different process needs. For this option, one heater is mounted on each lens from the inside of the instrument. Power consumption is 3 W total and come from the instrument itself. This option requires a different set of lens tube in order to accommodate the heater and wires.

This option is designed to have a small temperature difference between the systems in order to prevent water condensation on the lenses. The use of this option increases the current consumption by 0.15 A. The connector meets the 15 N pull test according to IEC/EN 60079-15. The mechanical design of the option in regard to sealing against the front plate as well as the sealing of the lenses is identical.

The use of the heated lenses option reduces the maximum ambient temperature to +45°C, instead of 60°C



SCHEDULE

TYPE EXAMINATION CERTIFICATE

**Sira 07ATEX4179X
Issue 5**

Equipment Type/model:

Application	Equipment Type/Model No	Description
Level measurement & Positioning	LM80.A	Aluminium Enclosure
	LM80.Axxxx	Aluminium Enclosure and accessories
	LM80.AC	Aluminium Enclosure with heated lenses
	LM80.ACxxxx	Aluminium Enclosure with accessories and heated lenses
	LM80.ACT804	Triclover Aluminium unit option with heated lenses
	LM80.S	Stainless Steel Enclosure
	LM80.Sxxxx	Stainless Steel Enclosure with accessories
	LM80.SC	Stainless Steel Enclosure with heated lenses
	LM80.SCxxxx	Stainless Steel Enclosure with accessories and heated lenses

Where xxx represent the different unit options without impacting on certification.

Variation 1, this variation introduced the following change:

- i. The introduction of a revised label material.

Variation 2, this variation introduced the following change:

- i. The company name and address was changed, previously it was Laser Measurement Pty Ltd, No 3 Stanford Park, 16th Road, Midrand, South Africa.

Variation 3 - This variation introduced the following changes:

- i. The recognition of minor mechanical changes to the interface of the main enclosure and base plate; these amendments involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.
- ii. Changes to certain component specifications were approved; these devices are non-heat dissipating components in normal operation and do not alter the original assessment.
- iii. An alternative base plate arrangement was introduced, this arrangement is detailed the LM80 Triclover version.
- iv. The Applicant's name and address was changed from K-TEK Instruments (Pty) Limited in South Africa to ABB (Canada), an alternative manufacturing location for ABB South Africa (Pty) Limited was also added.

Variation 4, this variation introduced the following changes:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents previously listed in section 9, EN 60079-0:2006, and EN 60079-15:2005, were replaced by those currently listed and EN 60079-28:2007 was also added, the markings in section 12 were updated accordingly and the special conditions for safe use were amended to recognise the requirements of the new standards.
- ii. The description was updated to reflect the above changes.
- iii. The South African address was removed from the certificate.

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SCHEDULE

TYPE EXAMINATION CERTIFICATE

**Sira 07ATEX4179X
Issue 5**

Variation 5 - This variation introduced the following changes:

- i. The introduction of a variation to the LM80 Laser Distance Measuring Instrument to allow for heated lenses as an option.
- ii. Minor mechanical changes to the enclosure.
- iii. The clarification of the permitted equipment type / model designations, the description is amended accordingly.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	06 August 2007	R52A16665A	The release of the prime certificate.
1	3 September 2007	R52A17185A	The introduction of Variation 1.
2	19 August 2009	R51A20527A	The introduction of Variation 2.
3	21 May 2012	R27265A/00	The introduction of Variation 3.
4	07 November 2012	R27266A/00	The introduction of Variation 4.
5	29 April 2013	R30104A/00	The introduction of Variation 5.

15 SPECIAL CONDITIONS FOR SAFE USE

- 15.1 No connection may be made to the "D" connector (RS232) inside the hazardous area, unless specifically approved.
- 15.2 Appropriate insulated lugs or ferrules shall be used for external connections to the terminal blocks and external and internal earth. The flat washer must be incorporated between the enclosure body and the lug to prevent corrosion from occurring.
- 15.3 Appropriately certified glands shall be used for cable entry into the enclosure.
- 15.4 External transient protection of up to 40% (44 V) of the maximum supply voltage ($32 \text{ V} \times 1.4 \leq 44 \text{ V}$) must be incorporated in the power supply line to the equipment.
- 15.5 The lenses shall not be exposed to direct sunlight.

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (EHSRs)

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



SCHEDULE

TYPE EXAMINATION CERTIFICATE

Sira 07ATEX4179X
Issue 5

17 CONDITIONS OF CERTIFICATION

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of Type Examination Certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.
- 17.3 An electric strength test of 1800V ac, shall be applied between the circuit and casing for at least 0.1 second (100ms) or 1500V ac, shall be applied between the circuit and casing for at least 60 second or the use of a d.c. test voltage is allowed as an alternative to the specified a.c. test voltage and shall be 170 % of the specified a.c. r.m.s test voltage for insulated windings as required by EN 60079-15:2010 Clause 23.2.2. No breakdown shall occur.
- 17.4 The resistance between the screw-on cover and front plate must be measured to ensure a resistance of less than 0.1 Ω .

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Sira Certification Service

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1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 07ATEX9180X** Issue: **5**

4 Equipment: **LM80 Laser Distance Measuring Instrument**

5 Applicant: **ABB Inc.**

6 Address: 585 Charest Boulevard East
Suite 300
Québec
Québec G1K 9H4
Canada

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, 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 EN 60079-31:2009

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC 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 2D
Ex tb IIIC T85°C Db (-40°C ≤ Tamb ≤ +60°C)
(With heated lenses option (AC & SC): -40°C ≤ Ta ≤ +45°C)

Project Number 30104

A C Smith
Certification Manager

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 07ATEX9180X

Issue 5

13 DESCRIPTION OF EQUIPMENT

The Laser Level and Distance measuring device model LM80series consists of a power source, electronics and optical elements housed in a cylindrical, powder coated, aluminium enclosure that consists of three parts: a screw-on cover (for the terminal compartment), the main body and the front plate. The enclosure has two compartments, the terminal compartment at the top and the electronics/optical compartment at the bottom.

The LM80 is powered from:

Input: 18 — 32 V DC (24 V typical) 0.4 A peak, 0.2 A continuous.

Input: 18V — 32 V DC (24 V typical) 0.52 A peak, 0.32 A continuous (with heated lenses option (AC & SC)).

Inside the terminal compartment, provision is made for a six way terminal strip for electrical connections (power, 4-20 mA current loop and contact relays) as well as a nine way "D" connector. This nine way "D" connector is used for initial setup and configuration of the device, not intended for permanent connection and may not be used in the during hazardous area is present.

A 1/2" NPT (or M20 x 1.5 mm) gland entry is provided for the electrical connection on the side of the main body into the terminal compartment.

The screw-on cover has a M80 x 20 mm internal threaded section, which fits onto the main body. A groove accommodated nitrile O-ring is provided on the main body for sealing the cover. This O-ring is under compression once lid is fit (screwed) onto the main body to ensure the effectiveness of the enclosure sealing.

Four, M5 x 30 stainless steel cap screws secure the front plate to the main body, the front face accommodates a nitrile O-ring to provide an effective seal with the main body. This O-ring is under compression once the front plate is fixed (by the four screws) onto the main body to ensure the effectiveness of the enclosure sealing. Two plastic lenses, approximate diameters 50 mm and 25 mm, are mounted in the front plate using nitrile O-rings. The lenses are kept in position with the O-rings mounted from the inside of the enclosure with separate optical mountings (lens tubes) and screws. Those O-ring are under compression once the optical mountings are fixed in place inside the main body to ensure the effectiveness of the enclosure sealing.

The purge point has no bearing on the explosion protection, as it does not enter into the enclosure or have any electronic components associated with it.

Product variations/options:

- Front plate material option

Description: The model LM80 is being produced with different front plate materials to accommodate different process interface needs. The different options are aluminium or stainless steel.

The mechanical design of the options in regard to sealing against the main body as well as the sealing of the lenses is identical.

- Screw-on cover and main body material option

Description: The LM80 is being produced with different screw-on cover and main body materials to accommodate different mounting location needs. The different options are aluminium or stainless steel.

The mechanical design of the options in regard to sealing against the front plate and the screw on cover is identical.

- Front plates process interface option

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Sira Certification Service

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

**Sira 07ATEX9180X
Issue 5**

Description: The model LM80 front plate is being produced in a Triclover version option to accommodate different process interface needs. The mechanical design of the option in regard to sealing against the main body as well as the sealing of the lenses is identical.

- Threading of cable gland option

Description: A 1/2" NPT or M20 x 1.5 mm gland entry is provided for the connection on the side of the main body into the terminal compartment. A suitably certified 1/2" NPT or M20 x 1.5 mm cable gland being certified to either Ex e or Ex n and having an IP rating of at least IP64 shall be used. Note: Default threads are 1/2" NPT. The threads provided will be marked into the installation instruction as requested by IEC 60079-0:2011 Clause 16.2.

Those different threading designs are identical in regard to sealing against the main body

- Heated lenses option (for non-condensing optics) (AC & SC option)

Description: The model LM80 is being produced with heated lenses version option to accommodate different process needs. For this option, one heater is mounted on each lens from the inside of the instrument. Power consumption is 3 W total and comes from the instrument itself. This option requires a different set of lens tube in order to accommodate the heater and wires.

This option is designed to have a small temperature difference between the systems in order to prevent water condensation on the lenses. The use of this option increases the current consumption by 0.15 A. The connector meets the 15 N pull test according to IEC/EN 60079-15. The mechanical design of the option in regard to sealing against the front plate as well as the sealing of the lenses is identical.

The use of the heated lenses option reduces the maximum ambient temperature to + 45°C, instead of 60°C

Equipment Type/model:

Application	Equipment Type/Model No	Description
Level measurement & Positioning	LM80.A	Aluminium Enclosure
	LM80.Axxxx	Aluminium Enclosure and accessories
	LM80.AC	Aluminium Enclosure with heated lenses
	LM80.ACxxxx	Aluminium Enclosure with accessories and heated lenses
	LM80.ACT804	Triclover Aluminium unit option with heated lenses
	LM80.S	Stainless Steel Enclosure
	LM80.Sxxxx	Stainless Steel Enclosure with accessories
	LM80.SC	Stainless Steel Enclosure with heated lenses
	LM80.SCxxxx	Stainless Steel Enclosure with accessories and heated lenses

Where xxxx represent the different unit options without impacting on certification

Variation 1, this variation introduced the following change:

- The introduction of a revised label material.



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Variation 2, this variation introduced the following change:

- i. The company name and address was changed, it was previously Laser Measurement Pty Ltd, No 3 Stanford Park, 16th Road, Midrand, South Africa.

Variation 3 - This variation introduced the following changes:

- i. The recognition of minor mechanical changes to the interface of the main enclosure and base plate; these amendments involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.
- ii. Changes to certain component specifications were approved; these devices are non-heat dissipating components in normal operation and do not alter the original assessment.
- iii. An alternative base plate arrangement was introduced, this arrangement is detailed the LM80 Triclover version.
- iv. The Applicant's name and address was changed from K-TEK Instruments (Pty) Limited in South Africa to ABB (Canada), an alternative manufacturing location for ABB South Africa (Pty) Limited was also added.

Variation 4, this variation introduced the following change:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents previously listed in section 9, EN 61241-0:2006, and EN 61241-1:2004, were replaced by those currently listed, the markings in section 12 were updated accordingly. The description was amended to reflect the new standards.
- ii. The South African address was removed from the certificate.

Variation 5 - This variation introduced the following changes:

- i. The introduction of a variation to the LM80 Laser Distance Measuring Instrument to allow for heated lenses as an option.
- ii. Minor mechanical changes to the enclosure.
- iii. The clarification of the permitted equipment type / model designations, the description is amended accordingly.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	06 August 2007	R52A16665A	The release of the prime certificate.
1	3 September 2007	R52A17185A	The introduction of Variation 1.
2	19 August 2009	R51A20527A	The introduction of Variation 2.
3	21 May 2012	R27265A/00	The introduction of Variation 3.
4	07 November 2012	R27266A/00	The introduction of Variation 4.
5	29 April 2013	R30104A/00	The introduction of Variation 5.

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Issue 5**

- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
- 15.1 Unless specifically approved, no connection shall be made to the "D" connector (RS232) inside the hazardous area.
- 15.2 Appropriate insulated lugs or ferrules shall be used for external connections to the terminal blocks and external and internal earth. The flat washer shall be incorporated between the enclosure body and the lug to prevent corrosion from occurring.
- 15.3 Only glands that have been suitably certified by a notified body and are appropriate for the application shall be used for cable entry into the enclosure.
- 15.4 External transient protection of up to 40% (44 V) of the maximum supply voltage ($32\text{ V} \times 1.4 \leq 44\text{ V}$) shall be incorporated in the power supply line to the equipment.
- 15.5 The lenses shall not be exposed to direct sunlight.
- 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.
- 17 **CONDITIONS OF CERTIFICATION**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.
- 17.3 The manufacturer shall substitute, on the approved label affixed to the apparatus, the new name and address for the old name and address.

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England

Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: info@siracertification.com
Web: www.siracertification.com



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx SIR 12.0120X issue No.:1

Status: **Current**

Certificate history:
Issue No. 1 (2013-5-1)
Issue No. 0 (2012-11-21)

Date of Issue: **2013-05-01** Page 1 of 4

Applicant: **ABB Inc.**
585 Charest Boulevard East
Suite 300
Québec,
Québec G1K 9H4
Canada

Electrical Apparatus: **LM80 Laser Distance Measuring Instrument**
Optional accessory:

Type of Protection: **Type nA, Type nC, op is and Dust Protection by Enclosure**

Marking: Ex nA nC IIC T4 Gc
Ex op is IIC T4 Gc
Ex tb IIC T85°C Db
Ta= (-40°C≤Ta≤+60°C)
(With heated lenses option (AC & SC): -40°C≤Ta≤+45°C)

Approved for issue on behalf of the IECEx Certification Body: P J Walsh

Position: Technical Advisor

Signature:
(for printed version)

Date:

2013-05-01

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:
SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira
CERTIFICATION



IECEx Certificate of Conformity

Certificate No.: IECEx SIR 12.0120X

Date of Issue: 2013-05-01

Issue No.: 1

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Manufacturer: **ABB Inc.**
585 Charest Boulevard East
Suite 300
Québec,
Québec G1K 9H4
Canada

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-15 : 2010 Edition: 4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-28 : 2006-08 Edition: 1	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2008 Edition: 1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[GB/SIR/ExTR12.0287/00](#)

[GB/SIR/ExTR13.0109/00](#)

Quality Assessment Report:

[NL/DEK/QAR12.0049/00](#)

[NL/DEK/QAR12.0049/01](#)



IECEx Certificate of Conformity

Certificate No.: IECEx SIR 12.0120X

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Issue No.: 1

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Laser Level and Distance measuring device model LM80series consists of a power source, electronics and optical elements housed in a cylindrical, powder coated, aluminium enclosure that consists of three parts: a screw-on cover (for the terminal compartment), the main body and the front plate. The enclosure has two compartments, the terminal compartment at the top and the electronics/optical compartment at the bottom.

Refer to the Annexe for the full description.

Conditions of manufacture

The Manufacturer shall comply with the following:

1. The resistance between the screw-on cover and front plate must be measured to ensure a resistance of less than 0.1Ω .
2. An electric strength test of 1800V ac, shall be applied between the circuit and casing for at least 0.1 second (100ms) or 1500V ac, shall be applied between the circuit and casing for at least 60 second or the use of a d.c. test voltage is allowed as an alternative to the specified a.c. test voltage and shall be 170 % of the specified a.c. r.m.s test voltage for insulated windings as required by IEC 60079-15:2010 Clause 23.2.2. No breakdown shall occur.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. No connection may be made to the D connector (RS232) inside the hazardous area, unless specifically approved.
2. Appropriate insulated lugs or ferrules shall be used for external connections to the terminal blocks and external and internal earth. The flat washer must be incorporated between the enclosure body and the lug to prevent corrosion from occurring.
3. Appropriately certified glands shall be used for cable entry into the enclosure.
4. External transient protection of up to 40% (44V) of the maximum supply voltage ($32V \times 1.4 \leq 44V$) must be incorporated in the power supply line to the equipment.
5. The lenses shall not be subjected to direct sunlight.



IECEx Certificate of Conformity

Certificate No.: IECEx SIR 12.0120X

Date of Issue: 2013-05-01

Issue No.: 1

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1 – this Issue introduced the following changes:	
1.	The introduction of a variation to the LM80 Laser Distance Measuring Instrument to allow for heated lenses as an option.
2.	Minor mechanical changes to the enclosure.
3.	The clarification of the permitted equipment type / model designations, the description is amended accordingly.