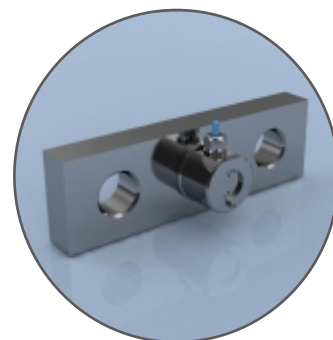
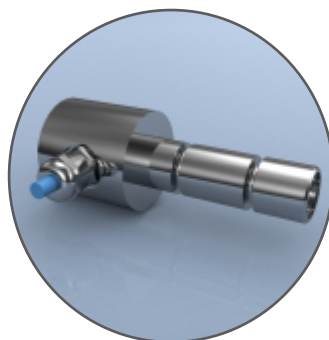




## **Operator Instructions for ATEX/IECEX Explosion Proof Load Cells & Enclosures**



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## Introduction

This manual refers to LCM Systems range of ATEX and IECEx Explosion Proof certificated load cells and enclosures. This and any reference documents should be read and understood before installing or operating any LCM systems ATEX/IECEx products. All LCM Systems ATEX/IECEx load cells will be accompanied by a general arrangement drawing or datasheet, calibration certificate, declaration of conformity and a copy of LCM systems ATEX/IECEx certificates as a minimum. All LCM Systems ATEX/IECEx enclosures will be accompanied with the same documentation as stated above for load cells minus a calibration certificate.

All LCM Systems ATEX/IECEx Ex d products are designed and manufactured in accordance with Directive 2014/34/EU and the following standards: EN 60079-0, EN 60079-1 and EN 60079-31:2013. All harmonized standards are in accordance with the current versions, and certificates are updated as required.

## Product Description

Load cell or enclosure - Group II, Category 2, Zone 1 Environment

Model numbers - CPA (compression load cell), WAS (through hole load cell), TCA (tension & compression load cell) TLL and TOG (load links), LMP, LPB and LPC (load pins), SHK-B and SHK-D (load shackles), AEN (enclosure) and LCMXXXX (custom design).

All LCM Systems load cell designs are allocated a unique LCM number/model number (i.e. LCMXXXX, where X= 0 to 9, for example LCM5203) or a model number (i.e. CPA-2-D-ATEX-D). LCM Systems send a drawing to the customer for approval prior to the manufacture of any custom designed hazardous area load cell.

### Supplier:

LCM Systems Ltd  
Unit 15, Newport Business Park,  
Barry Way, Newport  
Isle of Wight PO30 5GY  
United Kingdom

### Service: (REPAIR, SUPPORT)

LCM Systems Ltd (address as above)  
Tel: +44(0)1983 249264  
Fax: +44(0)1983 249266  
e-mail: sales@lcmsystems.com

## Markings

The label will be affixed to the load cell or enclosure as shown in the general arrangement drawing supplied. The label will be as to drawing LCM4255/9 and will include information as show below:

Name and Address of supplier:	LCM Systems Ltd Unit 15, Newport Business Park, Barry Way, Newport, Isle of Wight, PO30 5GY, United Kingdom	
Description of the product:	Load cell	
Serial Number:	(unique number to individual item)	
Hazardous area Markings:	ATEX marking:	Ex II 2GD
	Explosion classification:	Ex d IIC T6 Gb Ex tb IIIC T85°C Db IP6X



The following certification numbers cover models: load pin - 4255, load link - 4256 and CPA load cell - 4257.

**TRAC14ATEX0023X and IECEx TRC 14.0011X**

**17. “Special Conditions of Safe Use” for Ex Equipment**

1. The M3 fasteners used to secure the end caps shall be high tensile stainless steel fasteners with a minimum grade of A2-70 or A4-70.
2. The M6 fasteners used internally to secure the link load cell shall be stainless steel grade A2 or A4.
3. No modifications shall be made to the flamepaths of the equipment without consultation with the manufacturer.

**19. Additional Information**

**“Routine tests,” if any:**

1. Each CPA compression load cell to be subjected to a routine over pressure test of at least 13.98 Bar.

**“Special conditions for manufacture”:**

1. All equipment must be supplied either with a suitable ATEX certified bulkhead connector or cable and cable entry device fitted.

**Other information, if any:**

None.

The following certification numbers cover model: enclosure - 4290.

**TRAC14ATEX0047X and IECEx TRC 14.0018X**

**17. “Special Conditions of Safe Use” for Ex Equipment**

1. No modifications shall be made to the flamepaths of the equipment without consultation with the manufacturer.

**19. Additional Information**

**“Routine tests,” if any:**

None.

**“Special conditions for manufacture”:**

1. All equipment must be supplied either with a suitable ATEX certified bulkhead connector or cable and cable entry device fitted.

**Other information, if any:**

None.

## Manufacture

LCM Systems carries out the design and manufacture of ATEX/IECEx load cells and performs full testing and inspection of each item in accordance with IEC 80079-34 QMS system.

## Installation

All LCM Systems ATEX/IECEx certificated products should be installed as shown on the supplied general arrangement drawing. Load direction will be marked on each load cell and clearly shown on the drawing. All cable entry/exit points are clearly labelled with the thread type and size on the load cell or enclosure and the drawing. All wiring or connector pin details are shown on the calibration certificate and where applicable on the load cell or enclosure drawing. All earthing points must have a cross sectional area at least equal to the cross sectional area of the phase conductor.

LCM Systems do not supply any detailed installation instructions for their equipment due to the equipment being designed as to customer details or the equipment is for portable usage.

If LCM System equipment is supplied with additional hazardous area products (displays etc.) it is not the responsibility of LCM Systems to verify suitability or provide additional installation details for these products. All additional equipment not covered by LCM systems certification must be installed in accordance with the latest issues and relevant parts of EN60079 specifications or the equivalent IEC specification. Section 'Installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining applications or Explosive processing and manufacture)' must be in accordance with:

EN60079-14: (current version)	Electrical installation in hazardous areas (other than mines)
EN 60079-10-1: (current version)	Classification of Hazardous Areas
EN 60079-10-2: (current version)	

## Checks prior to installation

To ensure safe and problem free installation of the load cell, they must be installed and placed into operation by a competent person who is certified to install hazardous area products.

Before removing the load cell from its packaging, inspect it for any signs of damage and immediately inform the supplier if any damage is found. Unpack the load cell carefully taking care not to damage the cable, cable gland or connector. Please ensure that calibration and instruction data is not inadvertently discarded with packing material.

- Inspect the load cell for signs of damage including any marks which may obscure the information on the labels.
- Check the ambient temperature of the environment the load cell will be operating in does not exceed the certified -20°C to + 55°C range.
- Check that the load cell is suitable for the environment with regards to IP rating (ingress protection) and corrosion resistance (high chloride environments).
- Verify that the load cell certificate is in accordance with the hazardous area assessment as to EN60079-10-1 (current issue) and EN60079-10-2 (current issue).
- If the load cell is fitted with a cable and gland, check that the gland has not come loose during transit or storage and that the cable is still securely held in place.
- If the load cell is fitted with a connector, check the connector on the load cell has not come loose during transit or storage. Check the plug and socket for any damage and check that the connector mates correctly.
- For all load cells check the cable for damage, such as cuts or abrasions, especially where the cable enters the gland or connector assembly.



### Checks after installation

With the load cell installed, check the output is not negative and that when load is applied to the load cell the output increases. If this is not the case it may indicate the load cell is incorrectly mounted/installed or subject to miss-alignment forces. Use the calibration certificate for reference of correct output at certain loads.

### Warnings/Hazards

Load cells are highly stressed devices and commonly have safety factors between three and five times the rated capacity under static conditions. Fatigue applications and environmental factors can contribute to reducing this margin.

The user should determine media effects on the exposed load cell materials. Where a corrosive environment is present load cells can often be manufactured from corrosion resistant materials or alternatively, isolation barriers can be employed between the corrosive environment and the load cell. The following points should be followed to avoid potentially hazardous situations:

- ⦿ During installation and maintenance appropriate PPE must be used to avoid the potential of a spark caused by electrostatic discharge.
- ⦿ The load cell should **never** be opened when an explosive atmosphere may be present!
- ⦿ Load cells are sealed units which should not be dismantled. Removing the end cap of a load pin is permitted but only to adjust the span and zero when performing a calibration. This should only be done by a competent person in a nonexplosive atmosphere.
- ⦿ The accuracy of the system is dependent upon correct installation of the load cell.
- ⦿ Load cells must not be subjected to shock loads, such as using a hammer to force the load cell into position.
- ⦿ The load cell should never be placed in a potential explosive environment that the product is not suitably certified for (ATEX and IECEx only).
- ⦿ Load cell material and any applied treatments (heat treatments etc.) should be verified as suitable for the environment before the load pin is installed. Some heat treatments which LCM use are not suitable for marine environments/high chloride (for example, 17-4PH heat treated to H900).
- ⦿ All details shown on the general arrangement drawing and ATEX/IECEx certificate should never be exceeded for any LCM Systems products.
- ⦿ The Ingress protection rating (IP) should never be exceeded see table A & B below for details.

#### A. Solid particle protection

Level	Object size protected against	Solid Particle Ingress Protection (First Digit of Code)
0	-	No protection against contact and ingress of objects
1	>50 mm	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part
2	>12.5 mm	Fingers or similar objects
3	>2.5 mm	Tools, thick wires etc.
4	> 1mm	Most wires, screws etc.

5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the safe operation of the equipment; complete protection against contact
6	Dust tight	No ingress of dust; complete protection against contact

## B. Liquid ingress protection

Level	Protected Against	Liquid Ingress Protection (Second Digit of Code)
0	Not protected	Not necessary
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position
3	Spraying water	Water falling as a vertical spray at any angle up to 60° from the vertical shall have no harmful effect
4	Splashing water	Water splashing against the enclosure from any direction shall have no harmful effect
5	Water jets	Water projected by a nozzle (6.3mm) against enclosure from any direction shall have no harmful effects
6	Powerful water jets	Water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects
7	Immersion up to 1 mtr	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 metre of submersion)
8	Immersion beyond 1 mtr	The equipment is suitable for continuous immersion in water under condition which shall be specified by the manufacturer

## Repairs

Only LCM Systems personnel are authorised to carry out a repair or service to their products. All repairs or services will be carried out in the premises of LCM Systems. The unit is not serviceable out of LCM Systems premises.

## Assembling and Dismantling

To be carried out by LCM System Ltd personnel only. Third party attempts will render the certification for the unit invalid. Enclosures can be assembled and dismantled by third party engineers outside of a hazardous area only. All seals and fixings must be fitted correctly in accordance with the general arrangement drawing.

## Emergency repairs

The unit must be returned to LCM Systems Ltd premises for servicing and prompt return to the customer, should the item be deemed suitable for return.

## Adjustments/calibration of load cells with internal amplifiers

For calibrating the unit, it is recommended that this is carried out either at LCM Systems premises or by a fully competent Instrument Engineer. Please note that no internal adjustments are required or permitted for mV/V load cells. Any interference will render the unit invalid as a certified product and require it to be returned to LCM Systems for analysis and/or re-adjustment. Load cells fitted with an internal amplifier can





be accessed for calibration purposes in a safe area by a competent calibration engineer.

**WARNING: The load cell or enclosure should NEVER be opened when an explosive atmosphere may be present. Any repairs or adjustments must only ever be carried out in a non-explosive environment.**

## Calibration

All LCM Systems load pins are calibrated in UKAS traceable test machines to best simulate normal loading conditions.

LCM Systems endeavour to match the loading conditions that would be experienced in service, but it is not possible to totally simulate the on-site structure for every load cell manufactured. It is for this reason that for optimum system accuracy, a calibration in the final assembly is recommended. On-site calibration should be performed in accordance with the manual for the instrument the load pin is connected to.

As all load pins are subject to deterioration due to use, mistreatment, drift or ageing, calibration at regular intervals should to be carried out to establish how the load cell is currently performing. Load pins can also become less reliable due to electrical influence, mechanical effects and instrumentation faults. Unless calibrations are routinely carried out, load measurement readings can become less accurate, with the user potentially being unaware that they are using compromised data.

Annual calibration is recommended as the standard interval to ensure that measurements are always as accurate as possible, which is particularly important if being used for safety critical applications. However, more frequently than one year may be advisable if the load pin is being used in a particularly harsh environment or arduous operational conditions (high vibration levels, excessive cyclic loading).

## Storage

When not in use load cells should be stored undercover in a dry environment (max humidity 95% non-condensing) at storage temperature of -20°C to +70°C.

**IF IN DOUBT ABOUT ANY ASPECT OF THE SELECTION,  
INSTALLATION OR USE OF A HAZARDOUS AREA LOAD CELL,  
CONTACT LCM SYSTEMS FOR ADVICE BEFORE INSTALLING.**





# 1 EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres – Directive 94/9/EC – Annex III

3 EC Type Examination Certificate No.: **TRAC14ATEX0023X**

4 Equipment: **42xx Series Strain gauge enclosures, 4255, 4256 & 4257**

5 Manufacturer: **LCM Systems Ltd.,**

6 Address: **Unit 15, Newport Business Park, Barry Way, Newport, Isle of Wight, PO30 5GY, United Kingdom.**

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

8 TRaC Global Ltd, Notified Body number 0891 in accordance with Article 9 of the Council 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 or protective system intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report **TRA-023079-33-00A**.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in section 18 of the schedule to this certificate, has been assured by compliance with:

**EN 60079-0:2012**

**EN60079-1:2007**

**EN60079-31:2009**

10 If the sign "X" is placed after the certificate number then this indicates that the equipment or protective system is subject to special conditions of 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 in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of this equipment or protective system shall include the following:

**II 2 G Ex d IIC T6 Gb**

**II 2 D Ex tb IIIC T85°C Db IP6x T<sub>amb</sub> -20°C to +55°C**

This certificate and its schedules may only be reproduced in its entirety and without change. This certificate is issued in accordance with the TRaC Ex Certification Scheme.

*S.P. Winsor*

S P Winsor, Certification Team Leader

Issue date: 2014-10-03

Copy No.: 1e

Page 1 of 6

Form RF355 is16A

## NORTH WEST

Unit 1, Pendle Place, Skelmersdale, West Lancashire, WN8 9PN UK.  
T +44 (0)1695 556666 F +44 (0)1695 557077 E test@tracglobal.com  
www.tracglobal.com



### 13 SCHEDULE TO EC TYPE EXAMINATION CERTIFICATE

#### 14 TRAC14ATEX0023X

#### 15 General description of equipment or protective system included within the scope of this certificate

The 42xx series is a range of flameproof EPL Gb and dust ignition protected EPL Db strain gauge load measuring device enclosures which are constructed from either 304 or 316 stainless steel dependent upon the application and utilise, cylindrical, threaded and welded flameproof joints. The range comprises of 4255 Load Measuring Pin, 4256 Link Load Cell and 4257 CPA Compression Load Cell.

All enclosures are supplied either with a suitably ATEX certified bulkhead connector or a cable and cable entry device already fitted.

Electrical Rating 0-27Vdc.

##### 4255 Load Measuring Pin

The load pin is cylindrical in construction and varies in both internal and external dimensions dependent upon the application but has an internal volume ranging between 5 and 500cm<sup>3</sup>. Fitted at the load measuring end of the enclosure is either a M16, M22, M30 or M50 threaded end cap. At the opposite end is an electronics enclosure in which the signal conditioning board and connections are mounted. This end is fitted either with an M16, M22, M30 or M50 threaded end cap or alternatively a 16mm or 30mm non-threaded end cap which forms a cylindrical joint with the enclosure. The non-threaded end cap is secured by four M3 x 10 cap head screws. The electronics end cap is tapped with either an M12, M16, M20 or M25 thread to allow the fitment of a cable gland or approved flameproof bulkhead connector.

##### 4256 Link Load Cell

The link load cell is a three part construction and varies in both internal and external dimensions dependent upon the application but has an internal volume ranging between 40 and 500cm<sup>3</sup>. The three main parts are, the amplifier cap, the load cell element and the plug cap. The amplifier cap and plug cap form a cylindrical flamepath with the load cell element and secured together with M6 pan head screws fitted within the enclosure.

The end of the plug cap is fitted with an M50 threaded end cap which allows access to the M6 pan head screws. At the amplifier cap end, in which the signal conditioning board and connections are mounted, is fitted either with an M16, M22, M30 or M50 threaded end cap or alternatively a 16mm or 30mm non-threaded end cap which forms a cylindrical joint with the enclosure. The non-threaded end cap is secured by four M3 x 10 cap head screws. The amplifier end cap is tapped with either an M12, M16, M20 or M25 thread to allow the fitment of a cable gland or approved flameproof bulkhead connector.

##### 4257 CPA Compression Load Cell

The CPA compression load cell consists of three main parts, the first of which is the load cell element which fits inside a cylindrical cover which is closed at both ends with a welded joint. Fitted on the side of the cover is the amplifier boss which is again cylindrical in construction. The amplifier boss can house the signal conditioning board and connections mounted within it and has a threaded end cap which has either an M16, M22, M30 or M50 thread. The side wall of the amplifier boss is threaded to allow the fitting of a cable gland or approved flameproof bulkhead connector.

*A list of controlled Manufacturer's Documents is given in Appendix A to this schedule*

16 Test report No.: TRA-023079-33-00A.

17 "Special Conditions of Safe Use" for Ex Equipment:

1. The M3 fasteners used to secure the end caps shall be high tensile stainless steel fasteners with a minimum grade of A2-70 or A4-70
2. The M6 fasteners used internally to secure the link load cell shall be stainless steel grade A2 or A4.
3. No modifications shall be made to the flamepaths of the equipment without consultation with the manufacturer.

## CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0023X

### 18 Essential health and safety requirements

Covered by application of the standards listed in section 9 of this certificate and the assessment conducted in the test report listed in section 16 of this certificate.

### 19 Additional information

"Routine tests", if any:

1. Each CPA Compression load cell to be subjected to a routine over pressure test of at least 13.98 Bar.

"Special conditions for manufacture":

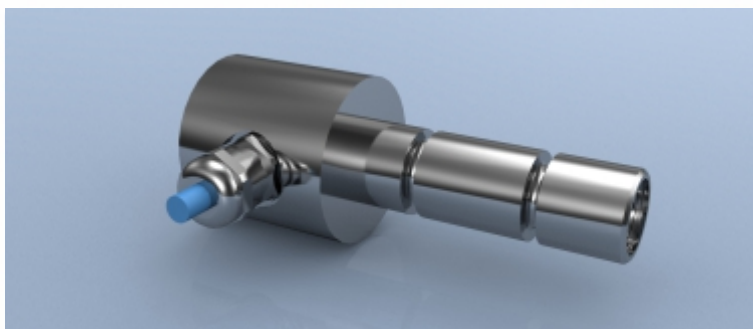
1. All equipment must be supplied either with suitable ATEX certified bulkhead connectors or cables and cable entry devices fitted.

Other information, if any:

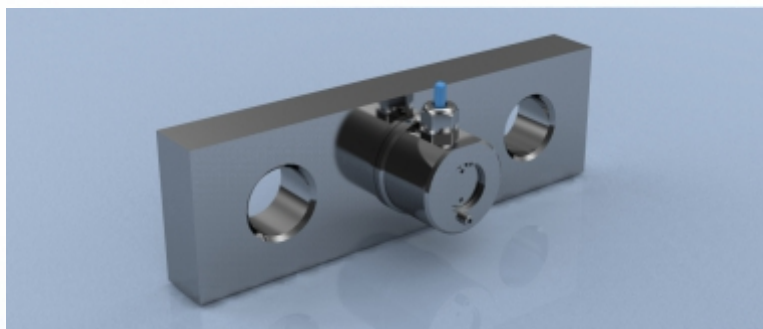
None.

### Photographs

#### 4255 Load Measuring Pin



#### 4256 Link Load Cell



CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0023X

4257 CPA Compression Load Cell



Details of markings

LCM SYSTEMS LTD  
Unit 15, Newport Business Park, Newport, Isle of Wight, PO30 5GY, UK  
Description - XXXXXXXX

Date - XXXX S/N - XXXXXXXX  
Voltage - 0 to 27 VDC  
TRAC14ATEX0023X

IECEX TRC 14.0011X

Ex d IIC T6 Gb  
Ex tb IIIC T85°C Db IP6x

II 2 GD

Tamb-20°C to +55°C

CE XXXX

**WARNING! -** DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

NOTE – Description completed with one of the following types and drawing numbers

LOAD CELL TYPE	DRAWING No.
LOAD PIN	4255
LINK LOAD CELL	4256
CPA LOAD CELL	4257



## CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0023X

### Details of variations to this certificate

- None

### Notes to CE marking

In respect of CE Marking, TRaC Global Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

### Notes to this certificate

TRaC certification reference: **TRA-023079-32-00**.

Throughout this certificate, the date format yyyy-mm-dd (year-month-day) is used.

## CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0023X

## APPENDIX A - LIST OF CONTROLLED MANUFACTURER'S DOCUMENTS

Title:	Drawing No.:	Rev. Level:	Date:
LOAD PIN	LCM4255_SHT 1 of 2	A	2014-08-01
LOAD PIN	LCM4255_SHT 2 of 2	A	2014-08-01
Link Load Cell	LCM4256_SHT 1 of 2	A	2014-08-01
Link Load Cell	LCM4256_SHT 2 of 2	A	2014-08-01
CPA Load Cell	LCM4257	A	2014-08-01
M50 END CAP	4255/1	A	2014-08-01
M30 END CAP	4255/2	A	2014-08-01
M22 END CAP	4255/3	A	2014-08-01
M16 END CAP	4255/4	A	2014-08-01
16mm End Cap	4255/5	A	2014-08-01
30mm End Cap	4255/6	A	2014-08-01
30mm End Cap	4255/7	A	2014-08-01
30mm End Cap	4255/8	A	2014-08-01
ATEX & IECEx Label	4255/9	A	2014-07-30
Link Plug Cap Ø45	4256/1	A	2014-08-01
Link Amp Cap Ø45	4256/2	A	2014-08-01
Link Amp Cap Ø45	4256/3	A	2014-08-01
Link Plug Cap Ø57	4256/4	A	2014-08-01
Link Amp Cap Ø57	4256/5	A	2014-08-01
Link Amp Cap Ø57	4256/6	A	2014-08-01
CPA Amp Cap	4257/1	A	2014-08-01
Instruction Manual (5 sheets)	QMS REC 6	01	2014-07-24



# 1 EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres –  
Directive 94/9/EC – Annex III

3 EC Type Examination Certificate No.: **TRAC14ATEX0047X**

4 Equipment: **Junction Box Enclosure, 4290**

5 Manufacturer: **LCM Systems Ltd.,**

6 Address: **Unit 15, Newport Business Park, Barry Way, Newport, Isle of Wight,  
PO30 5GY, United Kingdom.**

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

8 TRaC Global Ltd, Notified Body number 0891 in accordance with Article 9 of the Council 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 or protective system intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report **TRA-023079-33-00A**.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in section 18 of the schedule to this certificate, has been assured by compliance with:

**EN 60079-0:2012**

**EN60079-1:2007**

**EN60079-31:2009**

10 If the sign "X" is placed after the certificate number then this indicates that the equipment or protective system is subject to special conditions of 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 in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of this equipment or protective system shall include the following:

**II 2 G Ex d IIC T6 Gb**

**II 2 D Ex tb IIIC T85°C Db IP6x T<sub>amb</sub> -20°C to +55°C**

This certificate and its schedules may only be reproduced in its entirety and without change. This certificate is issued in accordance with the TRaC Ex Certification Scheme.

*S.P. Winsor*

S P Winsor, Certification Team Leader

Issue date: 2014-10-03

Copy No.: 1e

Page 1 of 4

Form RF355 is16A

## NORTH WEST

Unit 1, Pendle Place, Skelmersdale, West Lancashire, WN8 9PN UK.

T +44 (0)1695 556666 F +44 (0)1695 557077 E test@tracglobal.com

www.tracglobal.com





13 **SCHEDULE TO EC TYPE EXAMINATION CERTIFICATE**

14 **TRAC14ATEX0047X**

15 **General description of equipment or protective system included within the scope of this certificate**

The 4290 flameproof enclosure protection level EPL Gb and dust ignition protected EPL Db is cylindrical in construction from either 304 or 316 stainless steel or stronger grade dependent upon the application and varies in both internal and external dimensions dependent upon the application but has an internal volume ranging between 5 and 500cm<sup>3</sup>. The enclosure is used either as a junction box or to house signal conditioning circuitry. The enclosure consists of two main parts, the enclosure body and the lid which forms a cylindrical flamepath with the body and is secured by four M6 x 16 cap head screws. The sides of the enclosure are machined flat at 0°, 90°, 180° and 270° and are Mxx threaded to allow the fitment of a suitably ATEX certified bulkhead connector or a cable and cable entry supplied with the equipment.

Electrical Rating 0-27Vdc.

*A list of controlled Manufacturer's Documents is given in Appendix A to this schedule*

16 **Test report No.:** **TRA-023079-33-00A.**

17 **"Special Conditions of Safe Use" for Ex Equipment:**

1. No modifications shall be made to the flamepaths of the equipment without consultation with the manufacturer.

18 **Essential health and safety requirements**

Covered by application of the standards listed in section 9 of this certificate and the assessment conducted in the test report listed in section 16 of this certificate.

19 **Additional information**

"Routine tests", if any:

None.

"Special conditions for manufacture":

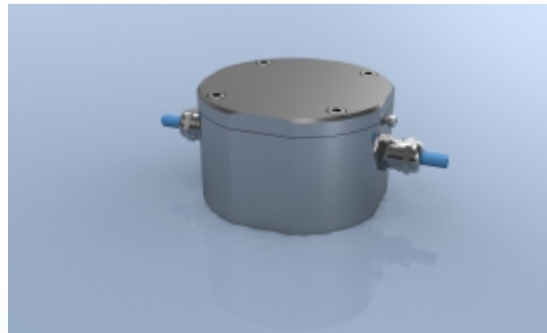
1. All equipment must be supplied either with suitably ATEX certified bulkhead connectors or cables and cable entry devices fitted.

Other information, if any:

None.

**Photographs**

**4290 Enclosure**





TRAC14ATEX0047X, 2014-10-03

Page 2 of 4

# CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0047X

## Details of markings

LCM SYSTEMS LTD		Date - XXXX	S/N - XXXXXXXX
Unit 15, Newport Business Park, Newport, Isle of Wight, PO30 5GY, UK			
Description - Enclosure 4290		Voltage - 0 to 27 VDC	
IECEX TRC 14.0018X		TRAC14ATEX0047X	
Ex d IIC T6 Gb		Tamb-20°C to +55°C	
Ex tb IIIC T85°C Db IP6x			
	II 2 GD		XXXX
WARNING! - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT			

## Details of variations to this certificate

- None

## Notes to CE marking

In respect of CE Marking, TRaC Global Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

## Notes to this certificate

TRaC certification reference: TRA-023079-32-00.

Throughout this certificate, the date format yyyy-mm-dd (year-month-day) is used.

## CONTINUATION OF SCHEDULE TO CERTIFICATE TRAC14ATEX0047X

### APPENDIX A - LIST OF CONTROLLED MANUFACTURER'S DOCUMENTS

Title:	Drawing No.:	Rev. Level:	Date:
Ex d Enclosure	LCM 4290	A	2014-08-01
ATEX & IECEx Label	4290/8	A	2014-07-30
Instruction Manual (5 sheets)	QMS REC 6	01	2014-07-24

## IECEX Certificates

		<h1>IECEX Certificate of Conformity</h1>	
<p>INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres</p> <p>for rules and details of the IECEX Scheme visit <a href="http://www.iecex.com">www.iecex.com</a></p>			
Certificate No.:	IECEX TRC 14.0011X	Issue No: 1	<u>Certificate history:</u> Issue No. 1 (2017-11-16) Issue No. 0 (2014-10-03)
Status:	Current	Page 1 of 4	
Date of Issue:	2017-11-16		
Applicant:	<b>LCM Systems Ltd.,</b> Unit 15, Newport Business Park, Barry Way, Newport, Isle of Wight, PO30 5GY United Kingdom		
Equipment:	42xx Series Strain gauge enclosures 4255, 4256, 4257		
Optional accessory:			
Type of Protection:	Flameproof, Enclosure		
Marking:	Ex d IIC T8 Gb Ex tb III C T85°C Db IP6x T <sub>amb</sub> -20°C to +55°C		
Approved for issue on behalf of the IECEX Certification Body:	Stephen Winsor		
Position:	Certification Manager		
Signature: (for printed version)			
Date:			
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 <a href="http://www.iecex.com">Official IECEX Website</a> .			
Certificate issued by: <b>Element Materials Technology</b> Unit 1 Pendle Place Skelmersdale West Lancashire WN8 9PN			
			



## IECEx Certificate of Conformity

Certificate No: IECEx TRC 14.0011X Issue No: 1  
 Date of Issue: 2017-11-16 Page 2 of 4  
 Manufacturer: **LCM Systems Ltd.,**  
 Unit 15, Newport Business Park,  
 Barry Way,  
 Newport,  
 Isle of Wight,  
 PO30 5GY  
 United Kingdom

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:

<b>IEC 60079-0 : 2011</b> Edition:6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-1 : 2007-04</b> Edition:6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
<b>IEC 60079-31 : 2008</b> Edition:1	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "Y"

*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/TRC/ExTR14.0011/00

#### Quality Assessment Report:

GB/SIR/QAR15.0012/02





# IECEx Certificate of Conformity

Certificate No: IECEx TRC 14.0011X

Issue No: 1

Date of Issue: 2017-11-16

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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The 42xx series is a range of flameproof EPL Gb and dust ignition protected EPL Db strain gauge load measuring device enclosures which are constructed from either 304 or 316 stainless steel or stronger material dependent upon the application and utilise, cylindrical, threaded and welded flameproof joints. The range comprises of 4255 Load Measuring Pin, 4256 Link Load Cell and 4257 CPA Compression Load Cell.

All enclosures are supplied either with a suitably IECEx certified bulkhead connector or a cable and cable entry device already fitted.

Electrical Rating 0-27Vdc.

See Annex for further details.

### SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The M3 fasteners used to secure the end caps shall be high tensile stainless steel fasteners with a minimum grade of A2-70 or A4-70.
2. The M6 fasteners used internally to secure the link load cell shall be stainless steel grade A2 or A4.
3. No modifications shall be made to the flamepaths of the equipment without consultation with the manufacturer.





## IECEx Certificate of Conformity

Certificate No: IECEx TRC 14.0011X

Issue No: 1

Date of Issue: 2017-11-16

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

#### Issue 1:

This certificate has been issued to show that the ExCB responsible for the QAR has now been changed.

#### Annex:

[Annex to CoC IECEx TRC 14.0011X is 1.pdf](#)





# 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](http://www.iecex.com)

Certificate No.: IECEx TRC 14.0018X

Issue No: 1

Certificate history:

Status: **Current**

Issue No. 1 (2017-11-16)

Issue No. 0 (2014-10-03)

Date of Issue: **2017-11-16**

Page 1 of 4

Applicant: **LCM Systems Ltd.,**  
Unit 15, Newport Business Park,  
Barry Way,  
Newport,  
Isle of Wight,  
PO30 5GY  
United Kingdom

Equipment: **Junction box Enclosure, 4290**

Optional accessory:

Type of Protection: **Flameproof, Enclosure**

Marking:

Ex d IIC T6 Gb

Ex tb III C T85°C Db IP6x

T<sub>amb</sub> -20°C to +55°C

Approved for issue on behalf of the IECEx  
Certification Body:

Stephen Winsor

Position:

Certification Manager

Signature:  
(for printed version)

Date:

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:

**Element Materials Technology**  
Unit 1 Pendle Place  
Skelmersdale  
West Lancashire  
WN8 9PN





## IECEx Certificate of Conformity

Certificate No:	IECEx TRC 14.0018X	Issue No: 1
Date of Issue:	2017-11-16	Page 2 of 4
Manufacturer:	<b>LCM Systems Ltd.,</b> Unit 15, Newport Business Park, Barry Way, Newport, Isle of Wight, PO30 5GY United Kingdom	

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:

<b>IEC 60079-0 : 2011</b> Edition:6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-1 : 2007-04</b> Edition:6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
<b>IEC 60079-31 : 2008</b> 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/TRC/ExTR14.0011/00](#)

#### Quality Assessment Report:

[GB/SIR/QAR15.0012/02](#)



# IECEx Certificate of Conformity

Certificate No: IECEx TRC 14.0018X

Issue No: 1

Date of Issue: 2017-11-16

Page 3 of 4

## Schedule

### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The 4290 flameproof enclosure protection level EPL Gb and dust ignition protected EPL Db is cylindrical in construction from either 304 or 316 stainless steel or stronger grade dependent upon the application and varies in both internal and external dimensions dependent upon the application but has an internal volume ranging between 5 and 500cm<sup>3</sup>. The enclosure is used either as a junction box or to house signal conditioning circuitry. The enclosure consists of two main parts, the enclosure body and the lid which forms a cylindrical flamepath with the body and is secured by four M6 x 16 cap head screws. The sides of the enclosure are machined flat at 0°, 90°, 180° and 270° and are Mxx threaded to allow the fitment of a suitably IECEx certified bulkhead connector or a cable and cable entry supplied with the equipment.

Electrical Rating 0-27Vdc.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. No modifications shall be made to the flamepaths of the equipment without consultation with the manufacturer.





## IECEX Certificate of Conformity

Certificate No: IECEx TRC 14.0018X

Issue No: 1

Date of Issue: 2017-11-16

Page 4 of 4

### DETAILS OF CERTIFICATE CHANGES (for Issues 1 and above):

#### Issue 1:

This certificate has been issued to show that the ExCB responsible for the QAR has now been changed.

#### Annex:

[Annex to CoC IECEx TRC 14.0018X is 1.pdf](#)

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## About

LCM Systems is a specialist provider of standard and bespoke load cells, load pins, load shackles, load links and associated instrumentation, with over 30 years' experience in supplying innovative load measurement solutions to many different industries worldwide. Whatever the application and however demanding the environment, we can provide a system to meet your needs.





**[www.lcmsystems.com](http://www.lcmsystems.com)**

**LCM Systems Ltd**

Unit 15, Newport Business Park

Barry Way, Newport

Isle of Wight PO30 5GY UK

Tel: +44 (0)1983 249264

Fax: +44 (0)1983 249266

[sales@lcmsystems.com](mailto:sales@lcmsystems.com)

[www.lcmsystems.com](http://www.lcmsystems.com)



Issue 3  
Issue date: 25/06/2021  
APPROVED  
(Unapproved if printed)