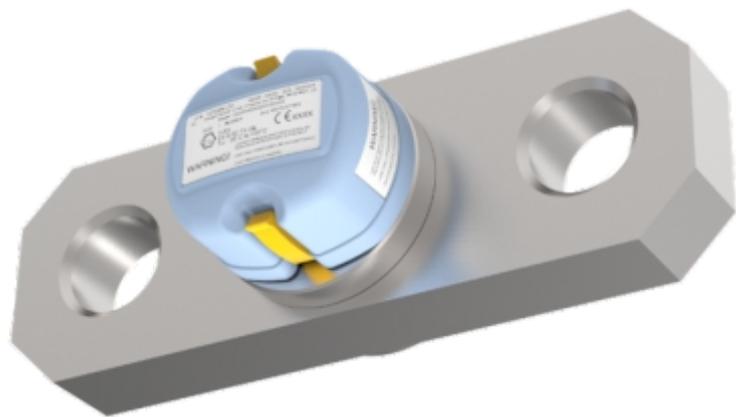


Operator Instructions for Wireless ATEX/IECEX Intrinsically Safe (Ex i) Load Links



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1. OPERATING INSTRUCTIONS

1.1 Introduction

This manual refers to the LCM Systems range of ATEX and IECEx certificated Intrinsically Safe (Ex i) wireless load links. This and any reference documents should be read and understood before installing or operating any LCM systems ATEX/IECEx wireless load link. All LCM Systems ATEX/IECEx wireless load links will be accompanied by a general arrangement drawing or datasheet, calibration certificate, declaration of conformity and a copy of LCM Systems ATEX/IECEx certificates.

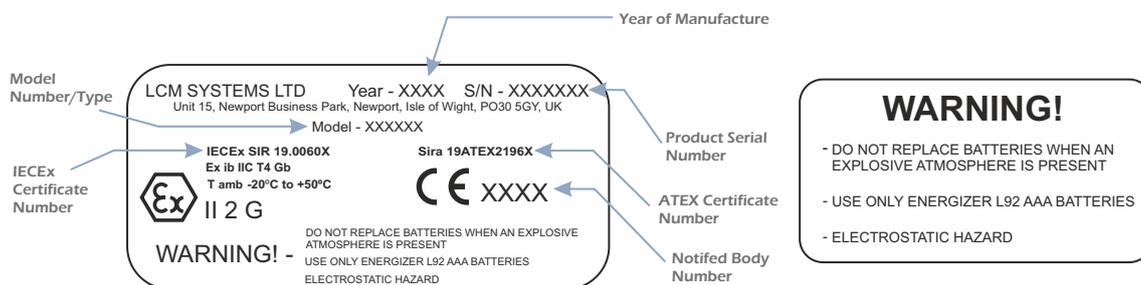
Our range of wireless products have been designed for hazardous area wireless communication between an Ex i wireless load link and X24-HD wireless handheld display. The Ex i wireless range of load links can also be combined to communicate with safe area wireless systems via the non-Ex T24 range of products (all non-Ex approved products can only be used in a safe area).

The Ex wireless products operate on the licence free 2.4 GHz band and are approved for FCC, IC and European use. The flexible transmission rates and low power usage allows for long battery life for remote modules. Free toolkit software provides simplified configuration of modules and other free software provides logging and visualisation functionality for Windows.

All Ex i load links are designed and manufactured in accordance with Directive 2014/34/EU and the following standards: IEC 60079-0, IEC 60079-11 and BS EN 60079-0.

1.2 Markings and labels

Each load link will have the serial number and the safe working load (SWL) engraved on the side. Customer specific markings may also be engraved if required. ATEX/IECEx labels and additional warning labels are attached to the telemetry enclosure. See below for label details.



Year: Year the product is manufactured

Product Serial Number: Individual serial number allocated to each product

Model/Type Number: Load link (all LCM System wireless load link designs are done in accordance with certification drawing LCM4815-ATEX_SHT3. LCM Systems allocate an individual model number for each new design i.e. LCMXXX-ATEX (where X=0-9), example LCM5201-ATEX)

Certificate Numbers: IECEx SIR 19.0060X and Sira 19ATEX2196X

Markings: II 2G
Ex ib IIC T4 Gb
T amb -20°C to +50°C

Warnings: DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
USE ONLY ENERGIZER L92 AAA BATTERIES
ELECTROSTATIC HAZARD



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
 Tel: +44(0)1983 249264
 Fax: +44(0)1983 249266
 e-mail: sales@lcm systems.com

1.3 Checks prior to installation

To ensure safe and problem free installation, the load link must be properly transported/stored and must be installed and placed into operation by a competent person who is certified to install hazardous area products. Standard engineering and rigging practices must also be followed in addition to this guide.

Unpacking

Before removing the load link inspect the packaging for signs of damage and immediately inform the supplier if any damage is found. Unpack the load link carefully, taking care with larger load links not to damage the telemetry enclosure, and being alert to the possibility of damaging low range devices by mishandling. Please ensure that calibration and instruction data is not inadvertently discarded with packing material.

- a) Inspect the wireless housing for signs of damage including any marks which may obscure the information on the labels.
- b) Check the ambient temperature of the environment the load cell will be operating in does not exceed the certified -20°C to + 50°C range.
- c) Check that the load link is suitable for the environment with regards to IP rating (ingress protection) and corrosion resistance (high chloride environments).
- d) Verify that the load link certificate is in accordance with the hazardous area assessment as to EN60079-10-1 (current issue).
- e) Check that the two Energizer L92 AAA batteries are correctly installed and that the two yellow clips on the wireless housing are closed and the battery cover is secure (batteries and battery holder has clearly marked (+) positive and (-) negative ends).
- f) Check that the white silicone o-ring that forms the seal between the wireless housing and the battery is present and free of any foreign materials.



1.4 Installation & operation

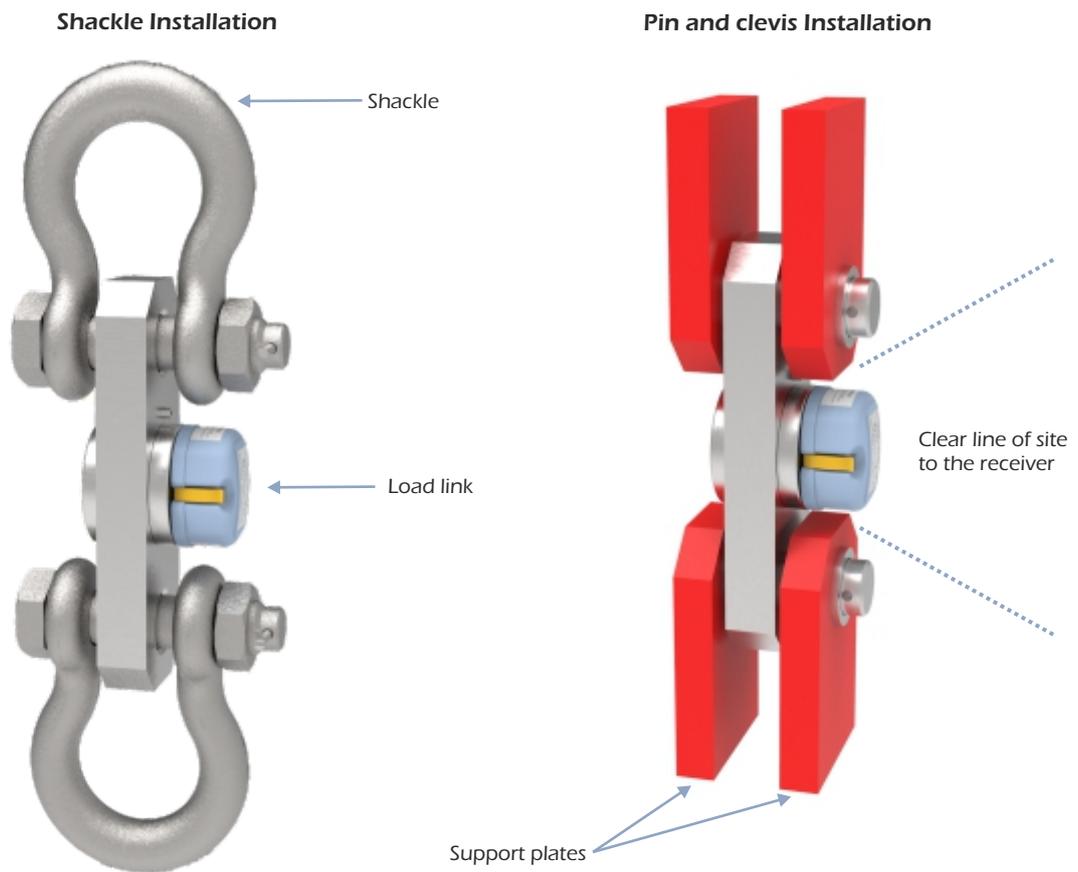
Load links are normally classified as portable devices and so correct installation is critical to maintain product life cycle. To avoid damage or loss of accuracy during installation, the following points should be followed:

- ⦿ The direction of load applied to the link should be linear as shown below
- ⦿ Ensure that the load link does not experience torque or bending forces during operation.
- ⦿ The load link should only be loaded in tension using the $\varnothing C$ holes as shown below.
- ⦿ To maintain the specified transmitter range, a clear line of sight between the transmitter and receiver is needed and objects or structures should be kept a least one metre away from the antenna (housed in the wireless enclosure) whenever possible. The installer should also first read the T24 Telemetry User Manual which can be found at the following web address: <http://www.lcmsystems.com/T24>.



- ⦿ When the load link has been installed check the displayed output is not negative, as this may indicate either a fault or a compressive force is being applied to the load link. See the diagrams overleaf for details on correct loading.
- ⦿ When applying load to the load link, the output should increase in the positive direction. Use the calibration certificate for reference and lift a known load to check the load link is correctly calibrated.
- ⦿ The zero load output given on the calibration certificate is the output of the load link when no load is applied. This includes removal of the load caused by any lifting accessories. The load on an installed load link will comprise of the weight of your assembly (including sheaves, blocks, shackles, rope, hooks etc) and the active load (load being lifted). Therefore, the output with no active load will be greater than the zero output indicated on the calibration certificate.





1.5 Telemetry unit set up and communication

The ATEX wireless product range uses high performance two-way radio communication. Each load link fitted with the wireless module requires either an X24-HD handheld display for hazardous area use or a base station and PC to communicate with (base station and PC must be located in the safe area.) See the X24-HD user manual and the T24 user manual for further details on LCM wireless products.

- 🔗 www.lcmsystems.com/t24-telemetry-instruction-manual
- 🔗 www.lcmsystems.com/X24-HD-instruction-manual

IF IN DOUBT ABOUT ANY ASPECT OF THE SELECTION, INSTALLATION OR USE OF AN INTRINSICALLY SAFE WIRELESS LOAD LINK, PLEASE CONTACT LCM SYSTEMS FOR ADVICE BEFORE INSTALLING

1.6 Calibration

All LCM Systems load links 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 link 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 link is connected to.

1.7 Warnings/Hazards

Load links 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 link materials. Where a corrosive environment is present load links can often be manufactured from corrosion resistant materials or alternatively, isolation barriers can be employed between the corrosive environment and the load link. 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.
- ⦿ Load links are sealed units which should not be dismantled. Removing any parts (except for when changing the batteries) will affect the sealing of the load link and therefore invalidate the hazardous area certification.
- ⦿ The accuracy of the system is dependent upon correct installation of the load link.
- ⦿ Load links must not be subjected to shock loads, such as using a hammer to force the link into position.
- ⦿ The load link should never be placed in a potentially explosive environment that the product is not suitably certified for (ATEX or IECEx only).
- ⦿ Load link material and any applied treatments (heat treatments etc.) should be verified as suitable for the environment before the load link is installed. Some heat treatments which LCM use are not suitable for marine environments/high chloride (for example, 17-4PH heat treated to H900).
- ⦿ Avoid use within 20 to 30 minutes of rapid changes in temperature, for example moving the device from a cold vehicle to a warm room. The change in temperature can affect the accuracy of the device. The operating temperature is -20 to +50°C or -4 to 122°F.

1.8 Inspection and repair

Repair: This equipment is certified for use in hazardous locations, therefore no modifications are allowed. Repairs must only be performed by LCM Systems personnel.

Inspection: All LCM System load links should be subject to periodic inspection which should include, but is not exclusive to, the follow checks.

- ⦿ Perform a run through of the installation and operation section of this manual, sections 1.3 to 1.4.
- ⦿ Check output at zero load (check for a shift in zero offset. Verify against the calibration certificate).
- ⦿ Check that the labels are still firmly attached, and the information is still readable.
- ⦿ Check for excessive wear on the load link which could compromise performance or the IP rating.
- ⦿ Inspect the batteries to ensure they are the correct type and have been installed correctly. The battery holder shows pictorially the correct orientation.
- ⦿ Check for any signs of water ingress in the battery compartment and for any signs of battery corrosion.

1.9 Storage

When not in use load links should be stored undercover in a dry environment (max humidity 95% non-condensing) at a storage temperature of -40°C to +85°C.

2.0 LOAD LINK SPECIFICATIONS

Ex i wireless load links are supplied to the specifications shown on our WLL datasheet. Alternatively, a general arrangement drawing is supplied to show the specification of non standard designs.



3. NOTICES

3.1 ATEX Certificates



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 19ATEX2196X** Issue: **0**

4 Equipment: **LCM4092 Wireless Telemetry Unit**

5 Applicant: **LCM Systems Ltd.**

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

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

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 IEC 60079-0:2018 EN 60079-11:2012

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-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 2G
Ex ib IIC T4 Gb
Ta = -20°C to +50°C

Project Number 80005303

Signed: J A May

Title: Director of Operations

This certificate and its schedules may only be reproduced in its entirety and without change

CSA Group Netherlands B.V.
Utrechtseweg 310, Building B42,
6812AR, Netherlands



SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 19ATEX2196X
Issue 0

13 DESCRIPTION OF EQUIPMENT

The LCM4092 Wireless Telemetry Unit is used in fixed installations for the wireless transmission of data from strain gauges. The equipment enclosure is comprised of an epoxy coated non-metallic enclosure, which is either connected directly to a load cell or via a metallic mounting disc or link cap. Within the enclosure is an Ex component certified telemetry transmitter module (Sira 15ATEX2334U). The module is powered by two series connected Ex ia certified AAA size cells (Baseefa 14ATEX0107U). Strain gauge connection is to a screw terminal block in the component certified module.

The use of the metallic mounting disc or link cap is dependent on the size and type of load cell. An alternative base plate may also be used for remote installation of the Telemetry Unit, with wired connection to the load cell strain gauges.

Output parameters at the strain gauge connections.

$U_o = 5.5V$ $I_o = 2.25A$ $P_o = 1.25W$ $C_o = 15\mu F$ $L_o = 1.38\mu H$

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	27 January 2020	R80005303A	The release of the prime certificate.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

15.1 Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of the LCM4092 Wireless Telemetry Unit may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.

15.2 The batteries in the LCM4092 Wireless Telemetry Unit must not be changed when an explosive atmosphere is present.

15.3 Only Energizer L92 AAA size batteries are permitted for use in the LCM4092 Wireless Telemetry Unit.

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.

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Utrechtseweg 310, Building B42,
6812AR, Netherlands



Certificate Annexe



Certificate Number: Sira 19ATEX2196X
Equipment: LCM4092 Wireless Telemetry Unit
Applicant: LCM Systems Ltd.

Issue 0

Drawing	Sheets	Rev.	Date (Stamp Date)	Title
LCM4092-ATEX_SHT1	1 of 2	-Initial	10 Jan 20	General assembly
LCM4092-ATEX_SHT2	2 of 2	-Initial	10 Jan 20	Marking, IECEx/ATEX
LCM4814-ATEX_SHT3	1 of 1	-Initial	10 Jan 20	ATEX Telemetry load Pin versions A & B
LCM4815-ATEX_SHT3	1 of 1	-Initial	10 Jan 20	ATEX Telemetry load Link
LCM4816-ATEX_SHT2	1 of 1	-Initial	10 Jan 20	Column Load Cell
LCM4818-ATEX	1 of 1	-Initial	10 Jan 20	ATEX Telemetry Enclosure
LCM4814-ATEX_SHT4	1 of 1	-Initial	10 Jan 20	Ex Label (Intrinsic safety)

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3.2 IECEx Certificate

	<h2>IECEX Certificate of Conformity</h2>	
INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres <small>for rules and details of the IECEx Scheme visit www.iecex.com</small>		
Certificate No.:	IECEX SIR 19.0060X	Page 1 of 4 Certificate history:
Status:	Current	Issue No: 0
Date of Issue:	2020-01-27	
Applicant:	LCM Systems Ltd Unit 15, Newport Business park Barry way, Newport Isle of Wight PO30 5G United Kingdom	
Equipment:	LCM4092 Wireless Telemetry Unit	
Optional accessory:		
Type of Protection:	Intrinsically Safe	
Marking:	Ex ib IIC T4 Gb Ta = -20°C to +50°C	
Approved for issue on behalf of the IECEx Certification Body:	Neil Jones	
Position:	Certification Manager	
Signature: (for printed version)	_____	
Date:	_____	
<p>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 www.iecex.com or use of this QR Code.</p> 		
Certificate issued by:		
SIRA Certification Service CSA Group Unit 6, Hawarden Industrial Park Hawarden, Deeside, CH5 3US United Kingdom		





IECEX Certificate of Conformity

Certificate No.: IECEx SIR 19.0060X Page 2 of 4

Date of issue: 2020-01-27 Issue No: 0

Manufacturer: LCM Systems Ltd
 Unit 15, Newport Business park
 Barry way, Newport
 Isle of Wight
 PO30 5G
 United Kingdom

Additional manufacturing locations:

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 equipment 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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
 Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"
 Edition:6.0

This Certificate does not indicate compliance with 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/EXTR20.0013/00](#)

Quality Assessment Report:

[GB/SIR/QAR15.0012/04](#)



IECEX Certificate of Conformity

Certificate No.: **IECEX SIR 19.0060X**

Page 3 of 4

Date of issue: 2020-01-27

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The LCM4092 Wireless Telemetry Unit is used in fixed installations for the wireless transmission of data from strain gauges. The equipment enclosure is comprised of an epoxy coated non-metallic enclosure, which is either connected directly to a load cell or via a metallic mounting disc or link cap. Within the enclosure is an Ex component certified telemetry transmitter module (Sira 15ATEX2334U). The module is powered by two series connected Ex ia certified AAA size cells (Baseefa 14ATEX0107U). Strain gauge connection is to a screw terminal block in the component certified module.

The use of the metallic mounting disc or link cap is dependent on the size and type of load cell. An alternative base plate may also be used for remote installation of the Telemetry Unit, with wired connection to the load cell strain gauges.

Output parameters at the strain gauge connections.

$U_o = 5.5V$
 $I_o = 2.25A$
 $P_o = 1.25W$
 $C_o = 15\mu F$
 $L_o = 1.38\mu H$

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of the LCM4092 Wireless Telemetry Unit may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.
2. The batteries in the LCM4092 Wireless Telemetry Unit must not be changed when an explosive atmosphere is present.
3. Only Energizer L92 AAA size batteries are permitted for use in the LCM4092 Wireless Telemetry Unit.





IECEX Certificate of Conformity

Certificate No.: **IECEX SIR 19.0060X**

Page 4 of 4

Date of issue: 2020-01-27

Issue No: 0

Equipment (continued):

Conditions of Manufacture

1. The LCM4092 Wireless Telemetry Unit incorporates a previously component certified telemetry module (IECEX SIR 15.0123U). It is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with this device. The manufacturer shall inform Sira of any modifications to the device that may impinge upon the explosion safety design of the LCM4092 Wireless Telemetry Unit.
2. The LCM4092 Wireless Telemetry Unit may only be supplied by component certified AAA size cells (Baseefa 14ATEX0107U) It is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with this cell type. The manufacturer shall inform Sira of any modifications to the cell certification that may impinge upon the explosion safety design of the LCM4092 Wireless Telemetry Unit.

3.3 Copyright

The copyright and all rights of a like nature in respect of this document in any part of the world are the property of LCM Systems Ltd.

No part of this document may be reproduced or transmitted in any form or by any means, whether electronic, mechanical, photocopying, recording or otherwise, nor used for tendering or manufacturing, nor communicated to any other person without the written permission of LCM Systems Ltd.

The recipient of this document, as its registered holder, must exercise due diligence in ensuring that the above conditions are observed. (errors and omissions excepted). Any enquires relating to this document or its contents should be addressed, in writing, in the first instance to LCM Systems Ltd.

LCM Systems Ltd reserve the right to make changes to its products and specifications without notice.

3.4 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

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

www.lcmsystems.com



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