

**CorDEX**



# INSTRUCTIONS FOR SAFE USE

**EXIS™ LITHIUM 7.4V**  
INTRINSICALLY SAFE  
BATTERY PACK



**RUGGED AUTHORITY**

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## SAFETY INFORMATION

Read and understand all warnings and cautions before using this product.

### Overview

The CorDEX Instruments EXIS Battery Pack is an intrinsically safe battery pack. The EXIS Battery Pack is designed to be used in hand-held devices as an Ex Component. The battery pack includes the safety critical components that limit the output parameters.

A protector is provided for mechanical protection and to maintain IP54 rating when the battery pack is not assembled in a host device.

### Safety Information

This instruction manual contains information and warnings that must be observed for safe operation under the conditions described.

### Faults and Damage

If there are any grounds to believe the unit is no longer safe to use, it must be taken out of service and measures taken to prevent its further unintentional use.

The safety of the device may be impaired if for example:

- External damage to the unit is visible.
- The device has not been stored correctly.
- The unit has suffered transport damage.

### Safety Regulations

When using the EXIS Intrinsically Safe Battery Pack the appropriate regulations must be observed to avoid incorrect operation of the device.

**ATTENTION! ENSURE THAT THE BATTERY PACK IS PROPERLY ATTACHED WHEN IN USE.**

### Special Conditions of Safe Use

- The EXIS Battery Pack cannot be used in hazardous areas except with a certified host device.
- In hazardous areas the protector should be in place when the battery pack is not attached to a host device.
- Only CorDEX approved accessories are permitted to be used in the EXIS battery pack.
- Only LG ICR18650D1 Lithium cells are approved to be used within this Ex Component as follows:

Operating temperature: -10°C to 40°C  
Charging temperature: 0°C to 45°C

## SAFETY INFORMATION

### Installation and Setting to Work

For the installation, maintenance and cleaning of the units observe the applicable regulations and provisions concerned with explosion protection (EN 60079-0, EN 60079-14).

### Transportation and Storage

Transport and store without imposing excessive mechanical stresses.  
Store in a cool dry place.

### Cleaning and Maintenance

The EXIS Battery Pack and accessories require no maintenance. For safety critical maintenance, please refer to EN60079-17.

### Safety Precautions

For the installation, maintenance and cleaning of the units observe the applicable regulations and provisions concerned with explosion protection (EN 60079-0, EN 60079-14).

### Aggressive Substances and Environments

Consideration shall be given to the risk of degradation of the camera due to aggressive substances. Additional protection may be required.

### Exposure to External Stresses

The EXIS Battery Pack is not intended for use with vibration, impact and heat stresses beyond its design capability. Additional protection may be required.

## LABELLING

### EXIS - battery pack



II 2G

ATEX : - ExVeritas 18ATEX0349U

IECEX : - IECEX EXV 18.0012U

Ex ib IIC Tamb -10°C to +40°C



XXXX\*

Year of construction - XXXX

Serial Number XXXX-XX-XXXXXX

\*Refers to CorDEX current QAN Certificate which is available upon request

**WARNING: NON REPLACEABLE COMPONENTS INSIDE  
SEE USER MANUAL FOR MORE INFORMATION. DO NOT  
CHARGE IN HAZARDOUS AREA.**

### Manufacturer Contact Information

# EC DECLARATION OF CONFORMITY

# EU TYPE EXAMINATION CERTIFICATE



Declaration No. \_\_\_\_\_ S017 Rev. A

**EC Declaration of Conformity**  
In accordance with EEC ATEX Directive 2014/34/EU

We  
CorDEX Instruments Ltd  
Hereby declare that the products described below;

Product: EXIS Battery  
Model: EXIS 740 Battery

are in conformity with the essential health and safety requirements of Council Directive 2014/34/EU relating to equipment intended for use in potentially explosive atmospheres (ATEX Directive) Ex II 2G Ex ib IIC (Ta = -10°C to +40°C) equipment, by the application of the following Standards:-

BS EN 60079-0:2012 + A11:2013 Explosive atmospheres - Part 0: Equipment – General requirements

BS EN 60079-11:2012 Explosive atmospheres. Equipment protection by intrinsic safety "I"

and are subject to the procedure set out in Annex VII of Directive 2014/34/EU and these procedures are in conformity with the requirements of EN 80079-34 under the supervision of Notified Body Number 0518, SIRA Certification Ltd. Unit 6, Hawarden Industrial Park, Hawarden, Deeside, CH5 3US.

It is ensured through internal measures that the products conform at all times to the requirements of EU Directive 2011/65/EU on the restriction of certain hazardous substances in electrical and electronic equipment (RoHS Directive) and other current EEC Directives and relevant standards

Signature:  Authorised Person

Position: Managing Director on behalf of CorDEX Instruments Ltd

Date: 18/05/2018



**ExVeritas**

**Schedule**

13 Description of Equipment or Protective System

The intrinsically safe battery pack EXIS is designed to be used in hand-held devices as an Ex Component. It is comprised of two LG ICR18650D1 Lithium cells connected in series and a board that includes the safety critical components that limit the output parameters. The cells and the board are encapsulated and housed in a suitable enclosure, this enclosure includes an external connector that is covered by a cap to provide mechanical protection and IP54 rating when not assembled in a host device.

**Electrical Output Parameters**

Host equipment provided with infallible galvanic insulation:

Terminals combination	U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>	U <sub>max</sub>	P <sub>max</sub>	C and L <sub>o</sub>
PWR_EXIS_DSP vs PWR_OV	8.4 V	760 mA	1.6 W	7.6 V	1.2 W	Negligible
PWR_EXIS_LCD vs PWR_OV	8.4 V	760 mA	1.6 W	7.6 V	1.2 W	Negligible
PWR_EXIS_SENSOR vs PWR_OV	8.4 V	750 mA	1.6 W	7.6 V	1.2 W	Negligible
PWR_EXIS_VRAIL1 vs PWR_OV	8.4 V	657 mA	1.4 W	7.6 V	920 mW	Negligible
PWR_EXIS_VRAIL2 vs PWR_OV	8.4 V	657 mA	1.4 W	7.6 V	920 mW	Negligible
EXIS_CONTROL vs PWR_OV	8.4 V	18 mA	40 mW	7.6 V	31 mW	Negligible

**NOTES:**

- Each power circuit has the same PWR\_OV potential, because all the lines are connected to the negative pole of the cells series association. However, each circuit has a PWR\_OV line infallible segregated of the others, which assure that the combination of the currents of only one PWR\_OV line is not possible to the output.
- Constant Power and Voltage shall be considered for thermal evaluations.

When the host equipment is provided without galvanic insulation and the different IS circuits can be combined, the following parameters apply:

U<sub>o</sub> = 8.4 V  
 I<sub>o</sub> = 3.8 A  
 P<sub>o</sub> = 7.5 W

Constant parameters:

PWR\_EXIS\_DSP: U = 7.6 V @ I = 425 mA @ P = 1.2 W  
 PWR\_EXIS\_LCD: U = 7.6 V @ I = 425 mA @ P = 1.2 W  
 PWR\_EXIS\_SENSOR: U = 7.6 V @ I = 425 mA @ P = 1.2 W  
 PWR\_EXIS\_VRAIL1: U = 7.6 V @ I = 425 mA @ P = 920 mW  
 PWR\_EXIS\_VRAIL2: U = 7.6 V @ I = 425 mA @ P = 920 mW  
 EXIS\_CONTROL: U = 7.6 V @ I = 16 mA @ P = 31 mW  
 PWR\_OV under fault: I = 2.14 A

Charger rating shall be according to the following:  
 U<sub>m</sub> = 8.4 V

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**ExVeritas**

**Schedule**

14 Descriptive Documents

14.1 Associated Report and Certificate History:

Report Number	Cert Issue Date	Issue	Comment
R11625A1	06/05/2015	0	Initial issue of the Prime Certificate

14.2 Compliance Drawings:

**Issue 0**

Title	Drawing No.	Rev. Level	Date
EXIS BatteryPack System	CDX1000-200	1.3d	2016/05/21
CorDEX EXIS-740 BatteryPack System Schematic BOM	CDX1000-201	1.3d	2016/05/21
Instructions for Safe Use Intrinsically Safe Battery Pack	EE740SOM	C	2016/03/21
EXIS BatteryPack schematic	CDX1000-220	1.3	2015/04/30
EXIS BatteryPack BOM (Certification)	CDX1000-222	1.3	2015/05/21
EXIS BatteryPack PCB fabrication drawing	CDX1000-223	1.3	2015/05/01
EXIS BatteryPack PCB assembly drawing	CDX1000-224	1.3	2015/05/01
EXIS BatteryPack RS274 (pebers)	CDX1000_EXISBatteryPack	1.3	2015/05/01
EXIS PackConn schematic	CDX1000-240	1.4	2016/03/07
EXIS PackConn BOM (Certification)	CDX1000-242	1.4	2016/03/11
EXIS PackConn PCB fabrication drawing	CDX1000-243	1.4	2016/03/10
EXIS PackConn PCB assembly drawing	CDX1000-244	1.4	2016/03/10
EXIS PackConn RS274 (pebers)	CDX1000_EXISPackConn	1.4	2016/03/07
EXIS BatteryPack General Assembly	CDX1000-019	D	2016/04/05
EXIS BatteryPack encapsulation	CDX1000-025	D	2015/07/26
EXIS BatteryPack clip General Assembly	CDX1000-030	D	2016/04/06
EXIS BatteryPack rating plate	CDX1000-441	E	2016/04/06

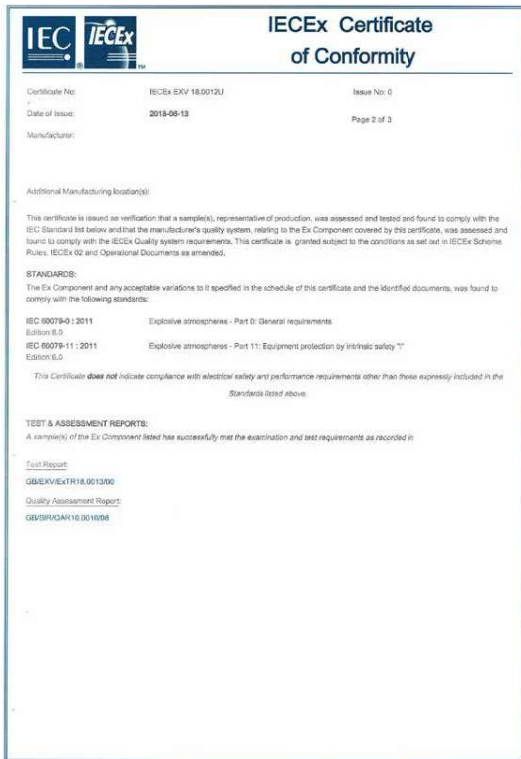
15 Conditions of Certification


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# IECEX CERTIFICATE OF CONFORMITY





Annex to: IECEx EXV 18.0012U Issue 0 

**Description Continued:**  
**Electrical Output Parameters**  
 Host equipment provided with infallible galvanic insulation:

Terminals combination	U <sub>L</sub>	I <sub>n</sub>	P <sub>n</sub>	U <sub>oc</sub> max	P <sub>oc</sub> max	Q <sub>max</sub> (C)
PWR_EXIS_DSP vs PWR_OV	8.4 V	750 mA	1.5 W	7.6 V	1.2 W	Negligible
PWR_EXIS_LCD vs PWR_OV	8.4 V	750 mA	1.8 W	7.6 V	1.2 W	Negligible
PWR_EXIS_SENSOR vs PWR_OV	8.4 V	750 mA	1.6 W	7.6 V	1.2 W	Negligible
PWR_EXIS_VRAIL1 vs PWR_OV	8.4 V	667 mA	1.4 W	7.6 V	920 mW	Negligible
PWR_EXIS_VRAIL2 vs PWR_OV	8.4 V	667 mA	1.4 W	7.6 V	920 mW	Negligible
EXIS_CONTROL vs PWR_OV	8.4 V	18 mA	40 mW	7.6 V	31 mW	Negligible

**NOTES:**

- Each power circuit has the same PWR\_OV potential, because all the lines are connected to the negative pole of the cells series association. However, each circuit has a PWR\_OV line infallible separated of the others, which assure that the combination of the currents at only one PWR\_OV line is not possible to the output.
- Constant Power and Voltage shall be considered for thermal evaluations.

When the host equipment is provided without galvanic insulation and the different IS circuits can be combined, the following parameters apply:

U <sub>n</sub> = 8.4 V	Constant parameters:	U = 7.6 V @ I = 425 mA @ P = 1.2 W
I <sub>n</sub> = 3.6 A	PWR_EXIS_DSP:	U = 7.6 V @ I = 425 mA @ P = 1.2 W
P <sub>n</sub> = 7.5 W	PWR_EXIS_LCD:	U = 7.6 V @ I = 425 mA @ P = 1.2 W
	PWR_EXIS_SENSOR:	U = 7.6 V @ I = 425 mA @ P = 1.2 W
	PWR_EXIS_VRAIL1:	U = 7.6 V @ I = 425 mA @ P = 920 mW
	PWR_EXIS_VRAIL2:	U = 7.6 V @ I = 425 mA @ P = 920 mW
	EXIS_CONTROL:	U = 7.6 V @ I = 18 mA @ P = 31 mW
	PWR_OV under fault:	I = 2.14 A

Charger rating shall be according to the following:  
 Um = 8.4 V

**Routine Tests:**  
 N/A

**Schedule of Limitations:**

- This is an Ex Component and cannot be used in an explosive atmosphere if not certified with a host device.
- Only LG ICR18650D1 Lithium cells are approved to be used in this Ex Component.
- The capacitance and inductance of the host device shall be assessed in accordance with the maximum parameters provided in the specifications.

Annex to: IECEx EXV 18.0012U Issue 0 

**Manufacturer's documents:**

Title	Drawing No.	Rev	Date
EXIS BatteryPack System	CDX1000-200	1.3b	2016/05/21
CorDEX EXIS740 BatteryPack System Schematic BOM	CDX1000-201	1.3b	2015/05/21
Instructions for Safe Use Intrinsically Safe Battery Pack	EE740SOM	C	2018/03/21
EXIS BatteryPack schematic	CDX1000-220	1.3	2015/04/30
EXIS BatteryPack BOM (Certification)	CDX1000-222	1.3	2015/05/21
EXIS BatteryPack PCB fabrication drawing	CDX1000-223	1.3	2015/05/01
EXIS BatteryPack PCB assembly drawing	CDX1000-224	1.3	2015/05/01
EXIS BatteryPack RS274 (gerbers)	CDX1000_EXISBatteryPack	1.3	2016/05/01
EXIS PackComm schematic	CDX1000-240	1.4	2016/03/07
EXIS PackComm BOM (Certification)	CDX1000-242	1.4	2016/03/11
EXIS PackComm PCB fabrication drawing	CDX1000-243	1.4	2016/03/10
EXIS PackComm PCB assembly drawing	CDX1000-244	1.4	2016/03/10
EXIS PackComm RS274 (gerbers)	CDX1000_EXISPackComm	1.4	2016/03/07
EXIS BatteryPack General Assembly	CDX1000-018	D	2016/04/06
EXIS BatteryPack encapsulation	CDX1000-025	D	2016/07/25
EXIS BatteryPack clip General Assembly	CDX1000-030	D	2016/04/06
EXIS BatteryPack rasing plate	CDX1000-441	E	2018/04/06