IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx EXV 21.0035X**

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Certificate history:
Issue 2 (2023-05-30)
Issue 1 (2021-12-14)
Issue 0 (2021-07-14)

Status: **Current**

Issue No: 3

Date of Issue: 2024-08-12

Applicant: **Cygnus Instruments Limited**
30 Prince of Wales Road
Dorchester
Dorset
DT1 1PW
United Kingdom

Equipment: **Thickness Gauge CYGNUS 1 EX**

Optional accessory: Charger (PN 060-xxxx), Comms Interface PN 060-1002

Type of Protection: **Equipment protection by intrinsic safety "i"**

Marking: Ex ia I Ma Ta = 0°C to +50°C

Ex ia IIC T4 Ga Ta = 0°C to +50°C

Ex ib IIIB T100°C Db Ta = 0°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: **Sean Clarke CEng MSc FIET**

Position: **Certification Manager**

Signature:
(for printed version)

Date:
(for printed version)

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.

Certificate issued by:

ExVeritas Limited
Units 16-18 Abenbury Way
Wrexham Ind. Est.
Wrexham LL 139UZ
United Kingdom

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Certificate No.: **IECEx EXV 21.0035X**

Date of issue: 2024-08-12 Issue No: 3

Manufacturer: **Cygnus Instruments Limited**
30 Prince of Wales Road
Dorchester
Dorset
DT1 1PW
United Kingdom

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 60079-11:2023 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:7.0

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 Reports:

GB/EXV/ExTR21.0047/00 GB/EXV/ExTR21.0121/00 GB/EXV/ExTR23.0059/00
GB/EXV/ExTR24.0023/00

Quality Assessment Report:

GB/EXV/QAR21.0007/02

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Cygnus CYGNUS 1 EX is a battery powered hand-held thickness gauge. The system operation is based on multiple echo sounding technology, where an ultrasonic probe is used.
The Cygnus CYGNUS 1 EX comprises a plastic enclosure where the encapsulated electronic module, keypad and battery pack are installed. This system includes two main boards, both are encapsulated. Encapsulation protruding conductive parts are the connector for the main battery pack, backup battery, keypad, Serial Interface connector (used only on safe areas) and Ultrasonic Probe connector.
CYGNUS 1 EX probes have the following part numbers Cygnus S2C, S3C, S5A, T2C, T5B, T5A and T7A.

Ratings:

2x Lithium battery 4.2 Vpeak in series, resulting in a 8.4 Vpeak battery pack, current limited by a fuse to 750 mA

Connections for devices in safe area:

- Charger (PN 060-xxxx) – Um = 8.4 V
- Comms Interface PN 060-1002 – Um = 250 V

Probe output:

Uo = 45.15 V, Io = 28 mA, Po = 312 mW, Co = 10 nF, Lo = 10 µH

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Charge only in Safe Area and use only the specified charger.
- Only replace or remove the battery in Safe Area.
- The Serial RS422 port can only be used in Safe Area and through the accessory Comms Interface part number 060-1002. The use of this port without the Comms Interface accessory invalidates the approval.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Equipment is being updated to the current version of IEC 60079-11: Ed. 7
2. Routine test for verfiication for encapsualtion added.
3. Marking updated for dust environments.
4. Introduction of an alternative battery pack (inclusion of a thermal fuse)

Annex:

IECEx 21.0035X Annex Iss 3_1.pdf

Description Continued:
None.

Routine Tests:
IEC 60079-11 Clause 10.4: Routine verification of conformal coating and encapsulation

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
Scheme for Intrinsic Safety - Gauge Body Cygnus 1 Ex	M5-IS-13-01	1	30/04/2021
*Scheme for Intrinsic Safety - Battery Pack Cygnus 1 Ex	M5-IS-13-02	3	03/06/2024
Scheme for Intrinsic Safety - Electronics Module Cygnus 1 Ex	M5-IS-13-03	1	30/04/2021
Scheme for Intrinsic Safety - S-Probe Transducer Cygnus 1 Ex	M5-IS-13-04	1	30/04/2021
Scheme for Intrinsic Safety - T-Probe Transducer Cygnus 1 Ex	M5-IS-13-05	1	30/04/2021
Scheme for Intrinsic Safety - Comms Interface Cygnus 1 Ex	M5-IS-13-06	1	30/04/2021
Scheme for Intrinsic Safety - S-Probes and Leads Cygnus 1 Ex	M5-IS-13-07	1	30/04/2021
Scheme for Intrinsic Safety - Txx Remote Probes Cygnus 1 Ex	M5-IS-13-08	1	30/04/2021
Scheme for Intrinsic Safety - RA Remote Probes Cygnus 1 Ex	M5-IS-13-09	1	30/04/2021
*Scheme for Intrinsic Safety - Marking Cygnus 1 Ex (*)	M5-IS-13-10	5	05/08/2024
Scheme for Intrinsic Safety - CYG059 PCBs Cygnus 1 Ex	M5-IS-13-11	1	06/05/2021
Scheme for Intrinsic Safety - Materials Register Cygnus 1 Ex	M5-IS-13-12	1	06/05/2021
Scheme for Intrinsic Safety - Hand Strap Cygnus 1 Ex	M5-IS-13-13	1	06/05/2021
Scheme for Intrinsic Safety - Battery Charger Cygnus 1 Ex	M5-IS-13-14	1	06/05/2021
*Scheme for Intrinsic Safety – Battery Pack Type DA Cygnus 1 EX	M5-IS-13-16	2	26/06/2024
Bill Of Materials CYG059-01 - Control Board (*)	CYG059-01_b5b	5b	15/04/2021
Gerber Files CYG059-01 - Control Board	CYG059-01_g5a	5a	03/02/2021

ExVeritas, Units 16-18, Abenbury Way, Wrexham Industrial Estate, Wrexham, United Kingdom LL13 9UZ.

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
Schematic Diagram CYG059-01 - Control Board	CYG059-01_s5a	5a	18/12/2020
Bill Of Materials CYG059-02 - Ultrasound Board (*)	CYG059-02_b5b	5b	09/07/2021
Gerber Files CYG059-02 - Ultrasound Board	CYG059-02_g5a	5a	03/02/2021
Schematic Diagram CYG059-02 - Ultrasound Board	CYG059-02_s5b	5b	28/01/2021
Bill Of Materials CYG059-03 - Connection Board	CYG059-03_b2a	2a	05/06/2020
Gerber Files CYG059-03 - Connection Board	CYG059-03_g2a	2a	04/06/2020
Schematic Diagram CYG059-03 - Connection Board	CYG059-03_s2a	2a	01/05/2020
Bill Of Materials CYG059-04 - Keypad	CYG059-04_b3a	3a	20/11/2019
Gerber Files CYG059-04 - Keypad	CYG059-04_g3a	3a	20/11/2019
Schematic Diagram CYG059-04 - Keypad	CYG059-04_s3a	3a	18/11/2019
Bill Of Materials CYG059-08 - Comms Interface	CYG059-08_b6a	6a	01/03/2021
Gerber Files CYG059-08 - Comms Interface	CYG059-08_g6a	6a	02/03/2021
Schematic Diagram CYG059-08 - Comms Interface	CYG059-08_s6a	6a	01/03/2021
Bill Of Materials CYG059-09 - Battery	CYG059-09_b4a	4a	20/05/2020
Gerber Files CYG059-09 - Battery	CYG059-09_g4b	4a	02/03/2021
Schematic Diagram CYG059-09 - Battery	CYG059-09_s4a	4a	20/05/2020
Bill Of Materials CYG059-13 - Probe Ex Clamp	CYG059-13_b2a	2a	29/05/2020
Gerber Files CYG059-13 - Probe Ex Clamp	CYG059-13_g2a	2a	05/06/2020
Schematic Diagram CYG059-13 - Probe Ex Clamp	CYG059-13_s2a	2a	20/05/2020
M5-EX Segregation Statement (Issue 1)(Signed).pdf	-	1	19/06/2020

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
M5-EX Ultrasonic Energy Statement (Issue 1)(signed).pdf	-	1	19/06/2020
Instructions declaration form.pdf	-	-	01/03/2021
Maximum Ultrasonic Probe Output Power Statement.pdf	-	-	01/06/2012
*Cygnus 1 Ex Intrinsically Safe Ultrasonic Thickness Gauge Instructions for Safety	M5-C1EX-M-01-EN	2	13/11/2023

(*) Document changed on this revision.