Type Examination Certificate CML 16ATEX4300X Issue 2

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

2 Equipment **Nimbus LED Driver NDU** Zone 2**
Nimbus Emergency LED Driver NDEU Zone 2**
Nimbus LED Panels NIMBUS Zone 2**

3 Manufacturer **Abtech Limited**

4 Address **199 Newhall Road,**
Lower Don Valley,
Sheffield,
S9 2QJ, UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 CML B.V., Chamber of Commerce No 6738671, Hoogoorddreef 15, Amsterdam, 1101 BA, The Netherlands, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design of equipment intended for use in potentially explosive atmospheres given in Annex II of Directive 2014/34/EU.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of certification (affecting correct installation or safe use). These are specified in Section 14.

8 This Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Annex VIII apply to the manufacture of the equipment or component.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN 60079-0:2012+A11:2013 EN 60079-5:2015 EN 60079-7:2015

EN 60079-11:2012

10 The equipment shall be marked with the following:

Driver Modules	**LED Panel**
II 3 G	II 3 G
Ex ec [ic Gc] qc IIC T4 Gc	Ex ic IIC T4 Gc
Ta= -20°C to +45°C	Ta= -20°C to +45°C

R C Marshall
Certification Officer

11 Description

The NIMBUS ** LED Panel is a range of various sized LED flat panels which are supplied by an intrinsically safe supply from the Nimbus Driver Unit (NDU).

The Nimbus LED Driver is designed to be supplied from a source voltage of between 90Vac and 250Vac 50/60Hz. The Abtech Zag aluminium enclosure comprises of two compartments, one containing a switch mode power supply and a LED driver circuit, which are protected by sand filling the void. The other compartment contains a terminal block to permit the connection of both the mains and the intrinsically safe output.

Intrinsic safety is provided by duplicated voltage and current trips that provide the following outputs:

Um	=	250Vac
Uo	=	13.5V
Io	=	2A
Co	=	0
Lo	=	0

Intrinsic safety of the Nimbus LED Driver is achieved by limiting energy storage and discharge, and by connecting to the non-hazardous area via the intrinsically safe LED Driver

The LED panel consists of an acrylic (PMMA) panel with an aluminium surround and a series of LED's which illuminate the acrylic panel. The panel can be laid into a modular ceiling or attached to a surface by means of fixing brackets or screws directly into the frame surround. The panel is connected to the NDU by means of a 2 core cable which is permanently attached to the panel. The Nimbus LED Panels come in four sizes:

Size (L x W) mm	Nominal Voltage	Nominal Power
150 x 150	12V	13W
300 x 300	12V	17W
600 x 275	12V	20W
600 x 300	12V	20W

Each version has the following input parameters:

Ui	=	13.5V
Ii	=	2A
Ci	=	0
Li	=	0

The NDU consists of an intrinsically safe LED driver pcb, housed in an enclosure which is protected by sand filling. The complete sand filled driver unit is housed in an Ex e component certified Abtech Zag aluminium enclosure under Sira 99ATEX3174U and IECEx SIR12.0116U.

Termination for the mains input and the panel output supply is via a component certified Wago terminal block certified ATEX and IECEx under PTB 03ATEX1189U & IECEx PTB 05.0034U.

Emergency version:

The Nimbus Emergency LED Driver version is designed to be supplied from a source voltage of between 90Vac and 264Vac 50/60 Hz. The driver also incorporates the use of Saft type VTD70 Size D or Saft cell VNT D U HC Size D rechargeable nickel cadmium cells.

Termination for the mains input and the panel output supply as well as battery connections are connected via component certified BK 6/E terminal blocks certified ATEX and IECEx under TUV 18ATEX8209U and IECEx TUR 18.0019U.

Variation 1

This variation introduces the following changes:

i. To increase the upper ambient temperature limit from +40°C to +45°C.

Variation 2

This variation introduces the following changes:

i. To transfer the CML UK ATEX Certificate to CML BV
ii. Correction of typographical errors.
iii. Change of terminal block certificate reference from SIRA 01ATEX3247U and IECEx SIR 05.0035U to TUV 18ATEX8209U and IECEx TUR 18.0019U.

12 Certificate history and evaluation Reports

Issue	Date	Associated report	Notes
0	07 Oct 2016	R1427A/00	Issue of Prime Certificate
1	28 Jun 2017	R2364A/00	Introduction of Variation 1
2	13 Sep 2019	R12524A/00	Introduction of Variation 2

Note: Drawings that describe the equipment or component are listed in the Annex.

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. Where the product incorporates certified parts or safety critical components the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.

ii. Each powder filled enclosure shall be subjected to a routine overpressure test at 50 kpa (0.5 bar) in accordance with IEC / EN 60079-5:2015, clause 5.2.1, for a minimum of 10 seconds. There shall be no permanent deformation exceeding 0,5mm in any of its dimensions. Alternatively, batch testing in accordance with clause EN / IEC 60079-5:2015, clause 5.2.1 may be conducted.

iii. Each batch of the filling material shall be subjected to a dielectric strength test in accordance with EN / IEC 60079-5:2015, clause 5.2.2 for a minimum of 60 seconds.

iv. The panel, when assembled to the driver must be subjected to a routine electric strength test of 500 V in accordance with IEC 60079-11 clauses 6.3.13, 10.3 and 11.2.

14 Specific Conditions of Use (Special Conditions)

The following conditions relate to safe installation and/or use of the equipment.

i. The cable supplied with the panel for connection to the NDU / NDEU has a maximum length of 4m and must not be lengthened. It may be cut to a required length to suit.

ii. Only one Nimbus LED Panel may be connected to the Nimbus NDU driver unit.

iii. Nimbus** LED Panel - Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment 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 e.g. locate the equipment where a charge-generating mechanism (such as wind-blown dust) is unlikely to be present. In addition, the equipment shall only be cleaned with a damp cloth.

iv. Nimbus** LED Panels – The enclosure is manufactured from aluminium. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation.

v. For Zone 2 applications, the input and in-line fuses may be removed. When this is the case, the equipment must be connected to an external protective device with a minimum breaking capacity of 1500 A.

Certificate Annex

Certificate Number	**CML 16ATEX4300X**
Equipment	**Nimbus LED Driver NDU** Zone 2** **Nimbus Emergency LED Driver NDEU** Zone 2** **Nimbus LED Panels NIMBUS** Zone 2**
Manufacturer	**Abtech Limited**

The following documents describe the equipment or component defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
ABT30828	1 of 1	A	07 Oct 2016	Nimbus panel label – zone 2
ABT30821	1 of 1	A	07 Oct 2016	Nimbus driver label – zone 2
ABT31214	1 of 1	A	07 Oct 2016	Nimbus emergency label drawing (z2)
ABT31215	1 of 1	A	07 Oct 2016	Nimbus led panel certification drawing – zone 2
ABT30360	1 of 1	A	07 Oct 2016	Nimbus emergency 27W driver enclosure certification drawing
ABT30361	1 of 1	A	07 Oct 2016	Nimbus emergency driver GA certification drawing
ABT30900	1 of 1	A	07 Oct 2016	Ex ec increase safety Ni/Cd battery assembly 6V 4Ah
ABT30891	1 of 1	A	07 Oct 2016	Nimbus emergency driver top component layout
ABT30889	1 of 1	A	07 Oct 2016	Nimbus emergency driver top layer
ABT30892	1 of 1	A	07 Oct 2016	Nimbus emergency driver bottom component layout
ABT30888	1 of 1	A	07 Oct 2016	Nimbus emergency driver bottom layer
ABT30890	1 of 1	A	07 Oct 2016	Nimbus emergency driver BOM
ABT30886	1 to 5	1	07 Oct 2016	Emergency Nimbus Driver Board
ABT28503	1 of 1	B	07 Oct 2016	Intrinsically safe driver / enclosure certification drawing
ABT28498	1 of 3	B	07 Oct 2016	Nimbus driver IS driver overview
ABT28499	2 of 3	A	07 Oct 2016	Nimbus driver crowbar system
ABT28500	3 of 3	A	07 Oct 2016	Nimbus driver LED driver
ABT28501	1 of 1	A	07 Oct 2016	Nimbus driver BOM
ABT30093	1 of 1	A	07 Oct 2016	ZAG 6 assembly GA nimbus
ABT28940	1 of 1	C	07 Oct 2016	Nimbus sand filling instruction
ABT30864	1 of 1	A	07 Oct 2016	Nimbus driver top components layout
ABT30865	1 of 1	A	07 Oct 2016	Nimbus driver bottom component layout
ABT30866	1 of 1	A	07 Oct 2016	Nimbus driver top layout
ABT30867	1 of 1	A	07 Oct 2016	Nimbus driver bottom layout
ABTQ218	1 of 1	-	07 Oct 2016	Ex q sand filling procedure

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Manufacturer	**Abtech Limited**

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
ABT30821	1 of 1	B	28 Jun 2017	Nimbus Driver Label – Zone 2
ABT31214	1 of 1	B	28 Jun 2017	Nimbus Emergency Label Drawing (Z2)
ABT30828	1 of 1	B	28 Jun 2017	Nimbus Panel Label – Zone 2

Issue 2

None.