



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

Ex COMPONENT CERTIFICATE

Certificate No.: **IECEx EXV 19.0027U**

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Certificate history:

Status: **Current**

Issue No: 2

[Issue 1 \(2020-04-22\)](#)

[Issue 0 \(2019-05-21\)](#)

Date of Issue: 2021-03-05

Applicant: **Barel AS**
Havneveien 8
N-9917Kirkenes
Norway

Ex Component: ARC BG4 & BG5 series LED-modules and VSI LED Status Indicator

This component is NOT intended to be used alone and requires additional consideration when incorporated into other equipment or systems for use in explosive atmospheres (refer to IEC 60079-0).

Type of Protection: **Ex mb - encapsulation**

Marking: Ex mb IIC Gb

Approved for issue on behalf of the IECEx
Certification Body:

Sean Clarke CEng MSc FIET

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 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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Manufacturer: **Barel AS**
Havneveien 8
N-9917 Kirkenes
Norway

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 60079-18:2014 Explosive atmospheres – Part 18: Equipment protection by encapsulation “m”
Edition:4.0

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/ExTR19.0022/00](#)

[GB/EXV/ExTR20.0031/00](#)

[GB/EXV/ExTR21.0021/00](#)

Quality Assessment Report:

[NO/NEM/QAR08.0001/08](#)



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Ex Component(s) covered by this certificate is described below:

The ARC BG4 and BG5 are Ex Component approved LED arrays for use in hazardous area luminaires. The rated service temperature range for the BG4 series is: Ts -40°C to +80°C. The rated service temperature range for the BG5 series and the VSI LED Status Indicator is: Ts -40°C to +95°C.

The VSI LED Status Indicator, which can be used with BG4 and BG5 model types, is employed to indicate battery status and is available in 4 colour options: Clear Green, White Green, Clear Red/Green and White Red Green.

See Annex for full details of the ARC BG4 and BG5 model types covered under this approval.

SCHEDULE OF LIMITATIONS:

1. When the ARC BG4 or BG5 LED Modules and VSI LED Status Indicator are installed in an enclosure it must comply with the requirements of EN/IEC 60079-0 for a minimum rating of IP54.
2. The ARC LED modules must be connected to a suitable constant current LED driver with a minimum rated breaking capacity of 1500A such as the Barel HFX/E LED, note that an external protective device can be used for this purpose.
3. The VSI indicators must not be subject to fault currents in excess of 30 mA when incorporated into the end use product.
4. The ARC BG5 and VSI indicators have a Service Temperature (Ts) range of -40°C to +95°C and must not be subjected to temperatures, internal ambient air temperatures around the component when incorporated into the end use product, of less than -40°C or greater than 76°C for the 370mA rated model types and less than -40°C or greater than 66°C for the 550mA rated versions.
5. The ARC BG4 has a Service Temperature (Ts) range of -40°C to +80°C and must not be subjected to temperatures, internal ambient air temperatures around the component when incorporated into the end use product, of less than -40°C or greater than 61°C for the 370mA rated model types and less than -40°C or greater than 51°C for the 550mA rated versions.
6. The embedded thermal fuses in ARC LED modules will limit the maximum surface temperature to not exceed 100°C under fault conditions.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Addition of BG5 model types and VSI LED status indicator.



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Additional information:

See Annex for Manufacturer's documents and Routine Testing required.

Annex:

[IECEx EXV.190072U Iss 2 Annex.pdf](#)

Description Continued: BG4 and BG5 model types covered under this approval

Name	Description	Model	Barel art	Type	Length mm	Color temp	Input rating	Nominal power W
ARC BG4	LED lamp	600	11283	ARC BG4 600 830	574	3000K	370mA/64V	23,7
			11284	ARC BG4 600 840	574	4000K		
			11286	ARC BG4 600 860	574	6000K		
			11283HF	ARC BG4 600 830 HF	574	3000K	550mA/64V	
			11284HF	ARC BG4 600 840 HF	574	4000K		
			11286HF	ARC BG4 600 860 HF	574	6000K		
		11483	ARC BG4 1200 830	1134	3000K	370mA/128V		47,3
		11484	ARC BG4 1200 840	1134	4000K			
		11486	ARC BG4 1200 860	1134	6000K			
		11483HF	ARC BG4 1200 830 HF	1134	3000K	550mA/128V		
		11484HF	ARC BG4 1200 840 HF	1134	4000K			
		11486HF	ARC BG4 1200 860 HF	1134	6000K			
	11283E	ARC BG4 600 830 E	574	3000K	370mA/64V		23,7	
	11284E	ARC BG4 600 840 E	574	4000K				
	11286E	ARC BG4 600 860 E	574	6000K				
	11283EHF	ARC BG4 600 830 E HF	574	3000K	550mA/64V			
	11284EHF	ARC BG4 600 840 E HF	574	4000K				
	11286EHF	ARC BG4 600 860 E HF	574	6000K				
11483E	ARC BG4 1200 830 E	1134	3000K	370mA/128V		47,3		
11484E	ARC BG4 1200 840 E	1134	4000K					
11486E	ARC BG4 1200 860 E	1134	6000K					
11483EHF	ARC BG4 1200 830 E HF	1134	3000K	550mA/128V				
11484EHF	ARC BG4 1200 840 E HF	1134	4000K					
11486EHF	ARC BG4 1200 860 E HF	1134	6000K					

Name	Length mm	Color temp CRI80	Input rating DC	Nominal power, W	Total lumen output (Calc)
ARC BG5 300 830	290	3000K	370mA/32 V	12	1824
ARC BG5 300 840	290	4000K			1903
ARC BG5 300 850	290	5000K			1913
ARC BG5 300 860	290	5700K	370mA/64 V	24	1936
ARC BG5 600 830	574	3000K			3649
ARC BG5 600 840	574	4000K			3805
ARC BG5 600 850	574	5000K			3829
ARC BG5 600 860	574	5700K	370mA/128 V	48	3873
ARC BG5 1200 830	1134	3000K			7298
ARC BG5 1200 840	1134	4000K			7611
ARC BG5 1200 850	1134	5000K			7656
ARC BG5 1200 860	1134	5700K	550mA/128 V	70	7745
ARC BG5 1200 830 HF	1134	3000K			10735
ARC BG5 1200 840 HF	1134	4000K			11208
ARC BG5 1200 850 HF	1134	5000K			11276
ARC BG5 1200 860 HF	1134	5700K	370mA/160 V	60	11343
ARC BG5 1500 830	1412	3000K			9122
ARC BG5 1500 840	1412	4000K			9514
ARC BG5 1500 850	1412	5000K			9569
ARC BG5 1500 860	1412	5700K	550mA/160 V	88	9682
ARC BG5 1500 830 HF	1412	3000K			13419
ARC BG5 1500 840 HF	1412	4000K			14010
ARC BG5 1500 850 HF	1412	5000K			14095
ARC BG5 1500 860 HF	1412	5700K			14179

Routine Tests:**Visual inspections**

Each piece of “m” equipment shall be subjected to a visual inspection. No damage shall be evident, such as cracks in the compound, exposure of the encapsulated parts, flaking, inadmissible shrinkage, swelling, decomposition, failure of adhesion (separation of any adhered parts) or softening.

Dielectric strength test

The dielectric strength test shall be done between the metallic frame of the device and the input wiring. The test voltage used is detailed below:

LED Type	AC test Voltage (Vrms)	DC test Voltage (Vdc)
ARC BG4 / BG5 300/600 64V	500 V, 48 Hz to 62 Hz	700
VSI Indicator 3.2V	500 V, 48 Hz to 62 Hz	700
ARC BG4 / BG5 1200/1500 128V	1,500 V, 48 Hz to 62 Hz	2100

The test voltage shall be maintained for at least 1 s without the breakdown or arcing.

Manufacturer's documents:**Issue 0**

Number	Date	Issue	Description
11280EHF-AS	06.05.2019	4	ARC BG4-600 E HF
11280HF-AS	06.05.2019	4	ARC BG4-600 HF
11480EHF-AS	06.05.2019	4	ARC BG4-1200 E HF
11480HF-AS	06.05.2019	4	ARC BG4-1200 HF
Label ARC BG4	15.05.2019	3	Label ARC BG4
I_P252	12.04.2019	2	Assembly and potting ARC BG4
BoM 321-323	08.11.2018	1	BoM 321-323
PCB 321	22.10.2018	B	PCB 321
PCB 323	22.10.2018	A	PCB 323
SCH 321-323	23.11.2018	A	SCH 321-323

Issue 1

Number	Date	Issue	Description
Label ARC BG4	06.04.2020	4	Label ARC BG4

Updated drawing

Issue 2

Number	Date	Issue	Description
460229	24.04.2020	2	PC-cover LM321
250040-1-2-3	28.05.2020	1	Al-profile ARC BG5
AS300BG5	05.06.2020	1	ASSY ARC 300 BG5
AS600BG5	05.06.2020	1	ASSY ARC 600 BG5
AS1200BG5	05.06.2020	1.1	ASSY ARC 1200 BG5
AS1500BG5	05.06.2020	1.1	ASSY ARC 1500 BG5
AS9204X	25.08.2020	4	ASSY VSI
BoM 321	09.10.2020	5	BoM LM 321
650002	25.02.2021	4	Label ARC BG5
920001	15.02.2021	2	Label VSI
TDS ARC BG5	25.02.2021	7	Technical Data ARC BG5
-	25.02.2021	4	Technical Data VSI – Indicator LED

New / additional drawings