



# 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](http://www.iecex.com)

### Ex COMPONENT CERTIFICATE

Certificate No.:	<b>IECEX EXV 19.0027U</b>	Page 1 of 4	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 5	Issue 4 (2024-05-20)
Date of Issue:	2024-10-24		Issue 3 (2022-02-23)
Applicant:	<b>Barel AS</b> Havneveien 8 N-9917Kirkenes <b>Norway</b>		Issue 2 (2021-03-05)
Ex Component:	ARC BG4 & BG5 series LED-modules and VSI LED Status Indicator		
<i>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).</i>			
Type of Protection:	<b>Ex mb - Encapsulation</b>		
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:  
(for printed version)

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Wrexham LL 139UZ  
**United Kingdom**





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Date of issue: 2024-10-24

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

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 component 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 component listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[GB/EXV/ExTR19.0022/00](#)  
[GB/EXV/ExTR22.0011/00](#)

[GB/EXV/ExTR20.0031/00](#)  
[GB/EXV/ExTR24.0057/00](#)

[GB/EXV/ExTR21.0021/00](#)  
[GB/EXV/ExTR24.0104/00](#)

Quality Assessment Report:

[NO/NEM/QAR08.0001/09](#)



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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 BX5 XXX 97XX & - HF model range have a service temperature (Ts) range of -40°C to +95°C. When incorporated into the end use product the temperature measured at the 'Tc' point must not exceed 79°C, taking into account the upper ambient rating of the end use equipment.
5. The ARC 370mA BG5 and VSI indicators have a Service Temperature (Ts) range of -40°C to +95°C. When incorporated into the end use product the temperature measured at the 'Tc' point must not exceed 86°C, taking into account the upper ambient rating of the end use equipment.
6. 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.
7. 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)**

Introduction of an optional, smaller LED footprint and associated drawings including label drawing

**Annex:**

[IECEX EXV.190027U Iss 5 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		
		1200	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		
	LED lamp with E-indicator	600	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		
		1200	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		

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

Barel art	Name	Length mm	Color temp	CRI	Input rating DC	Total lumen output (Calc)	Ts	Tc	Ta	
650383	ARC BG5 300 830	290	3000K	80	370mA/32V	1824	-40 to +95° C	86° C	-40 to +76° C	
650384	ARC BG5 300 840		4000K			1903				
650385	ARC BG5 300 850		5000K			1913				
650386	ARC BG5 300 857		5700K			1936				
650387	ARC BG5 300 865		6500K			1981				
650683	ARC BG5 600 830	570	3000K	80	370mA/64V	3649				
650684	ARC BG5 600 840		4000K			3805				
650685	ARC BG5 600 850		5000K			3829				
650686	ARC BG5 600 857		5700K			3873				
650687	ARC BG5 600 865		6500K			3962				
651283	ARC BG5 1200 830	1130	3000K	80	370mA/128V	7298				
651284	ARC BG5 1200 840		4000K			7611				
651285	ARC BG5 1200 850		5000K			7656				
651286	ARC BG5 1200 857		5700K			7745				
651287	ARC BG5 1200 865		6500K			7924				
651283HF	ARC BG5 1200 830 HF	1130	3000K	80	550mA/128V	10735		79° C	-40 to +66° C	
651284HF	ARC BG5 1200 840 HF		4000K			11208				
651285HF	ARC BG5 1200 850 HF		5000K			11276				
651286HF	ARC BG5 1200 857 HF		5700K			11343				
651287HF	ARC BG5 1200 865 HF		6500K			11478				
651583	ARC BG5 1500 830	1412	3000K	80	370mA/160V	9122	86° C	-40 to +76° C		
651584	ARC BG5 1500 840		4000K			9514				
651585	ARC BG5 1500 850		5000K			9569				
651586	ARC BG5 1500 857		5700K			9682				
651587	ARC BG5 1500 865		6500K			9905				
651583HF	ARC BG5 1500 830 HF	1412	3000K	80	550mA/160V	13419			79° C	-40 to +66° C
651584HF	ARC BG5 1500 840 HF		4000K			14010				
651585HF	ARC BG5 1500 850 HF		5000K			14095				
651586HF	ARC BG5 1500 857 HF		5700K			14179				
651587HF	ARC BG5 1500 865 HF		6500K			14347				
650393	ARC BG5 300 9730	290	3000K	97	370mA/34V	tbd	79° C	-40 to +66° C		
650394	ARC BG5 300 9740		4000K			tbd				
650395	ARC BG5 300 9750		5000K			tbd				
650396	ARC BG5 300 9757		5700K			tbd				
650397	<b>ARC BG5 300 9765</b>		6500K			<b>1406</b>				
650693	ARC BG5 600 9730	570	3000K	97	370mA/68V	tbd				
650694	ARC BG5 600 9740		4000K			tbd				
650695	ARC BG5 600 9750		5000K			tbd				
650696	ARC BG5 600 9757		5700K			tbd				
650697	<b>ARC BG5 600 9765</b>		6500K			<b>2811</b>				
651293	ARC BG5 1200 9730	1130	3000K	97	370mA/136V	tbd				
651294	ARC BG5 1200 9740		4000K			tbd				
651295	ARC BG5 1200 9750		5000K			tbd				
651296	ARC BG5 1200 9757		5700K			tbd				
651297	<b>ARC BG5 1200 9765</b>		6500K			<b>5623</b>				
651593	ARC BG5 1500 9730	1412	3000K	97	370mA/170V	tbd				
651594	ARC BG5 1500 9740		4000K			tbd				
651595	ARC BG5 1500 9750		5000K			tbd				
651596	ARC BG5 1500 9757		5700K			tbd				
651597	<b>ARC BG5 1500 9765</b>		6500K			<b>7029</b>				

**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:**

<b>Technical Documents</b>			
Title:	Drawing No:	Rev:	Date:
ARC BG4-600 E HF	11280EHF-AS	5	12.04.2024
ARC BG4-600 HF	11280HF-AS	5	12.04.2024
ARC BG4-1200 E HF	11480EHF-AS	5	12.04.2024
ARC BG4-1200 HF	11480HF-AS	5	11.04.2024
Label ARC BG4	Label ARC BG4	3	15.05.2019
Assembly and potting ARC BG4	I_P252	2	12.04.2019
*Assembly and potting ARC BG4	I_P253	1	20.08.2020
BoM 321-323	BoM 321-323	1	08.11.2018
PCB 321	PCB 321	B	22.10.2018
*PCB 321 C	PCB 321 C	C	30.05.2024
PCB 323	PCB 323	A	22.10.2018
SCH 321-323	SCH 321-323	A	23.11.2018
PC-cover LM321	460229	2.1	08.11.2021
Al-profile ARC BG5	250040-1-2-3	1	28.05.2020
ASSY ARC 300 BG5	AS300BG5	1	05.06.2020
ASSY ARC 600 BG5	AS600BG5	1	05.06.2020
ASSY ARC 1200 BG5	AS1200BG5	1.1	05.06.2020
ASSY ARC 1500 BG5	AS1500BG5	1.1	05.06.2020
ASSY VSI	AS9204X	4	25.08.2020
*BoM LM 321	BoM 321	7	26/09/2024
*Label ARC BG5	650002	7	04/10/2024
Label VSI	920001	4	28.01.2022
*Technical Data ARC BG5	TDS ARC BG5	13	04.10.2024
Technical Data VSI – Indicator LED	TDS VSI	6	28.01.2022
Potting Compound ARC BG5 and VSI	650001	1	18.02.2021

*\*New / additional drawings*