

1 EU - Type Examination Certificate

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

3 Certificate Number: **ExVeritas 19 ATEX 0478U** Issue: 5

4 Equipment: **ARC BG4 & BG5 series LED Modules and VSI LED Status Indicator**

5 Manufacturer: **BAREL AS**

6 Address: **Havneveien 8, N-9917 Kirkenes, Norway**

7 This component and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 ExVeritas, Notified Body number 2804 in accordance with Article 9 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to design and construction of equipment and protective systems for use in potentially explosive atmospheres given in Annex II to the Directive

9 Compliance with the applicable Essential Health and Safety Requirements has been assured by compliance with the following Standards and section 16 of this report:

EN IEC 60079-0: 2018

EN 60079-18: 2015

10 If the sign "U" placed after the certificate number indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as the basis for certification of an equipment or protective system.

11 This EU-Type Examination Certificate relates only to the design, construction, examination and tests of the specified component in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

12 The marking of the equipment shall include the following:

 II 2 G Ex mb IIC Gb



On behalf of ExVeritas



Peter Lauritzen
Managing Director

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The certificate is only valid when it carries an original signature.

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Schedule

13 Description of Equipment or Protective System

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.

The tables below detail the ARC 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			

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Description of Equipment (cont'd)

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	ARC BG5 300 9765		6500K			1406				
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	ARC BG5 600 9765		6500K			2811				
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	ARC BG5 1200 9765		6500K			5623				
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	ARC BG5 1500 9765		6500K			7029				

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14 Descriptive Documents

14.1 Associated Report and Certificate History:

Report Number	Cert Issue Date	Issue	Comment
R1954/A/1	17/05/2019	0	Initial issue of the Prime Certificate
R2539/A/1	06/04/2020	1	Extension of Ts range.
R2894/A/1	05/03/2021	2	Addition of BG5 model types and VSI LED status indicator
R3745/A/1	22/02/2022	3	Addition of 'Tc point' to equipment marking label.
R5224/A/1	17/05/2024	4	Increase in colour temp to 6500K
R5503/A/1	21/10/2024	5	New, optional, smaller footprint LED package and associated drawings changes

14.2 Compliance Drawings:

Issue 3

Title:	Drawing No.:	Rev. Level:	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 revision drawings

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15 Conditions of Certification

15.1 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.

15.2 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 breakdown or arcing.

16 Essential Health and Safety Requirements

Essential Health and Safety Requirements are addressed by the standards listed in section 9 and where required the report listed in section 14.1

The manufacturer shall inform the Notified Body of any modifications to the design of the product described by this schedule.

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