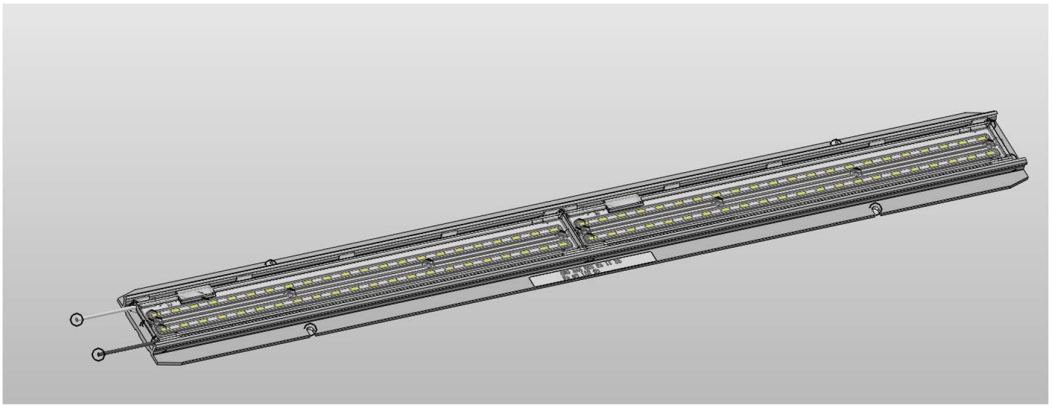
TECHNICAL DATA
ARC BG5
LED MODULE FOR Ex-ENVIRONMENT



Author: Barel AS
Rev 13
Date: 4.10.2024

Barel AS
9917 Kirkenes
Norway
www.barel.no

CONTENTS:

1 General

These operating instructions apply to the products listed under 3.1.
Barel reserves the right to change technical specifications without further notice.
Unauthorized copying or modification of this content not permitted.

1.1 Manufacturer

Barel AS
Havneveien 8
N-9900 Kirkenes
Phone: +47 78 97 00 70 /Fax: +47 78 97 00 77
www.barel.no
E-Mail: sales@barel.no

1.2 Applications

The ARC LED MODULE is designed to replace fluorescent lamps in Ex e luminaires. State of the art LED technology is utilized to increase efficiency and cold-area performance over fluorescent solutions. The LED system is suitable for installation in Ex e enclosures, together with a suitable LED driver like the Barel HFX or HFXE LED. This luminaire is suitable for use in explosive gas atmospheres like:

- Oil Industry On- & Off-shore Installations, Gas Stations, Fuel Reservoirs, Oil Tankers
- Chemical Industry Production Plants

2 Approvals

Approvals:

- QAN/QAR 0470 Nemko 01ATEX452Q/NO/NEM/QAR08.0001/04
- Ex protection Code Ex II 2 G Ex mb IIC
- IECEx Certificate: IECEx EXV 19.0027U
- ATEX no. ExVeritas 19 ATEX 0478U

According to directives and standards listed:

ATEX Directive 2014/34/EU
EN 60079-0 Explosive atmospheres -- Part 0: Equipment - General requirements
EN 60079-18 Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

IECEx Scheme
IEC 60079-0 Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-18 Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

Low Voltage Directive 2014/35/EU
EN 62031 LED modules for general lighting - Safety specifications

RoHS Directive 2011/65/EU
EN 50581 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

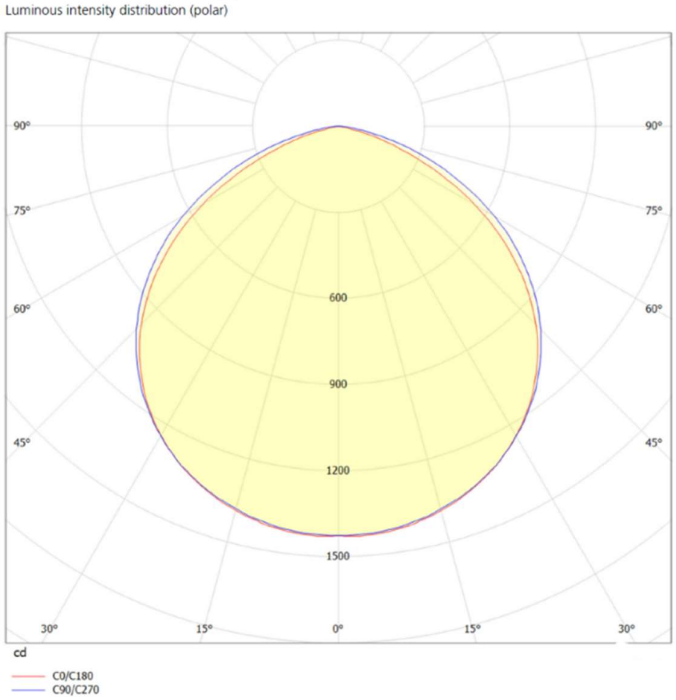
3 Technical data

3.1 Product range

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**			

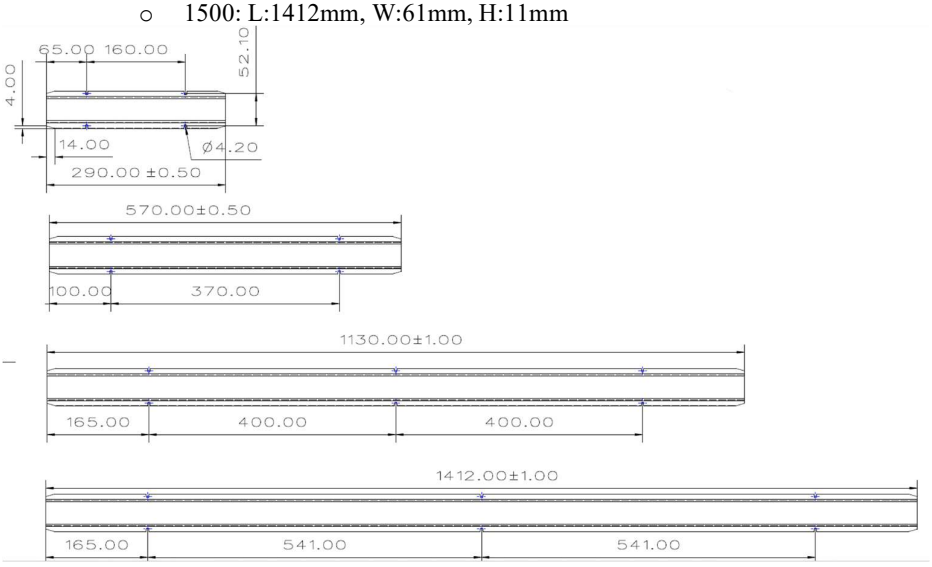
General tolerance +/- 10%.
Within 3-step MacAdam.
Photometric measurements must be done in final application.

3.2 Polar diagram



3.3 Mechanical data:

- Aluminium profile to be fastened with screws or other suitable means.
- Dimensions:
  - 300: L:290mm, W:61mm, H:11mm
  - 600: L:570mm, W:61mm, H:11mm
  - 1200: L:1130mm, W:61mm, H:11mm
  - 1500: L:1412mm, W:61mm, H:11mm

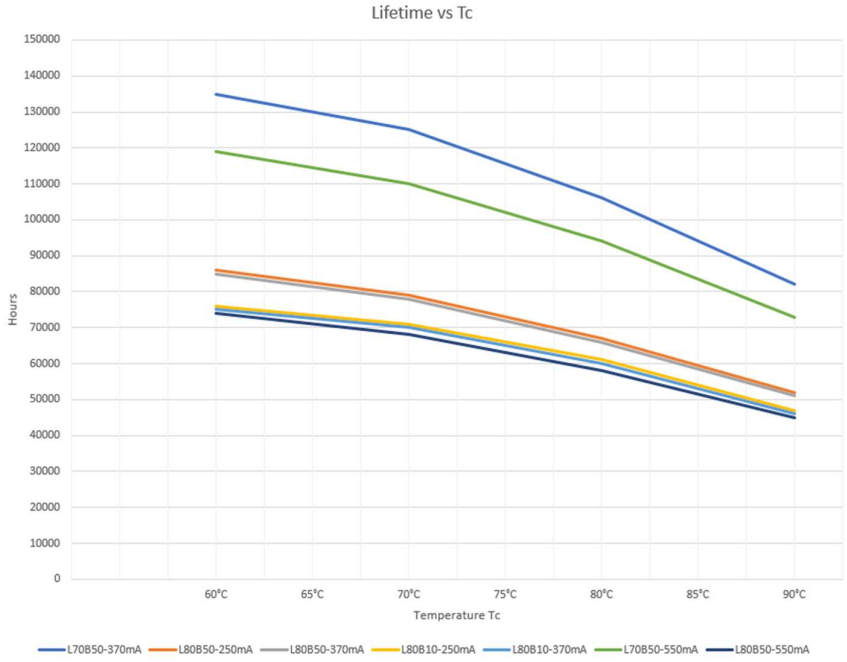


3.4 Optical data:

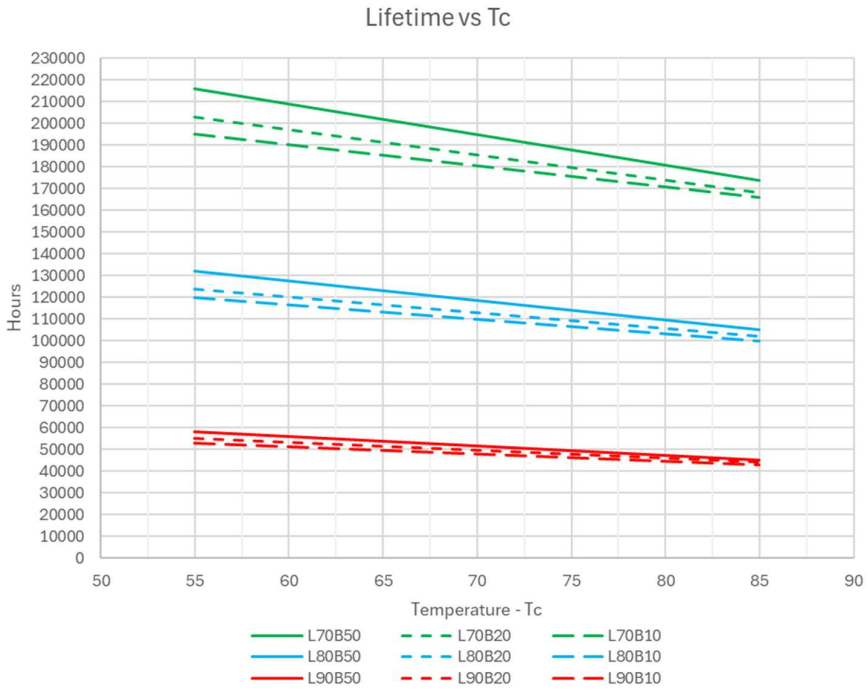
- Light output and performance to be tested in actual application.
- Separate diffuser could be used for glare reduction and light pattern shaping. (available as kit)

3.5 Expected lifetime:

For CRI 80 products:



For CRI 97 products at rated current:



4 Installation

These components do not cause harm or injury when used as specified in these instructions. If this equipment is not utilized in a manner specified by the manufacturer, the protection by the equipment may be impaired. Wire length:

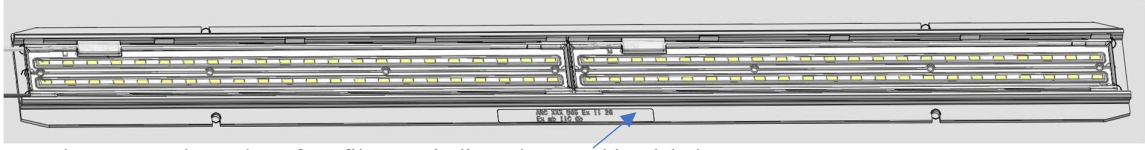
- ARC 300: wires L=150mm
- ARC 600: wires L=350mm
- ARC 1200: wires L=850mm
- ARC 1500: wires L=1150mm

Do not energize circuit before all components and LED module are connected properly.
In case of no function or malfunction: first de-energize the circuit. Disconnect mains and battery supply before LED module is disconnected.
The LED module must be connected to correct polarity.
Second layer of wire insulation should be considered depending on installation class.
Wires should be secured and protected from damage in installation. Barel recommends ferrule on wire end.

4.1 Temperature:

Tc is to be measured on the edge of the aluminum profile – Tc indicated on marking label.

- The internal – non-resettable- thermal fuse will limit the maximum surface temperature to not exceed 100°C under fault conditions.



Tc to be measured on edge of profile – Tc indicated on marking label.

4.2 Schedule of limitations:

The ARC BG5 is an updated version of BG4, to include improved design of aluminium profile and assembly, including new versions 300 and 1500.

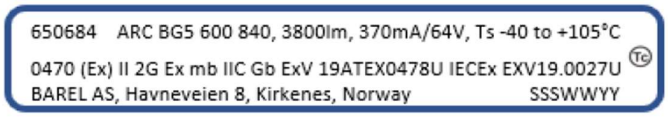
- When the ARC BG4 or BG5 LED Modules and VSI LED Status Indicator are installed in an enclosure it must comply with the requirements of EN/IEC 60079-0 for a minimum rating of IP54.
- The ARC LED modules must be connected to a suitable constant current LED driver with a minimum rated breaking capacity of 1500A such as the Barel HFX/E LED, note that an external protective device can be used for this purpose.
- The ARC BG5 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 for the 370mA rated model types and 79°C for the 550mA rated versions, taking into account the upper ambient rating of the end use equipment.
- The embedded thermal fuses in ARC LED modules will limit the maximum surface temperature to not exceed 100°C under fault conditions.

4.3 Electrical connection

Connect wires to suitable constant current LED driver. White + and black -.
LED-driver must be de-energized before connection or disconnection of LED module.
Do not connect or disconnect when circuit is energized.

4.4 Marking

Example:



4.5 ESD:

ESD (Electrostatic Discharge) protective measures should be considered during installation. Connection wires should not meet charged objects before properly connected to HFX/HFXE LED driver.

5 What to do if…

No light when first connected to the mains:

- Make sure all components are the correct type and suitable for LED module/driver type, mains supply voltage and frequency range.
- Make sure all connections are correct.
- Allow a reset of LED driver.
- Do not attempt to open or repair these units. ARC should be replaced in case of failure – to avoid premature failure of the other component.

If problems with conducted emission during EMC measurements, contact Barel for assistance.
Important issues are:
Keep all wires short.
Separate LED module wires from mains supply wires