HFX LED

LED DRIVER for Ex-Environment

Barel AS

Revision 1

Date 23.04.2021

www.barel.no/

CONTENT

1 General

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

1.1 Manufacturer

Barel AS
Havneveien 8
9917, Kirkenes, Norway
Phone: +47 789 70 070
www.barel.no/
E-mail: sales@barel.no

1.2 Applications

State of the art technology is utilized to increase efficiency and long lifetime.
These components are suitable for use in explosive gas atmospheres like:

- Oli industry — On- & offshore installations, gas stations, fuel reservoirs, oil tankers
- Chemical industry — Production plants

2 Approvals

- QAN/QAR	*0470 Nemko 01ATEX452Q/ NO/NEM/QAR08.0001/04*
- Ex protection Code	*Ex II 2 G Ex eb mb IIC T4*
- IECEx Certificate	*IECEx PRE 14.0039U*
- ATEX no.	*Presafe 14 ATEX 5355U*

According to directives and standards listed:

ATEX Directive 2014/34/EU
EN 60079-0:2018 Explosive atmospheres -- Part 0: Equipment - General requirements
EN 60079-7:2015 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
EN 60079-18:2015/A1:2017 Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

IECEx Scheme
IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-7:2015+ AMD1:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
IEC 60079-18:2014/AMD1:2017 Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

EMC-Directive 2014/30/EU
EN 55015:2013/A1:2015 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61000-3-2:2014 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase)
EN 61000-3-3:2013 Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
EN 61547:2009 Equipment for general lighting purposes - EMC immunity requirements

Low Voltage Directive 2014/35/EU
EN 61347-1:2015 Lamp control gear -- Part 1: General and safety requirements
EN 61347-2-7:2012 Lamp control gear -Particular requirements for battery supplied electronic control gear for emergency lighting
EN 61347-2-13:2014/A1:2017 Lamp control gear - Part 2-13: Particular requirements for dc. or ac. supplied electronic control gear for LED module

RoHS Directive 2011/65/EU
EN 50581:2012 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

Marking Ex II 2 G Ex e mb IIC Gb

Ta -42 to +65°C

Tc 80°C

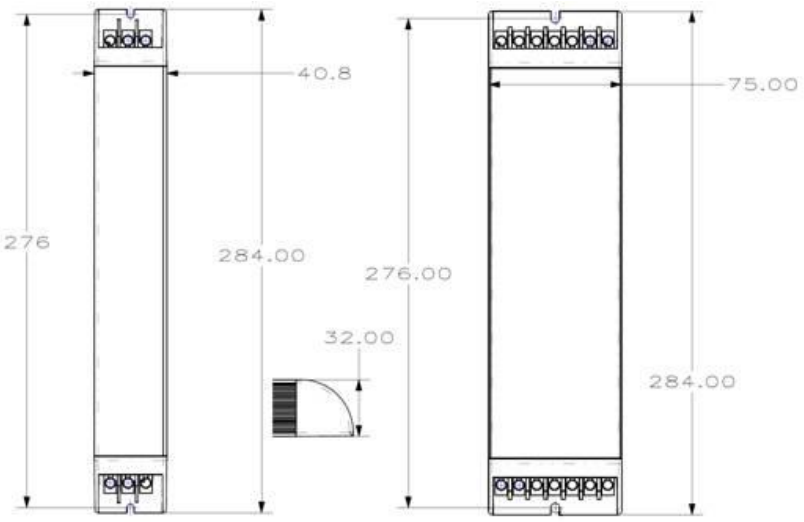
Dimension LxWxH 285x41x32mm

Weight 510g

Name	Description	Barel part number	Input Voltage AC 50/60Hz - DC		LED current in normal operation +/-7%	Lamp type	Input Current range AC +/- 10%	PF at 230V 50Hz	THD% at 230V 50Hz
HFX LED	Electronic driver for LED lamp	12951	110-254VAC	220-250VDC	200mA	ARC 600	0,13A - 0,06A	0,88	24,24
						ARC 1200	0,22A - 0,10A	0,94	15,54
		12949-250			250mA	ARC 600	0,16A - 0,08A	0,91	20,87
						ARC 1200	0,29A - 0,13A	0,96	12,41
		12949			370mA	ARC 600	0,25A - 0,11A	0,94	18,41
						ARC 1200	0,45A - 0,19A	0,98	9,65

3.2 Mechanical data

- Aluminium housing fastened with 2 screws in the plastic end-caps, c-c 276mm.



3.3 Expected lifetime

HFX LED: At Tc <55°C the expected lifetime to survival of >90% of units exceeds 75.000 hours

Expected lifetime of the system HFX LED and ARC depends on the following parameters:

- Operation at maximum ambient temperature will decrease lifetime
- Number of switching cycles –
  - Frequent switching causing rapid temperature change will decrease lifetime
- Number of thermal cycles –
  - Frequent and rapid cycling from cold to warm will decrease lifetime

- Constant operation in stabile low to medium temperature will increase lifetime
- Mains supply quality, susceptibility for high-voltage spikes in the supply lines

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.

Inrush current and circuit breaker characteristics/amount of units per circuit breaker must be considered in the installation.

Do not energize circuit before all components and LED-modules are connected properly.

In case of no function or malfunction: first de-energize the circuit. Disconnect mains supply before LED modules are disconnected.

- Connect all components and LED module.
- Check that all connections are made to the correct port, tightened to the correct torque and that no wires are loose or damaged.
- The LED module must be connected to correct polarity. Do not operate the unit without LED module properly connected.
- Energize the unit from mains supply.
    - The LED module will light up in normal mode.

4.1 Schedule of limitations

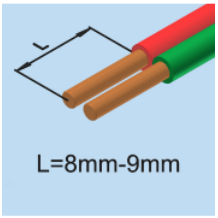
- The temperature of the TC point must not be exceeded
- The minimum operating temperature of the HFX LED-driver is -42°C
- The HFX LED have an output rating of 50-130V and 200-370mA. The current is limited to 850mA and breaking capacity of 1500A and has been tested together with Barel ARC LED 600 and 1200, certified Presafe 15 ATEX 6296U and IECEx PRE 15.0014U.
- The LED-driver shall be mounted inside an Ex e luminaire and not directly exposed to light.
- The terminal has a rating of 450V, Torque 0.9Nm and capacity on the screw side of one conductor with dimensions 1.0 - 2.5mm2 rigid or flex.

4.2 Electrical connection

Electrical connections of the LED-driver must be done with mains power supply off and disconnected. The mains supply must be disconnected by an external 2-pole switch (both phases must be off). Connect “GND” to Protective Earth and chassis of the luminary or to a separate ground connection. The aluminium chassis is internally connected to the gnd pin. DC input: Connect – to “N” and + to “L”.

4.3 Cable

Cable cross sectional area: 1 – 2,5 mm2 (solid or multi wire).
Terminal torque: 0,9Nm.
Terminal screw/tool: 0,6x3,5mm Slotted bit of high quality is recommended.



Suitable ferrule should be used to secure the connection of stranded wires.
For Aluminium cables; a bi metallic connector should be used to provide a copper connection.

5 What to do if...

Do not energize circuit before all components are connected properly.

In case of no function or malfunction: first de-energize the circuit. Disconnect mains and battery supply before LED modules are disconnected.

- No light in LED module when connected to mains supply-
    - Make sure all components are the correct type and suitable for driver type, mains supply voltage and frequency range.
    - Make sure all connections are correct.
    - Allow reset of mains supply.
- Some internal protection circuits require a reset of mains supply before resuming operation after a fault is detected.
    - Contact Barel if no fault is found, and the reset does not restart the unit.
- Do not attempt to open or repair these units. Both HFX/E and ARC should be replaced in case of failure to avoid premature failure of other components.

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.
- Ground the LED-driver through a short wire connection, and if possible separate from mains cabling internally in the luminaire.