


# User Manual

Explosion-safe LED signal lights  
Type series AR-047

 II 3 G Ex ec IIC T4 Gc  
II 3 D Ex tc IIIC T135°C Dc





## 1. Safety Instructions

The signal light AR-047 is an explosion-safe product suitable for use in hazardous areas with explosion hazard from flammable gases, vapors, mist and dust, classified as Zone 2 or Zone 22.

This manual must be read and understood for safe use of the signal lights. All warnings and instructions must be followed.

- Installation must be carried out by personnel trained and qualified in explosion safety taking the instructions mentioned on the equipment and in this manual into consideration. Local regulations that apply to the installation must be followed.
- Connect this equipment to the direct current supply voltage for which it is designed.
- Isolate electrical power to the signal light before electrical installation.
- The transparent lens can be electrostatically charged. Only use a damp cloth to clean the lens. Do not use solvents.
- Either decommission the signal light or do not use it when it is damaged.
- During installation of the signal light national safety regulations must be observed.
- Only use the signal light under the environmental conditions for which it is specified. Deviating environmental conditions can contribute to damage to the equipment and may lead to possible danger to the life of the user.
- Do not use the signal light at temperatures deviating from the specified ambient temperature range.
- Follow all instructions written on the equipment and as mentioned in this manual.
- Repairs may only be carried out by the manufacturer or by a person appointed by the manufacturer.
- Modifications to the equipment or changes to the design are not permitted.
- The product may only be used for the function for which it is designed and shall be maintained in a good and clean condition.

If these instructions are not followed, the explosion safety of the equipment cannot be guaranteed. The equipment could then endanger the life of the user and could cause the ignition of an explosive atmosphere. Consequently, Artidor as the manufacturer will waive any responsibility.

## 2. Description

The explosion-safe signal light AR-047 has been designed to attract the attention in a safe manner in environments where explosion hazards may exist. For example to indicate the status of a machine or report a malfunction or hazard that requires immediate action. The lamp can be operated in continuous mode or as a blinking (1 Hz) light.

The signal light comprises of a metal housing with a transparent lens covering the LED light source. The explosion safety to gas is arranged by the appliance of protection degree against ignition 'increased safety'. The explosion safety to dust is arranged by the appliance of protection degree against ignition 'protected by enclosure'.

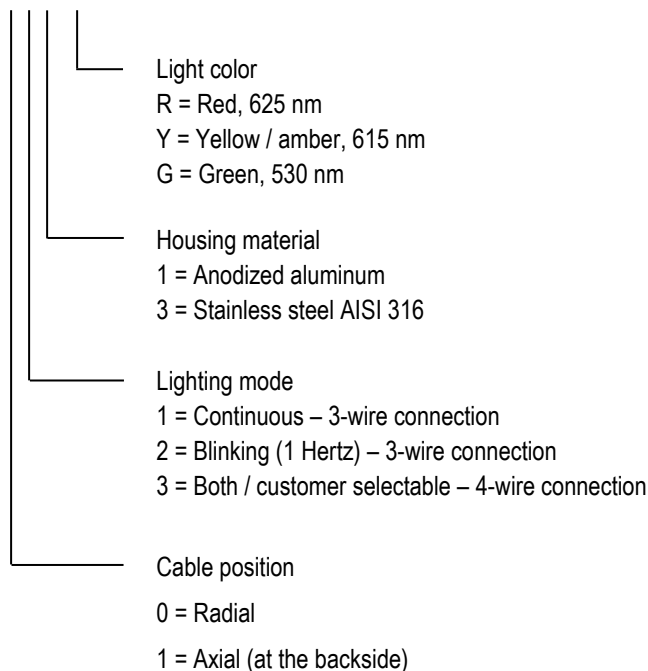
The lens is made of PMMA (Perspex) with an impact resistance of at least 7 Joule. The LED compartment is sealed by a NBR seal. On top of that, a special polyurethane potting is applied on both sides of the printed circuit board to protect the electronics and the leds against environmental factors under the most severe conditions.

The signal lights can be supplied in various models, differing with respect to:

- a. the light color
- b. the material of the armature
- c. the lighting mode
- d. the cable position

Each of these options are explained in more detail further in this document. The specific model is identified by the model code. See the table below.

AR-047 / 0 2 3 - R



- a. Light color

The color of the LED signal light is obtained by use of colored LEDs.

- b. Material

The housing is manufactured out of stainless steel AISI 316 for offshore use and on board of ships, or anodized aluminum for industrial use.

- c. Lighting mode

De lights with continuous and blinking lighting mode are provided with a 3-wire cable. De lighting mode of the light is set during production of the light and cannot be changed. In case the light is provided with a 4-wire connection, the user can select the desired lighting mode by making the right electrical connections.

- d. Type of electrical connection

The LED signal light is provided with a fixed cable with a standard length of 5 m. The metal cable gland is situated either on the outside diameter (radial) or on the backside of the lamp (axial).

### 3. Characteristics

The characteristics of the LED signal light can be summarized as follows;

- Robust signal light with a very low height of only 52 mm
- Stainless steel AISI 316 or anodized aluminum housing and top plate
- Obtainable in three colored lights enabled by the use of colored LEDs
- In continuous lighting mode and blinking mode available
- Provided with a fixed cable
- Manufactured on the basis of the European Directive 2014/34/EU (ATEX 114)
- Suitable for use in gas and dust hazardous areas classified as zone 2 and 22
- Explosion safety category and protection degree against ignition applied:  
II 3 G Ex ec IIC T4 Gc  
II 3 D Ex tc IIIC T135°C Dc
- Protection degree against the ingress of water and dust IP65
- Suitable for internal and external use
- Mounting position 360°

### 4. CE - Marking

The signal lights comply to the European Directives for EMC and ATEX and implicit to the Low Voltage Directive. With regard to explosion safety the signal lights have been designed and manufactured on the basis of the essential health and safety requirements of European Directive 2014/34/EU (ATEX 114) relating to Group II Category 3GD.

Harmonized European construction standards have been applied fulfilling the essential requirements of the directives. Please refer to chapter 6 "Technical data" and the EU Declaration of Conformity at the last page of this user manual for more details.

### 5. Application

The explosion-safe signal lights series AR-047 have been designed for and are suitable for use in hazardous classified areas due to flammable gases, vapors, mist, fibers and dust. Because they are explosion-safe and certified on the basis of Group II Category 3GD of the European ATEX Directive they are suitable for use in the following types of zones in explosion hazardous areas:

- for combustible gases, vapors and mist: zone 2
- for combustible fibers and dust: zone 22

The parts used are all manufactured from corrosion resistant materials and are resistant to the effects of most common chemicals.

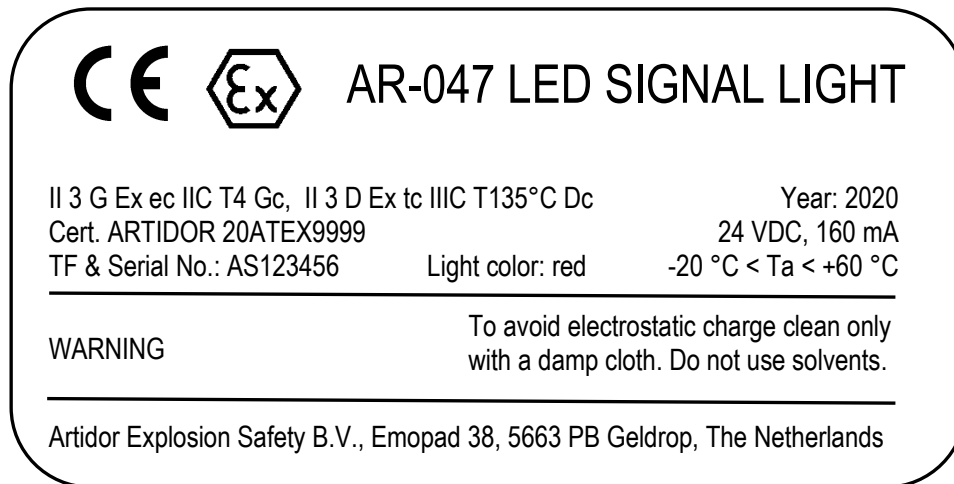
### 6. Technical data

Explosion safety category:	ATEX II 3GD
Protection against ignition:	Ex ec IIC T4 Gc, Ex tc IIIC T135°C Dc
Conformity:	European Directive 2014/34/EU (ATEX 114), 2014/30/EU (EMC)
Standards applied:	EN 60079-0:2018, EN 60079-7:2015 / A1:2018 and EN 60079-31:2014
Ambient temperature:	-20 °C to +60 °C
Material housing:	AISI 316 stainless steel or anodized aluminum

Material lens:	20 mm impact-resistant PMMA (Perspex)
Dimensions:	Ø 95 x 52 mm (excl. cable gland)
Assembly:	M5 tapped holes (3x) on a pitch circle diameter of Ø 81 mm
Light source:	15 LEDs
Voltage:	24 VDC ± 10%
Input voltage:	160 mA @ 24 VDC
Ingress protection level:	IP 65 according to EN 60529
Mounting position:	As desired (360°)
Duration of use:	Continuous
Circumstances of use:	Exterior and interior use
Electrical connection:	Fixed cable, 3 x 1 mm <sup>2</sup> or 4 x 1 mm <sup>2</sup> , length 5 m
Earth connection:	External, stainless steel, 4 mm <sup>2</sup>
Weight:	1.395 g (stainless steel), 575 gram (aluminum)

## 7. Marking and warning on the equipment

The AR-047 signal light is provided with a marking label as shown below.



## 8. Installation instructions

- Installation of explosion-safe equipment such as this product must be carried out by personnel specially trained and qualified to do this, following the relevant requirements of the installation standard EN 60079-14.
- For the installation and use of this product the relevant safety regulations and also the generally recognized latest state of the technology apply.
- During assembly, care must be taken that the framework, screws and surface are strong enough to take the weight of the signal light.
- Isolate power from the electrical supply cable prior to installation.
- Mount the signal light on a metal frame connected with ground (equipotential bonding). If this is not possible, connect an earth wire to the external earth boss and ensure that this is in sufficient electrical connection with ground.
- Install the connection cable and make sure that it is protected from mechanical and chemical influences.

- Connect the end of the cable in a proper way to an external connection box and ensure this is done professionally. The connection box is not supplied. Use a connection box that it is suitably protected for the (explosion hazard) classification of the surroundings in which it will be used.

- The 3-wire connection cable has the following connections:

<u>Function</u>	<u>Wire color</u>
Supply voltage (+)	Brown
Neutral (-)	Blue
Ground	Green / Yellow

- The 4-wire connection cable has the following connections:

<u>Function</u>	<u>Wire number</u>
Continuous mode supply voltage (+)	1
Blinking mode supply voltage (+)	2
Neutral (-)	3
Ground	Green / Yellow

## 9. Maintenance

For the maintenance of the AR-047 signal lights the requirements as stated in EN 60079-17 apply.

If the signal light or the connection cable is no longer in good condition or if it is damaged, it must be repaired immediately. If repair is necessary, the power supply to the signal light must be switched off and may only be restored after the maintenance has been carried out and is approved.

If the light is very dirty it must be cleaned.

The advised maintenance cycles for these signal lights depends on their specific use and must therefore be agreed upon with the user for the expected use.

## 10 Repair

Except for the transparent PMMA lens and the metal top plate, none of the parts of the AR-047 signal light can be repaired or replaced. If repairs are carried out in an incompetent manner, the explosion-safety of the signal light can no longer be guaranteed. Therefore it is preferred that the signal light is returned to the manufacturer for repair.

## 11 Removal / re-use

The equipment can be completely processed as electronic waste. For processing regarding disposal or reuse of the product and its packaging, national disposal and environmental laws and legislation must be taken into consideration.

# EU Declaration of Conformity


We

ARTIDOR Explosion Safety B.V.  
Emopad 38, 5663 PB Geldrop, The Netherlands

herewith declare that the  
Explosion-safe LED signal light type series

**AR-047/\***

labelled with the distinctive community mark including the code of the  
protection degree against ignition and temperature class:

**CE**  II 3 G Ex ec IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc

produced under the ARTIDOR Quality Assurance system in accordance with  
ISO 9001:2015 and annex VIII of Directive 2014/34/EU

is in conformity with the relevant Union harmonization legislation:

2014/30/EU  
Concerning electromagnetic compatibility

2014/34/EU  
Concerning equipment and protective systems intended  
for use in potentially explosive atmospheres,

and that the following standards regarding explosion safety have been applied:

EN 60079-0:2018  
EN 60079-7:2015 / A1:2018  
EN 60079-31:2014

This declaration of conformity is issued under the sole responsibility of the manufacturer

Geldrop, 27 April 2020

Signed



M. Moolenaar  
Managing Director and EX Authorized Person