


User Manual

Explosion-safe twilight switch
Type series AR-022

 II 3 G Ex nR IIC T6 Gc
II 3 D Ex tc IIIC T80°C Dc





1. Safety Instructions

The AR-022 twilight switch 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 twilight switch. 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 supply voltage for which it is designed.
- Isolate electrical power to the twilight switch before electrical installation.
- The protection degree against ignition Restricted Breathing has been applied to the apparatus. The enclosure may not be opened if the twilight switch is energized.
- Installation of cables may not invalidate the protection degree Restricted Breathing, therefore only IP67 cable glands with the a clamping size meeting the cable diameter should be used.
- All unused openings should be plugged off in a properly closed and tight way.
- Either decommission the twilight switch or do not use it when it is damaged.
- During installation of the twilight switch national safety regulations must be observed.
- Only use the twilight switch 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 twilight switch 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 twilight switch AR-022 is based on a highly sensitive photodiode and modern electronics. These electronics offer an electrical output of up to 2,000 VA ohmic or light inductive load and an extra free contact. The twilight switch can successfully be applied in circulation areas and business areas in which safety is essential and therefore good visibility is important.

The twilight switch meets the latest explosion safety requirements and can be applied in a wide range of locations with potentially explosive atmosphere as a result of gas or dust. The twilight switch is therefore suitable for use at oil and gas production sites and in the chemical and petrochemical industries.

The twilight switch comprises of a coated aluminum housing with an impact resistant safety glass in a polyamide frame covering the sensor. The explosion safety to gas is arranged by the appliance of protection degree against ignition 'Restricted breathing'. The explosion safety to dust is arranged by the appliance of protection degree against ignition 'protected by enclosure'.

3. Characteristics

The characteristics of the twilight switch can be summarized as follows;

- Robust design;
- Coated aluminum housing and adjustable steel mounting bracket;
- Provided with two Ex e cable glands;
- 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 nR IIC T6 Gc
II 3 D Ex tc IIIC T80°C Dc;
- Protection degree against the ingress of water and dust IP66;
- Suitable for internal and external use.

4. CE - Marking

The twilight switch comply to the European Directives for EMC and ATEX and implicit to the Low Voltage Directive.

With regard to explosion safety the twilight switch has 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.

5. Application

The explosion-safe AR-022 twilight switch has been designed for and is 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 ATEX Directive they are suitable for use in the following types of zones in explosion hazardous areas:

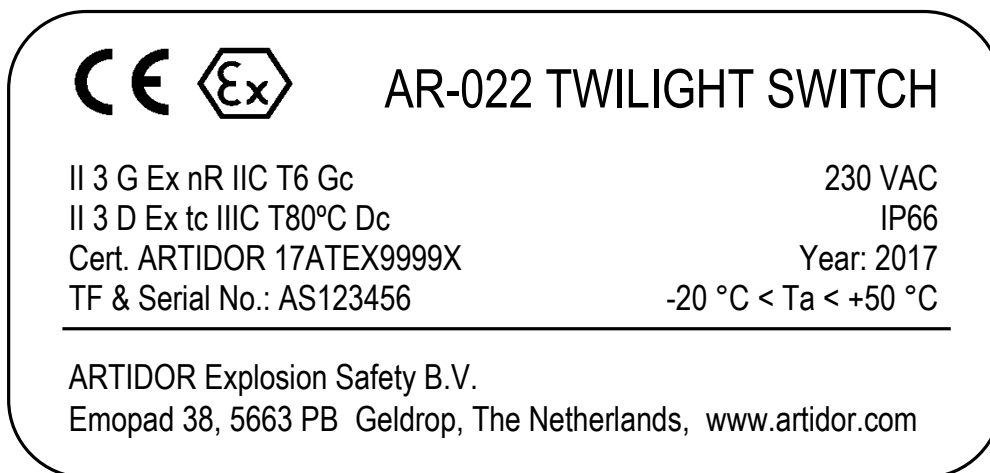
- for combustible gases, vapors and mist: zone 2;
- for combustible fibers and dust: zone 22.

6. Technical data

Explosion safety category:	ATEX II 3GD
Protection against ignition:	Ex nR IIC T6 Gc, Ex tc IIIC T80°C Dc
Conformity:	European Directive 2014/34/EU (ATEX 114) and 2014/30/EU (EMC)
Standards applied:	EN 60079-0:2012 / A11:2013, EN 60079-15:2010, and EN 60079-31:2014
Light-sensitive cell:	Photodiode
Lux setting:	30 – 300 Lux
Delay:	± 1 minute
Connection voltage:	230 V AC 50 Hz
Switch power AC1:	2,000 VA (resistive and light inductive loads)
Switch power AC15:	400 VA at 230 V AC (electromagnetic load with tenfold engagement power)
Motor load AC3:	0.3 kW at 230 V AC (stopping and starting of squirrel-cage armature motors)
Output:	Switched 230 V AC supply (L', N2) and free contact (1, 2)
Electrical connections:	Terminals 7 x 2.5 mm ²
Material:	Die cast aluminum housing (RAL 7032, silver gray), polyamide frame with impact resistant safety glass, cable glands nickel plated brass
Entries:	M16 or M20 cable glands (2x)
Ingress protection level:	IP66 according to EN 60529
Mounting bracket:	Black steel mounting bracket, mounting holes Ø 7 (4x), mutual distance 81 x 88 mm
Ambient temperature:	-20 °C to +50 °C
Dimensions (L x W x H):	160 x 80 x 73 mm (excl. cable glands)
Weight:	1,650 g (incl. mounting bracket)

7. Marking and warning on the equipment

The marking label as shown below will be attached to the twilight switch:



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 twilight switch.
- Isolate power from the electrical supply cable prior to installation.
- 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 twilight switch offers 7 connection terminals:



Power in:	Output:	Potential free contact:
L 230 VAC phase	L' 230 VAC phase – switched	1 Connection 1
N1 Neutral	N2 Neutral (connected to N1)	2 Connection 2
PE Earth		

9. Operating instructions

The knob for adjustment of the sensitivity of the sensor is only accessible when the housing is open. The opened device is not explosion-safe! If an explosion hazard cannot be excluded, undertake adjustments when the device is switched off only. Before switching on the device, close housing correctly!

10. Maintenance

For the maintenance of the AR-022 twilight switch the requirements as stated in EN 60079-17 apply. If the twilight switch is no longer in good condition, very dirty or damaged, it must be repaired or cleaned immediately.

The power supply to the twilight switch must be switched off and may only be restored after the maintenance has been carried out and approved.

The advised maintenance cycle for this twilight switch depends on its specific use and must therefore be agreed upon with the user for the expected use.

11. Repair

If repairs are carried out in an incompetent manner, the explosion-safety of the twilight switch can no longer be guaranteed. Therefore it is preferred that the twilight switch is returned to the manufacturer for repair.

12. 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 Twilight switch type series

AR-022/*

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

CE  II 3 G Ex nR IIC T6 Gc, II 3 D Ex tc IIIC T80°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 (EMC)
Concerning electromagnetic compatibility

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

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

EN 60079-0:2012 / A11:2013
EN 60079-15:2010
EN 60079-31:2014

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

Geldrop, 1 August 2017 Signed



M. Moolenaar
Managing Director and EX Authorized Person