Operating Instructions

Adolf Schuch GmbH
Mainzer Str. 172 • D-67547 Worms
+49 6241 4091-0 • info@schuch.de
www.schuch.de

Explosion-proof
LED-Floodlight / plane surface floodlight

ExFOCO L

Series nD8700…



The safety of people and equipment in hazardous areas depends on the observance of all safety standards. Exact knowledge of all applicable regulations and standards is mandatory for installation, maintenance and repair of explosion proof equipment, especially

- the determinations of IEC/EN 60079-14 and IEC/EN 60079-17 for the maintenance of explosion-proof appliances
- the generally accepted rules of technology
- the national health and safety standards
- the safety instructions of these operating instructions
- the characteristic data on the type plate and the instruction plates

1. Safety Instructions

- Mounting and installation must be done in accordance with the respective regulations.
- The light fitting must be protected against overvoltage, overcurrent, short circuits and other electrical failures.
- The light fitting must be operated in an undamaged condition only.
- The light fitting may only be opened if it has been disconnected from the mains supply completely.
- It is allowed to open the light fitting in a non-explosive (non hazardous) atmosphere only.
- The non-stationary use of the light fitting as well as any other inappropriate usage is prohibited.
- The operation of the light fitting is allowed within its assessment thresholds only.
- In regard to the minimum and maximum admissible ambient temperature potential sources of cold and heat (e.g. direct heat or solar radiation, cooling units) have to be considered.
- If the light fitting is subject to particular stresses - chemical, mechanical, thermal and electrical, as well as vibrations or moisture - prior consultation with Adolf Schuch GmbH is required.
- Every structural modification will cause dangerous situations and consequently the certification of this light fitting will be null and void.
- **The light fitting is not allowed to be installed in process areas where strong electrical fields may occur (i.e. HV Sparkling Electrodes or Particle Streams). Reason is to avoid any electrostatic charge of the light fitting itself.**
- The filling level of the connection cable should be quite high for avoiding any air penetrating the inside of the light fitting through the cable.
- The stated minimum distance between light fitting and illuminated objects must be observed.
- Applying an explosion-proof breathing gland for pressure compensation is not allowed.
- Replace damaged parts by original spare parts from the Adolf Schuch GmbH only.
- LED-modules and control gears of this light fitting must be replaced by Adolf Schuch GmbH, by a service technician who is instructed from Schuch or by any other person with equivalent qualification only.

Special versions with seawater-resistant paintwork:

- **Caution - Risk of electrostatic discharge!**
  Fitting to be cleaned with damp cloth only!
- **In areas with risk of accidental electrostatic charge (e.g. by passing by) the light fitting must be protected by appropriate measures.**

2. Operating Advice

- Any application of the light fitting that is incorrect or even forbidden will lead to the fact that the manufacturer's warranty is lost.
- LED are sensitive electronic components. Please ensure that the LED are protected against mechanical and electrostatic attacks whenever the light fitting is open. For this reason the LED must not be touched either.
- Due to harmful gases and other corrosive substances (e.g. ammoniac, sulphur- or chlorine compounds) it may come to damages of the LEDs. Depending on the substance, the concentration, the temperature and the dwell time, damages up to total black-out are possible. This may occur also to fittings with high degree of protection. The suitability of the light fitting for the respective application can only be checked by running a test at site.
- Please note, that fittings of series nD8700 runs with LED modules of risk group 2. The luminaires should be positioned so that prolonged staring into the luminaire at a distance closer than 1.08 m is not expected.
- Precautions must be taken to protect the light fitting against potential overvoltage caused by lightning strikes.
- The light fitting has an additional Ex cable gland, which is locked by a closing plug and which is designed as a test port to run the test for restricted breathing (see section 5.3, Testing the restricted breathing).



- **The Ex cable gland with closing plug, which is designed as a test port, must not be used for cable entry!**
- The operation of this light fitting is only allowed if the Ex cable gland, which is designed as a test port, is installed and locked with the provided closing plug!

- Due to a high inrush current when switching on the light fitting, the number of light fittings which can be connected to a single fused circuit is limited (Possible number of light fittings per circuit breaker see section 3, Technical Data).
- All DALI dimmable light fittings have two additional terminals marked „DA“. Lines to the control terminals must be mains voltage proof.
- Light fitting versions with the option of power reduction (nD8700 ... LR) are designed with an additional connection terminal (Marking: LSt) for connecting the control phase.
  In the standard setting, the light fitting delivers 100% luminous flux when the control phase is pending (LSt = 230V). Without a control phase (LSt = 0V), the light fitting is dimmed to 50%. The control phase does not have to be in phase with the supply (L).
- In case of versions for connection to group or central battery systems (ZB), the type of operation (Stand-by operation = 0; Maintained operation = 1) must be permanently marked on the type plate of the light fitting (see illustration).

Z	*	****

Delivery status

Z	**0**	****

Stand-by operation

Z	**1**	****

Maintained operation

3. Technical Data

Series:	nD8700 Explosion-proof LED-Floodlight / plane surface floodlight for operating in hazardous areas of zones 2 and 22.
Explosion protection:	Ⓔx II 3 G Ex nR IIC T4 Gc Ⓔx II 3 D Ex tc IIIC T100 °C Dc
Certification:	SH 17.8700
Rated voltage:	220…240 V AC; 50/60 Hz Special version nD8700 … ZB: 176…250 V DC in addition Further special versions: see type plate
Isolation class:	I
Ingress protection:	IP66
Ambient temperature:	-30 °C … +40 °C (Standard version) Special versions for higher ambient temperatures see type plate
Energy efficiency class:	This light fitting contains a light source of the energy efficiency class: C
Power consumption:	The power consumption of the LED is dependent on production fluctuations as well as on the service temperature. This is why just reference values can be given as follows: nD8700 4803: ca. 106 W nD8700 6403: ca. 140 W Special versions: see type plate
Cable entry:	The built in Ex cable gland with thread size M20 x 1.5 only! (spare-part-no. 90120 9000) Sealing range: 8 - 13 mm Torques: Connection thread 2.3 Nm; Pressing screw 1.5 Nm (Ex cable gland with closing plug = Test port) or an Ex cable gland with an equivalent flat seal approved by the manufacturer or in accordance with national regulations for the types of protection nR and tc. See information label on the front page when having special versions!
Test port:	Ex cable gland with closing plug (spare-part-no. 90122 9000)
Connection per terminal:	Ampacity: 16 A max. Clamping range: 2 x 0.75 - 2.5 mm² (solid core or stranded) 2 x 1.5 - 2.5 mm² (flexible) Req. stripping length: 8 mm (conductor 0.75 - 1.0 mm²) 9 mm (conductor 1.5 - 2.5 mm²) See information label on the front page when having special versions!

Possible number of light fittings per circuit breaker*:

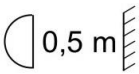
nD8700 …	Type B 10 A	Type B 16 A	Type C 10 A	Type C 16 A
4803	4	7	7	11
6403	4	7	7	11

*) Typical values; possible deviations depending on make, cable impedance and temperature

Information on special versions on request

Locking: 2 socket head cap screws (M6)

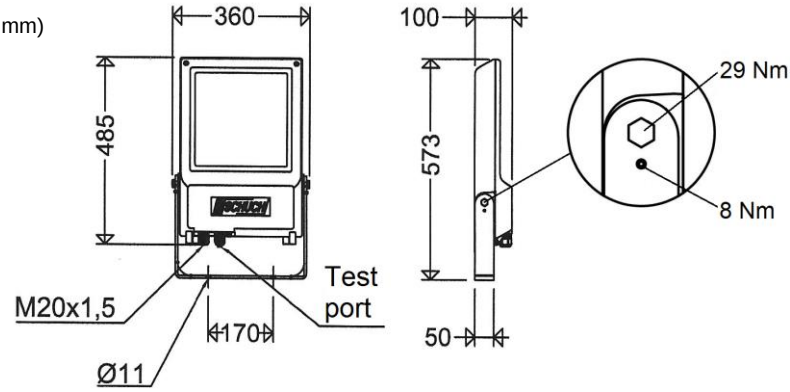
Minimum distance to illuminated surface:



Weight: ca. 9,6 kg

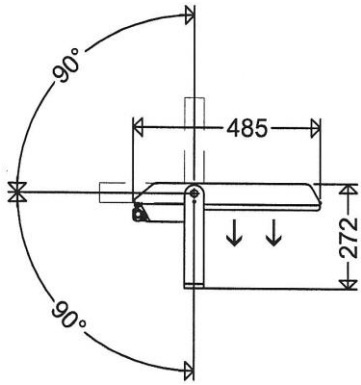
Wind load area: 0,15 m²

Dimensions:
(all measures in mm)

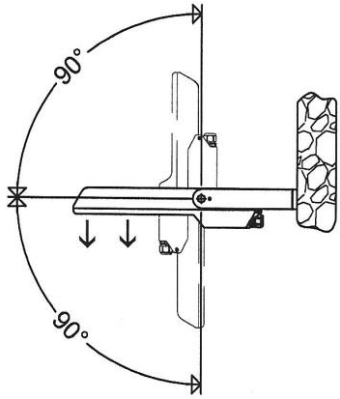


The retaining bracket must be fastened with two screws. Only the two outer holes (distance: 170 mm) must be used for this purpose!

Swivel range of
the retaining bracket:



Operation position:



Lighting downwards resp. horizontally;
Light fitting is suitable for indoor installation also;
The light fitting must be installed in such a way that sufficient air circulation is ensured for the heat dissipation.

Equipotential bonding:	Connection terminal for equipotential bonding on the outside of the light fitting Clamping range: 4 mm² max. Torque of terminal screw: 2 Nm max.
Fuse:	Miniature fuse 5x20 mm; T 3.15 A H; 250 V AC/DC; Type 179200; Article-No. 90294 9002 (in versions nD8700 4803.. ZB and nD8700 6403 ZB.. only)

4. Installation

- ➤ The safety of this light fitting is only guaranteed as long as it is operated within its assessment threshold. Installation and maintenance must be done in accordance with the respective regulations!
- ➤ The installation of explosion-proof light fittings must be done by Ex-skilled electricians only!
- ➤ In regard to the minimum and maximum admissible ambient temperature potential sources of cold and heat (e.g. direct heat or solar radiation, cooling units) have to be considered!
- ➤ The application of this light fitting in an explosive dust atmosphere is depending on the properties of the surrounding dust. Please ensure that there will be an adequate difference between the maximum surface temperature of the fitting and the glowing and the ignition temperature of the respective dust!
- ➤ The light fitting must be mounted in the instructed operation position (see section 3, Technical Data)!
- ➤ The minimum distance to the illuminated surface must be observed (see section 3, Technical Data)!
- ➤ Applying an explosion-proof breathing gland for pressure compensation is not allowed!

4.1 How to open the light fitting

- ➤ The light fitting may only be opened if it has been disconnected from the mains supply completely!
- ➤ It is allowed to open the light fitting in a non-explosive (non hazardous) atmosphere only!
- ➤ Please ensure that the LED are protected against mechanical and electrostatic attacks whenever the light fitting is open. For this reason the LED must not be touched either!

– Unscrew the two screws in the front part of the housing and open the light fitting.

4.2 Electrical connection

- ➤ The filling level of the connection cable should be quite high for avoiding any air penetrating the inside of the light fitting through the cable!
- ➤ **The test port for restricted breathing (Ex cable gland with closing plug, see illustration in section 3, Technical Data), must not be used for cable entry in any case!**

– After mounting the light fitting insert the connection cable through the Ex cable gland. An inlaid dust protective disc, if existing, must be removed before.

– Fasten the pressing screw of the Ex cable gland (Torque see section 3, Technical Data).



- **Outside** the light fitting appropriate measures (e.g. pull relief clips) must be taken to protect the connection cable from twist and it must be ensured that no tensile forces react on the wiring and the Ex cable gland!
- The diameter of the connection cable must correspond to the sealing range of the Ex cable gland (see section 3, Technical Data)!
- The conductors must not be damaged when skinning resp. stripping the cable!
- When stripping the cable special attention needs to be paid to the correct length of the conductor end sections (see section 3, Technical Data)!

– Connect the conductors of the connection cable to the right terminals as per marking.



- It is important to ensure that the bare conductor is fully inserted into the terminal and that no cable insulation is clamped!

4.3 Replacing LED circuit boards and electronic gear

Replacement of the LED boards and/or of the electronic gear has been described in the separate instructions which can be found attached to the spare parts to be supplied.

4.4 How to close the light fitting

– Put the parts of the housing together and tighten the two screws in the front part of the housing. The two screws must be tightened so far that the two housing parts are firmly on top of one another in the sector of the screws.



- After closing the light fitting please make sure that the gasket is correctly sealing it!

5. Commissioning

Before commissioning this explosion-proof lighting fitting please check and ensure that:

– the light fitting has been installed according to the regulations and in the allowed operating position.

– the Ex cable glands are securely fixed in the housing and the closing plug is installed in a proper manner (Torques see section 3, Technical Data).

– the pressing screw of every Ex cable gland is tightened with the required torque (Torques see section 3, Technical Data).

– the connection cable has been firmly installed and is not subject to any tension whatsoever.

– the bare conductor is fully inserted into the terminal and that no cable insulation is clamped.

– the light fitting is closed correctly.

– all gaskets are effective.

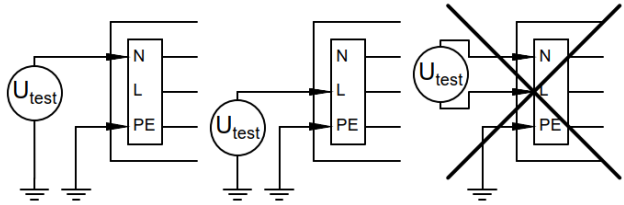
– the light fitting is not damaged whatsoever.



- The restricted breathing of the light fitting is condition for its safe operation! Therefore, prior to commissioning, check the restricted breathing in accordance with section 5.3.

5.1 Isolation measurement

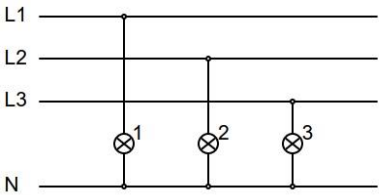
For measuring the isolating resistance the test voltage must be put on between the outer conductor and the earth conductor or between the neutral conductor and the earth conductor only.



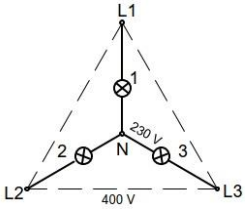
After finishing the isolation test the conductor between the mains and the light fitting must be reconnected safely. Before starting operation the connection of the neutral conductor must be safe for avoiding any damage whatsoever of the electronic control gear caused by any inadmissible excess-voltage in case of an unbalanced mains load. (see section 5.2)

5.2 Electronic gear in 3-phase-operation

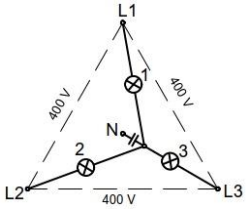
The diagram shows the wiring for light fittings or light fitting groups in 3-phase circuits and with a common neutral conductor N. If the common neutral conductor is interrupted and voltage is present, then light fittings or groups of light fittings may be exposed to unacceptably high voltages and consequently the electronic gear may be destroyed.



Light fittings with electronic gear



OK



fault

5.3 Testing the restricted breathing

The test of the restricted breathing of the light fitting must be carried out after installation and at regular intervals. For this purpose, the light fitting is provided with a test port, which consists of an Ex cable gland which is locked by a closing plug.

For testing, a negative pressure is to be generated in the light fitting via the test port. Under constant temperature conditions, the vacuum must exceed a predetermined minimum value after a specified waiting time has elapsed.

According to EN/IEC 60079-15:2019, section 12.2.2.1.2, three test methods can be used:

	Method 1	Method 2	Method 3
Underpressure at the beginning of the test	3 kPa (30 mbar)	0,3 kPa (3 mbar)	0,3 kPa (3 mbar)
Waiting time	14 s	14 s	90 s
Minimum underpressure after waiting time has elapsed	2,7 kPa (27 mbar)	0,27 kPa (2,7 mbar)	0,15 kPa (1,5 mbar)



- After completing the test, make sure that the closing plug is inserted back into the Ex cable gland and the pressing screw is tightened properly (Torque see section 3, Technical Data).

6. Maintenance

6.1 Repair- and maintenance works

- The light fitting may only be opened if it has been disconnected from the mains supply completely!
- It is allowed to open the light fitting in a non-explosive (non hazardous) atmosphere only!
- For applications in dusty atmospheres the light fitting must be cleaned before opening!
- Ensure that no dust can get into the light fitting when it is open!
- Working on the inner parts of the light fitting is allowed in non hazardous atmosphere only!
- Replace damaged parts by original spare parts from the Adolf Schuch GmbH only!

Spare Parts:
For spare parts inquiries, in addition to the complete type designation of the light fitting, the serial number of the light fitting must be stated. The serial number is printed on the type plate of the light fitting – on the bottom left.
If programmed electronic gear is required as a replacement, its configuration no. printed on a label on the gear below the barcode must also be indicated.



6.2 Cleaning the light fitting

- If possible glass and housing of the light fitting shall be cleaned with water only. When using any kind of cleaning agent make sure that there is no damaging influence at all especially on the sealing material!

Pay attention to the following in case of application of this light fitting in dusty atmospheres:
Dust deposits show heat-insulating properties and thus reduce the service life of the light fitting. It is necessary to clean the fitting from dust regularly. In case the dust layer may be higher than 5 mm it must be ensured that the surface temperature of the light fitting does not exceed the maximum permissible surface temperature of the specific dust considering the thickness of the dust layer. The dust layer must not exceed 50 mm at any time.

6.3 Regular maintenance work

- Follow the instructions of section 6.1!

Explosion-proof light fittings need regular maintenance according to the national rules of the country they are installed. Especially components which are important for the Explosion Category have to be carefully checked. Therefore it must to be checked very carefully:

- glass, housing and gaskets for any kind of damages.
- effectiveness of gasket between the two parts of the housing and between housing and glass.
- the correct installation and tightness of Ex cable glands and closing plug (Torques see section 3, Technical Data).
- all parts of plastic inside the light fitting to attend to colour change, deformation and damaging.
- the tight fit of the conductor and the condition of the cable insulation.

– that the light fitting is closed correctly and the gasket is effective.



➤ The restricted breathing of the light fitting is condition for its safe operation and must therefore be regularly checked under particular consideration of its operating conditions (see section 5.3, Testing the restricted breathing)!

EU-Konformitätserklärung
EU-Declaration of Conformity
Déclaration UE de Conformité

Bezeichnung des Betriebsmittels Name of product Nom du produit	nD 8700...ZB
Beschreibung des Betriebsmittels Description of product Description du produit	Explosionsgeschützte Leuchte Explosion-proof luminaire Luminaire antidéflagrant
EU-Konformitätserklärung Nr. EU-Declaration of confomity No Déclaration UE de Conformité N°	SH 17.8700
Relevante EU-Richtlinie Relevant EU directive Directive UE importante	2014/34/EU ATEX-Richtlinie (ABL L 96 29.03.2014 S. 309) 2014/34/EU ATEX Directive (OJ L 96 29.03.2014 S. 309) 2014/34/UE Directive ATEX (JOUE L 96 29.03.2014 S. 309)
Angewandte Normen Applied standards Normes appliquées	EN IEC 60079-0:2018/AC:2020-02, EN IEC 60079-15:2019, EN 60079-31:2014
Normen nach Niederspannungsrichtlinie Standards according to the Low Voltage Directive Normes selon la directive basse tension	EN 60598-1:2015+A1:2018, EN IEC 60598-2-1:2021, EN 60598-2-5:2015, EN 60598-2-22:2014+AC:2016-05+AC:2016-09+A1:2020
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Normen nach EMV-Richtlinie Standards according to EMC Directive Normes selon la directive CEM	EN IEC 55015:2019+A11:2020, EN IEC 61000-3-2:2019+A1:2021-04, EN 61000-3-3:2013+A1:2019, EN 61547:2009, EN 301489-1 V2.2.3:2019-11, EN 301489-3 V2.1.1:2019-03
Relevante EU-Richtlinie Relevant EU directive Directive UE importante	2011/65/EU RoHS-Richtlinie (ABL L 174 01.07.2011 S. 88) 2011/65/EU RoHS-Directive (OJ L 174 01.07.2011 S. 88) 2011/65/UE Directive RoHS (JOUE L 174 01.07.2011 S. 88)
Angewandte Normen Applied standards Normes appliquées	EN IEC 63000:2018

Hiermit erklären wir in alleiniger Verantwortung, dass das oben aufgeführte Produkt mit den Anforderungen der angegebenen Richtlinien und Normen übereinstimmt.
We hereby declare in our sole responsibility that the product above complies with the requirements of the specified directives and standards.
Nous déclarons de notre seule responsabilité que le produit mentionné ci-dessus est conforme aux exigences des directives et des normes indiquées.

Adolf Schuch GmbH - Mainzer Str. 172, 67547 Worms, GERMANY

Worms, 17.02.2022
Ort und Datum
Place and date
Lieu et date

ppa. Prof. Dr. Bruno Weis
Technischer Leiter
Technical Director
Directeur de technique

SH 17.8700-04 Teil/part/partie B/SB-01

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Déclaration UE de Conformité

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Normen nach Niederspannungsrichtlinie Standards according to the Low Voltage Directive Normes selon la directive basse tension	EN 60598-1:2015+A1:2018, EN IEC 60598-2-1:2021, EN 60598-2-5:2015
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Angewandte Normen Applied standards Normes appliquées	EN IEC 63000:2018

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ppa. Prof. Dr. Bruno Weis
Technischer Leiter
Technical Director
Directeur de technique

SH 17.8700-04 Teil/part/partie A/SB-01

The test certificates are ready to be loaded down from our homepage - www.schuch.de - or we shall send it on request.

Misprints, modifications and errors are excepted