

Installation and Operating Instructions for Lumiglas luminaires

(supplement to data sheet 07.21)

Ex light guide luminaire Lumiflex, model series USL07 LF-Ex

• Important note:

The lumiflex light guide luminaire can be applied as a sightglass luminaire as well as specific object illumination such as on machine tools.

Luminaires intended for use in Ex hazardous areas may only be installed and serviced by suitably qualified personnel duly authorized for those tasks.

EC type test certificate contents to be noted.

• The following applies, without exception, when used as sightglass luminaire:

Sightglass luminaires are specifically and exclusively designed for mounting onto sightglass flange fittings; on no account may the sightglass luminaire be used as a cover flange or as the complete sightglass unit i. e. to provide any form of lid or cover for a vessel opening.

• General operating conditions:

- Unaffected by internal vessel pressure/vacuum when used as sightglass luminaire e.g. on reactors
- Approved for use in Ex zones 1 & 2; the light guide head may not, under any circumstances, be exposed in any way in zone 0 conditions!
- Approved for use in ambient temperatures of up to 60° C
- Temperature range for light guide -40° C to +100° C
- Temperature range for light guide head -60° C to +200° C

• Electrical data – general:

- voltage, power, temperature class, and protection rating to be taken from identification plate
- Ex approval to EC type test certificate:
PTB 04 ATEX 2078 Ex II 2G EEx d IIC T4/T6

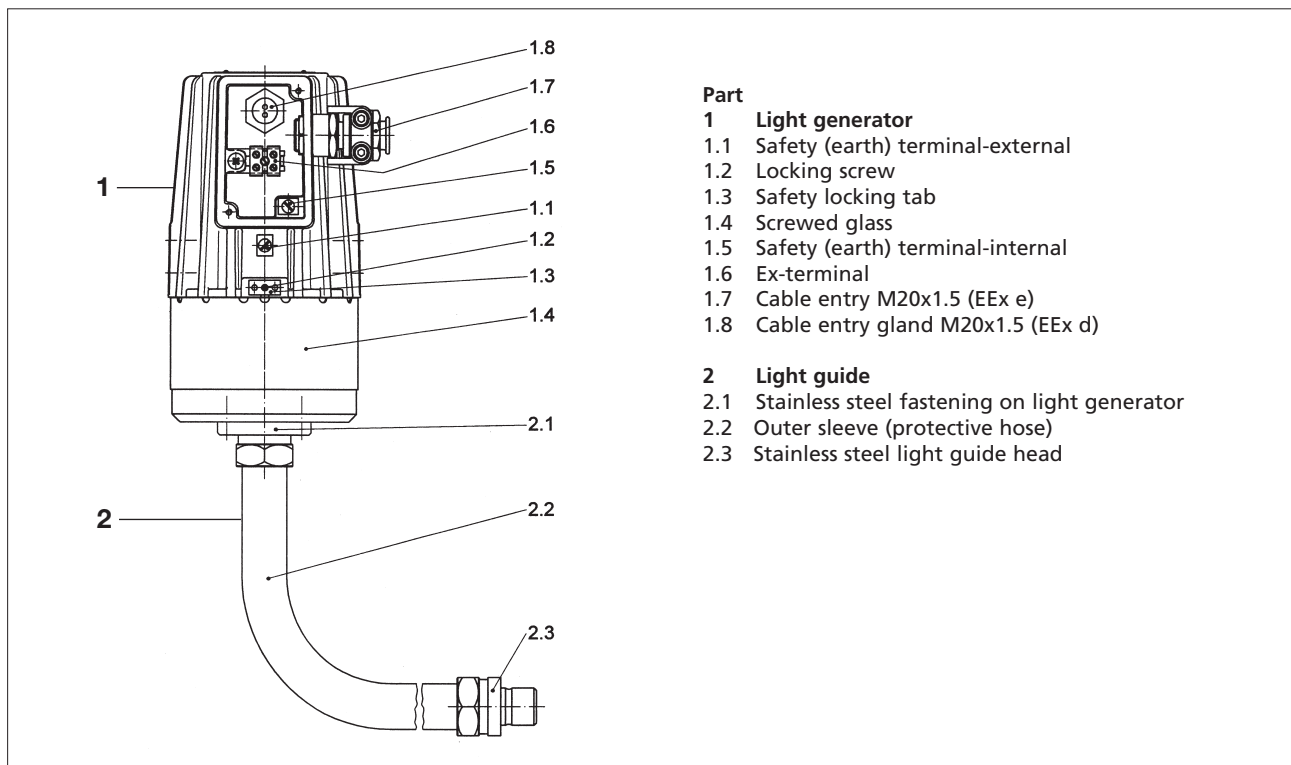
- the transformer fitted to the 20 W version is PTC protected; the 39 W version by a 315 mA meltable fuse to IEC 60127-2/3. The fuse may only be exchanged with the power switched off!
- It is vital that data contained in the EC type test certification are noted!
- Power supply: Alternating current (caution: the luminaire is fitted with integral transformer!)
- CAUTION: over voltages will lead to early filament lamp failure!

• Electrical connection:

General instruction: the Lumiflex Ex light guide luminaire is rated "d" (pressure tight enclosure) for the body and "e" (increased safety) for the terminal box. Connecting cable must be suitable for a minimum operating temperature of 95° C, e.g. Sinotherm 110 H05GG-F3G 1,5mm².

Connection in detail:

- Remove lid of light generator (1) terminal box
- Loosen screws of pull out preventer (with anti twist lugs) in cable entry branch (1.7)
- Pass cable, with bared cores, through EExe cable entry M20 x 1.5 (1.7) into terminal box.
- Retighten screws.
- Wire cores to Ex terminals (1.6)
- Connect safety (earth) core to safety (earth) conductor terminal (1.5)
- Connect outer safety (earth) terminal (1.1) to separate plant earthing point.
- Fit lid gasket
- Refit lid and tighten screws
- Connecting cable must be supported within 1 m of light generator and support secured.



Part

1 Light generator

- 1.1 Safety (earth) terminal-external
- 1.2 Locking screw
- 1.3 Safety locking tab
- 1.4 Screwed glass
- 1.5 Safety (earth) terminal-internal
- 1.6 Ex-terminal
- 1.7 Cable entry M20x1.5 (EEx e)
- 1.8 Cable entry gland M20x1.5 (EEx d)

2 Light guide

- 2.1 Stainless steel fastening on light generator
- 2.2 Outer sleeve (protective hose)
- 2.3 Stainless steel light guide head

• **Lamp exchange:**

General instruction:

Note: Without any exception only use replacement lamps which are individually tested by the supplier and marked 'Lumiglas tested'!

Before opening the light generator (1), separate the light guide (2) from light generator (depending on application, the light guide head (2.3) may have to be withdrawn from the fastening).

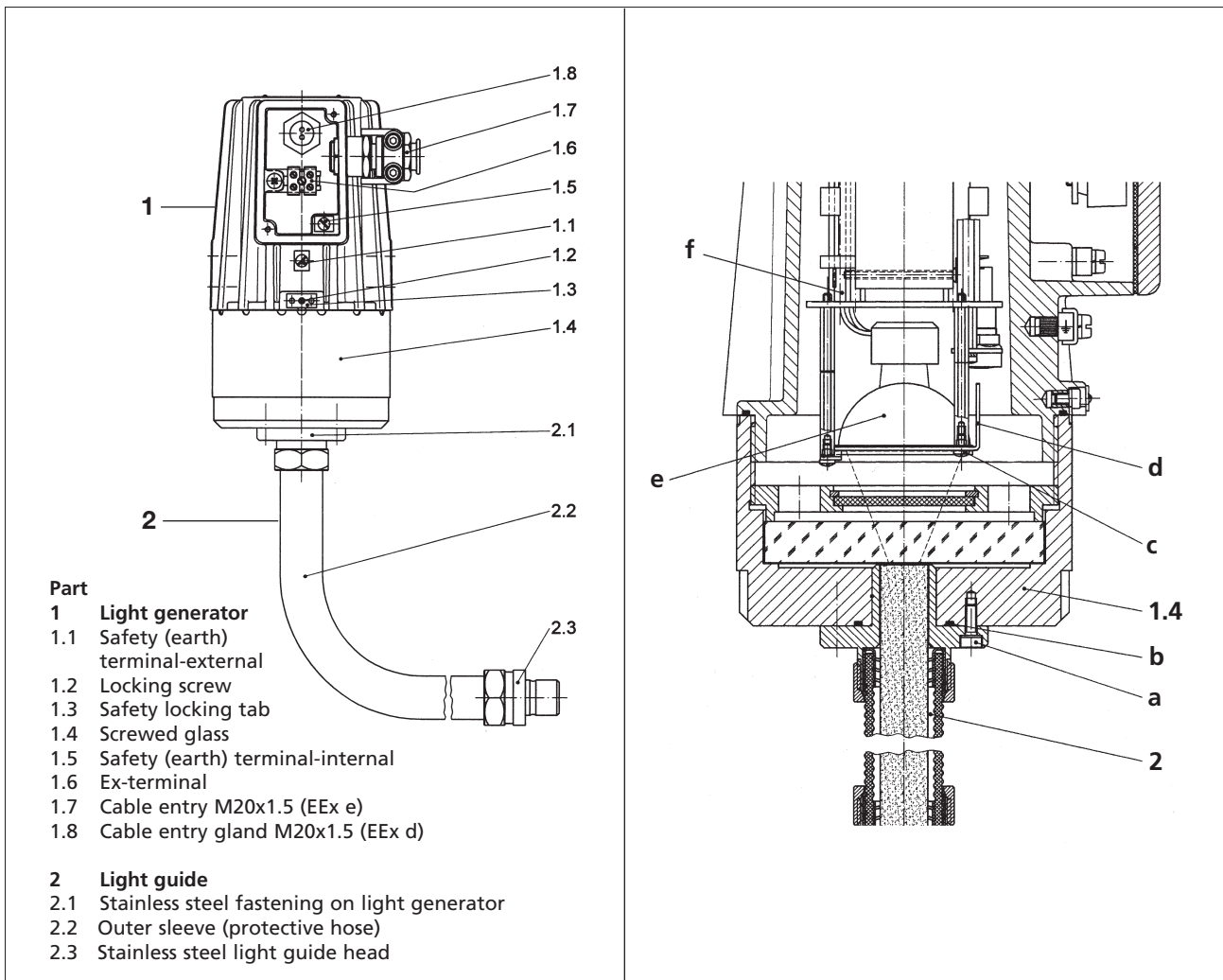
Light guide (2) is secured to the screwed glass (1.4) with three screws (a).

Caution: The clearance between the light guide at its entry to the light generator forms an Ex related gap: it is imperative that any damage be avoided!

- switch off power to luminaire
- loosen the three screws (a) on the screwed glass (1.4)
- carefully withdraw light guide; ensure that the O ring (b) in the screwed glass (1.4) and the screws (a) are not lost!
- Secure light guide against any damage!
- After changing the lamp, refit the light guide in reverse order of above
- Check that O ring (b) is seated correctly
- Never separate light guide from generator without first ensuring there is no power supply to generator!

Lamp exchange in detail:

- Switch off power to luminaire i.e. check that there is no power to light generator
- Wait for time lapse as per identity plate
- Loosen locking screw (1.2) to screwed glass (1.4); this releases safety tab (1.3)
- Unscrew screwed glass (1.4); using special spanner only
- In exposed lamp space: loosen 3 screws (c) of lamp holder (d)
- Carefully withdraw lamp holder together with lamp (e)
- Unplug pin connector (f)
- Remove lamp and discard
- Refit new lamp
- Carefully plug in connector again
- Refit lamp holder with lamp, ensuring correctly seated, and secure with the three screws
- Refit screwed glass (1.4) until tight (O ring compressed)
- Safety tab must engage in appropriate notch, so that screwed glass is locked properly
- Retighten locking screw (1.2)
- Refit light guide as previously described
- Switch on power



• **Mechanical installation:**

Light generator (1) is fasted to a suitable point on the reactor, or other plant, using the straight luminaire mounting bracket provided in such a way as to ensure that the light guide head fastening can be fixed e.g. to a sightglass unit in such a way that the light guide is not under any strain, free of any twist and, with a bend radius of > 125 mm.

The light guide head (2.3) is bolted to the point whence the subject is to be illuminated, such as a sightglass unit, using the stainless steel fastening provided (see sample photo)

• **Mounting position:**

The following attitudes for the light exit on the light generator are approved when installed correctly:

- exit upwards
- exit sideways (max 90°)

Caution: exit downwards not permitted!

• **Replacement parts and accessories:**

- use only genuine replacement parts
- if need be have luminaire serviced in maker's works



Lumiglas 'LUMIFLEX' Ex light guide luminaire, model USL07 LF-Ex mounted on a sightglass fitting type DIN 28120

Part	Cat. No.
Spanner for screwed glass	6805.002.00
Fastening bracket, straight For light generator, 2 fastening brackets	0354.005.00
Fastening for light guide head	1947.005.00
Screwed glass (light exit)	1774.089.00
O ring (Viton) for screwed glass	0862.040.00
O ring for light guide	0862.082.00
Halogen filament lamp 12 V/20 W marked 'Lumiglas-tested'	3232.279.00
Halogen filament lamp 10 V/39 W marked 'Lumiglas-tested'	3232.280.00
Light guide 0.4 m length	3383.016.00*
Light guide 0.5m length	3383.010.00
Light guide 1,0 m	3383.011.00*
Light guide 1,5 m	3383.012.00
Light guide 2,0 m	3383.013.00*
Light guide 2,5 m	3383.014.00*
Light guide 3,0 m	3383.015.00

• **Maintenance:**

- keep luminaire clean
- after opening luminaire, apply fresh grease to threads of screwed glass (1.4) using e.g. AEMA-SOL 6B made by A.E.Matthes
- note mean figure for lamp life! Use only genuine replacement parts!

We reserve the right to make changes without notice – dimensions in mm (unless indicated otherwise)
Min 05.05 0093.055.96

Important instructions for the use of sightglass fittings, sightglass discs and sightglass luminaires.

Before installing, operating or servicing any of the above products, it is vital that these instructions are read and rulings observed:

1. Installation of sightglass fittings

Fitting by welding, brazing etc. must be distortion free, carried out only by personnel qualified and authorised to do so.

2. Installation of sightglass disc into a sightglass fitting:

- 2.1 The operational safety of sightglass discs depends largely upon correct installation.
- 2.2 The gasket recesses in the flanges must be flat, even and smooth. The edges of the gaskets must never be squashed by the flange edge.
- 2.3 The sightglass disc must have a separate gasket laid concentrically on its upper and lower surface.
- 2.4 Use only totally undamaged gaskets, which are flat and clean i.e. free of any grease or dirt.
- 2.5 Before pulling nuts or bolts tight, ensure cover and weld flange are correctly seated and their surfaces parallel to one another.
- 2.6 Tightening should follow diametrically opposed sequence, in progressive steps. Tightening torque can be taken from data sheets accompanying product supply or requested from supplier.
- 2.7 A further tightening of cover flange nuts/ bolts is recommended once the vessel has been put into initial operation under its operating temperature and pressure.
- 2.8 When fitting quartz sightglass discs, observe manufacturer's special recommendations!

3. Maximum loading of sightglass discs

- 3.1 Correctly fitted sightglass discs may only be used within their specifically approved temperature and pressure ranges. Exceeding these ranges can lead to failure.
- 3.2 Temperature cycling must be limited to within approved limits:
 - Soda-lime glass (DIN 8902); max permissible temp. 150° C, temp.change within one minute max from 120° C to 20° C with glass wholly immersed.
 - Borosilicate glass (DIN 7080); max permissible temp. 280° C; temp. change within one minute max from 230° C to 20° C with glass wholly immersed.
- 3.3 Spraying a glass which is still hot with cold fluids must be avoided. **Caution:** this can lead to breakage of the sightglass disc.
- 3.4 Safety measures to be taken when using sightglass discs:
 - 3.4.1 Planned maintenance:

Sightglass discs must be included in planned maintenance schedule, and periodically checked visually and/or by ultrasound and wall thickness tests. In event of any damage the plant must be promptly shut down and the damaged glass disc exchanged. Careful and regular checks of the sightglass disc will establish a down time to suit the particular vessel on which it is mounted and a glass exchange routine to best suit the process.
 - 3.4.2 Breakage of a sightglass disc:

In spite of careful fitting and use of sightglass discs, on rare occasions it is possible for breakage to occur. Where critical processes are involved, such as food products, and entry of glass shards into the product must be avoided, the vessel manufacturer or operator must take particular safety measures.
- 3.5 It is strongly recommended that following the disassembly of a sightglass unit, and before the resuming operation, the sightglass disc and its accompanying gaskets are exchanged for new ones in line with procedures detailed in DIN 7080 and applicable for all types of sightglass discs. This is particularly important where pressure vessels or aggressive media are concerned.

The following extract from DIN 7080 applies verbatim: sightglass discs may only be fitted by personnel which have been expressly informed of the following requirements;

 - Careful handling of the sightglass discs
 - Cleaning of recess seating faces, glass discs gaskets and accessories prior to fitting i.e. removal of foreign matter (such as metal swarf)
 - Even tightening of securing bolts

Any sightglass discs which have been removed after use should never be reused.

4. Disc Wipers

- 4.1 Check that the wiper assembly has been installed correctly (see separate installation instruction).
- 4.2 The wipers may only be used within the prescribed temperature and pressure ranges.
- 4.3 The mechanical wiper drive seal should be checked whilst rotating and if necessary gland sleeve tightened; defective gaskets changed, wiper arms and wiper blades cleaned to remove any accumulated matter and wiper blade replaced if necessary (see separate installation instructions).

5. Spray device

The spray fluid should preferably be at the same temperature as the vessel contents. On no account may cold fluid be sprayed onto a hot sightglass disc (refer to temperature cycling under point 3)

6. Sightglass luminaires

- 6.1 Care should be taken that the luminaire is connected to the correct power supply as shown on the identity plate.
- 6.2 Sightglass luminaires are purpose designed and must only be fitted over or onto sightglass units.
- 6.3 On no account may a sightglass luminaire be used in place of a cover flange or the complete sightglass flange assembly.
- 6.4 The continuous ON mode is only approved for certain types of Lumiglas luminaire. This should be clarified prior to placing a firm order; if in doubt ask the manufacturer/supplier.
- 6.5 Sightglass luminaires fitted with integral push button or which are specifically for use under push button operation should only be switched on by means of that switch.
- 6.6 Sightglass luminaires which are intended for use in continuous ON mode should be operated by means of external on/off switch.
- 6.7 The following should also be noted:
 - Max permissible temperature at the cable gland not to be exceeded (see data sheet).
 - Max permissible temperature for sightglass disc to be adhered to (vessel temp +Temp rise caused by sightglass luminaire = sightglass disc temp; check by measuring).
- 6.8 When changing lamp bulb, always use the same type with identical wattage whilst also checking that max permissible lamp power rating of luminaire is not exceeded.
- 6.9 When changing lamp bulb, check that lamp holder is in good order.
- 6.10 Over voltages lead to early lamp failure.

7. Ex range

Luminaires intended for Ex hazardous areas may only be installed and serviced by suitably qualified and authorised personnel. Data contained in relevant certification (EC type test certificate) must be adhered to. Some models of Ex luminaires are fitted at manufacturer's works with resin cast cable tails. On no account may the cable gland be unscrewed or removed! Any unofficial replacement of components on Ex approved luminaires can lead to loss of Ex protection!

8. Hinged or screwed light/sightglasses

Before using these units their pressure tightness should be checked (if necessary retightening bolts). The seal between this type of unit and the vessel flange relies on a clean, grease free and flat vessel sealing face as well as the correctly fitted and adjusted closure; these must be thoroughly checked. In the case of hinged light/sight ports in particular, care should be taken that the vessel contents are compatible with the material of construction of the light/sightglass unit. When sited on pressure vessels, ensure that the operating pressure is within the limits approved for the sightglass.

If in doubt, please ask the manufacturer or supplier!