

## Sight glass discs

Circular sight glass discs DIN 7080 borosilicate glass 3755.162

Circular sight glass discs DIN 8902 sodalime glass 3755.163

Circular sight glass discs with central hole for wiper 3755.164

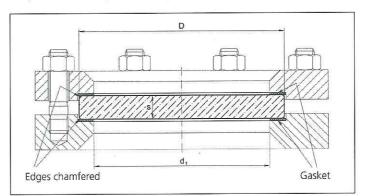


## Lumiglas Sight Glass Disc, Circular DIN 7080

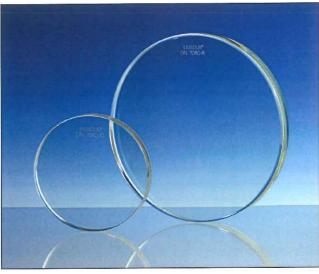
Dimension D x s	Viewing Diameter d,	Nominal Pressure		
(mm)	(mm)	(bar)		
R				
63 x 10	48	16		
80 x 12	65	16		
94 x 11 <sup>1)</sup>	801)	6		
100 x 15	80	16		
113 x 15 <sup>1)</sup>	1001)	6		
125 x 15	100	10		
125 x 20	100	16		
141 x 151)	1251)	6		
150 x 20	125	10		
150 x 25	125	16		
166 x 15 <sup>1)</sup>	150"	- 6		
175 x 20	150	10		
175 x 25	150	16		
200 x 20	175	8		
200 x 25	175	10		
200 x 30	175	16		
250 x 25	225	8		
250 x 30	225	10		

Other dimensions on request, material acc. to DIN 7080

- For pressure duties at temperatures up to 280°C.
   No lower temperature limit
- Toughened borosilicate glass
- Ground and polished
- · Optional extras possible, e. g. coating!



3755.162 b



#### Safety precautions when using sight glass discs:

1. Whenever a sight glass assembly has been taken apart it is urgently recommended in accordance with DIN 7080 that the glass disc and gaskets are replaced by new ones. That is particularly important in the case of pressure vessels and/or aggressive media.

The following extract from DIN 7080 text is verbatim: 'Sight glass discs may only be installed by personnel who have been informed fully about the following requirements:

- care in handling sight glass discs
- cleaning of recesses, sight glass discs, gaskets and other parts i. e. removal of foreign bodies (e. g. swarf), prior to installation/reassembly
- even tightening of retaining bolts Sight glass discs that have been removed after operating use must not be re-used.'

#### 2. Planned maintenance:

Sight glass discs should be included in routine maintenance and periodically checked visually or using ultrasound wall thickness measuring means. In the event of damage, a glass disc must be promptly exchanged, with the plant first having been brought to a standstill.

The service life of a sight glass – relative to the particular vessel in which it is mounted – should be established by regular and careful visual check of its condition.

Caution: Completely demineralised water may dissolve glass – especially intensive periodical inspection required!

#### 3. Breakage of a sight glass:

In spite of careful installation and recommended use, sight glass discs can, on rare occasions, suffer breakage through external influences. In order to prevent the entry of glass particles into products of a critical nature, e. g. foodstuffs, appropriate safety precautions should be taken by the plant manufacturer or user.

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 03.14

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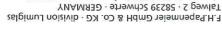


O As supplement to DIN standard for screwed sight glass fittings similar DIN 11851 – no DIN-dimension!



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All dimensions in mm unless stated otherwise. Subject to change without prior notice. 06.14



dasket		edges chamfered
	ţp.	
	mm č,01 Q	
	S	
4	а	
		Optional extras pos
	ne or Borosilicate glass	<ul><li>Toughened boundaring</li><li>Ground and publiched</li></ul>
timil	no lower temperature	<ul> <li>For pressure duties,</li> </ul>
to DIN 11851	ass fittings, material acc.	η For screwed sight gl
Þ	225	SZ × 0SZ
7	502	225 x 15
Þ	SZI	61 x 002
9	120	61 x 271
9	1200	(SL X 99)
9	ISS	61 × 0S1
9	uSZl	(1 <b>5</b>   <b>X</b>   <b>7</b>

100

1001

08

(108

9

Soda Lime glass, material acc. to DIN 8902 - up to 150°C

Other dimensions on request

(யய)

Viewing Diameter

	timit	temperature	lower	ou	duties,	For pressure	
--	-------	-------------	-------	----	---------	--------------	--

125 x 15

USLXELL

51 X 001

(111 X 76

80 x 12

(ww)

S X Q

Dimension

r Borosilicate alass	o amilisho? banadpuoT .	
lower temperature limit	<ul> <li>For pressure duties, no</li> </ul>	

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limit	lower temperature	For pressure duties, no

nse must not be re used.'	•	
Sight glass discs that have been removed after operating	7	
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2. Planned maintenance:

3. Breakage of a sight glass:

taken by the plant manufacturer or user.

and careful visual check of its condition.

foodstuffs, appropriate safety precautions should be

of glass particles into products of a critical nature, e. g.

sight glass discs can, on rare occasions, suffer breakage In spite of careful installation and recommended use,

through external influences. In order to prevent the entry

glass – especially intensive periodical inspection required! Caution: Completely demineralised water may dissolve

in which it is mounted, should be established by regular

service life of a sight glass, relative to the particular vessel the plant first having been brought to a standstill. The

damage, a glass disc must be promptly exchanged, with

sound wall thickness measuring means. In the event of nance and periodically checked visually or using ultra-

Sight glass discs should be included in routine mainte-

to installation/reassembly

parts i. e. removal of foreign bodies (e. g. swarf), prior

- cleaning of recesses, sight glass discs, gaskets and other - care in handling sight glass discs

requirements:

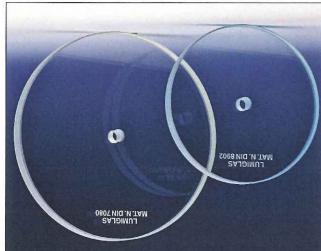
have been informed fully about the following 'Sight glass discs may only be installed by personnel who

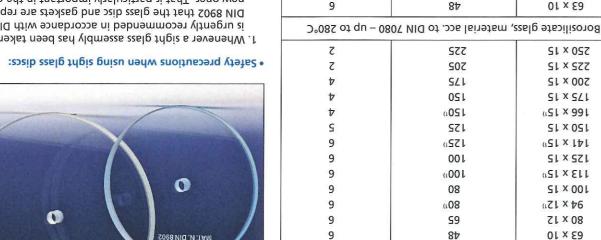
The following extract from DIN 7080/DIN 8902 text is

pressure vessels and/or aggressive media.

## new ones. That is particularly important in the case of DIN 8902 that the glass disc and gaskets are replaced by

is urgently recommended in accordance with DIN 7080/ 1. Whenever a sight glass assembly has been taken apart it

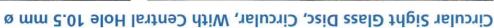




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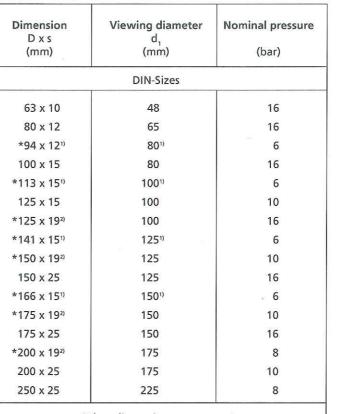
Nominal Pressure





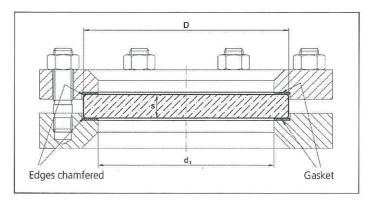
3755.163 b

## **Lumiglas Sight Glass Disc, Circular DIN 8902**



Other dimensions on request, material according to DIN 8902

- · toughened (tempered) soda lime glass
- ground and polished
- · optional extras possible, e. g. coating



• Safety precautions when using sight glass discs:

1. Whenever a sight glass assembly has been taken apart it is urgently recommended in accordance with DIN 8902 that the glass disc and gaskets are replaced by new ones. That is particularly important in the case of pressure vessels and/or aggressive media.

The following extract from DIN 8902 text is verbatim: 'Sight glass discs may only be installed by personnel who have been informed fully about the following requirements:

- care in handling sight glass discs
- cleaning of recesses, sight glass discs, gaskets and other parts i. e. removal of foreign bodies (e. g. swarf), prior to installation/reassembly
- even tightening of retaining bolts

Sight glass discs that have been removed after operating use must not be re used.'

#### 2. Planned maintenance:

Sight glass discs should be included in routine maintenance and periodically checked visually or using ultrasound wall thickness measuring means. In the event of damage, a glass disc must be promptly exchanged, with the plant first having been brought to a standstill. The service life of a sight glass - relative to the particular vessel in which it is mounted – should be established by regular and careful visual check of its condition. Caution: Completely demineralised water may dissolve glass – especially intensive periodical inspection required!

#### 3. Breakage of a sight glass:

In spite of careful installation and recommended use, sight glass discs can, on rare occasions, suffer breakage through external influences. In order to prevent the entry of glass particles into products of a critical nature, e. g. foodstuffs, appropriate safety precautions should be taken by the plant manufacturer or user.

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<sup>1)</sup> for screwed sight glass fittings similar to DIN 11851 2) 's' according to DIN = 20 mm

for pressure duties at temperatures up to 150°C. No lower temperature limit



## Sight glass fittings

5

	data sheet no.
Circular sight glass fitting DIN 28120	3755.165
Circular sight glass fitting, stainless steel, for non pressurised vessels, viewing circle corresponding to DIN 28120	3755.197
Circular sight glass fitting DIN 28121 / PN10/25	3755.166
Double sight glass safety fitting	3755.167
Screwed sight glass fitting MV	3755.168
Aseptic screwed sight glass fitting MV-S	3755.242
Rectangular sight glass fitting	3755.170
Oblong oval sight glass fitting	3755.438
Sight flow indicator	3755.186



## Lumiglas Sight Glass Fitting, Circular DIN 28120 or similar

Sight glass fittings acc. to DIN 28120 are circular flanged ports for welding into and onto the vessel wall. The block and the cover flange are screwed together tightly, with the sight glass disk and an independent gasket to the upper and the lower flange respectively positioned between them.

The structure and dimensions comply with the design standards set out in DIN 28120 for sizes DN 50 to DN 200. Flange thicknesses dimensioned according to this standard ensure the distortion-free positioning of the sight glass disk, provided the block flange is properly welded onto or into the wall of the vessel.

#### Application:

For viewing of internals of pressure vessels, tanks, silos, stirred vessels, separators pipelines etc.

#### Operating conditions:

Pressure: 10 bar or 16 bar, depends on size, higher pressure rating on request; vacuum Temperature: max. 150°C with sodalime glass DIN 8902 max. 280°C with borosilicate glass DIN 7080 higher temperatures on request

#### Possible combinations:

Can be combined with Lumiglas luminaires when used in explosion hazardous as well as non explosion hazardous areas. The cover flange is then drilled and tapped to suit luminaire mounting bracket.

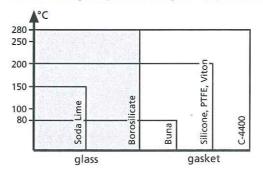
#### Certificates/testing:

Depending on customer requirements and at extra cost, can be provided to DIN EN 10204 3.1/3.2

### • Component materials shown in adjoining exploded view are

item	part	material
1	base flange (welding flange)	carbon steel RSt 37-2, stainless steel or other
2.1, 2.2	fastening bolts	carbon steel 5.6/5 or stainless steel A2
3.1, 3.2	gaskets	KLINGERsil C-4400; silicone, PTFE or other
4	sight glass disc	<ul> <li>sodalime glass:</li> <li>toughened DIN 8902</li> <li>borosilicate glass:</li> <li>toughened DIN 7080</li> </ul>
5	cover flange	carbon steel RSt 37-2; stainless steel 1.4541 or other
6	vesel wall	

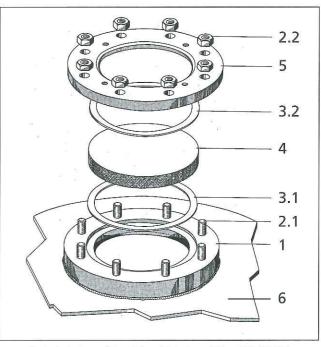
#### • The following temperature diagram simplifies material selection:







Lumiglas sight glass fitting DIN 28120



Exploded view of Lumiglas sight glass fitting DIN 28120

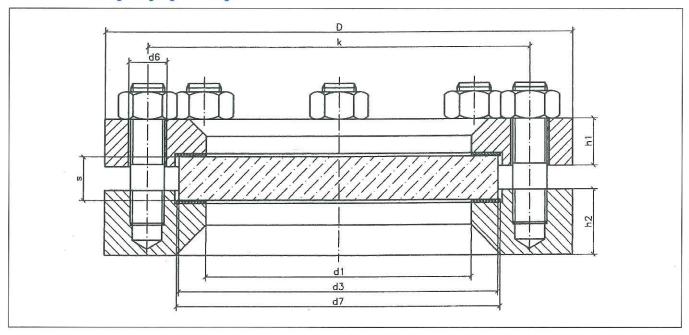
#### Installation

After welding base flange (1) onto or into vessel wall, seals (3.1 & 3.2), glass disc (4) and cover flange (5) are placed together in the order shown. Then the nuts (2.2) in case of studded base flange and washers are progressively tightened, always working on diametrically opposed pairs of nuts at time. Tightening torque values are given in table on overleaf. For more information see DIN 28120.

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#### • Dimensions for Lumiglas sight glass fitting, circular, DIN 28120/PN 10/16 or similar DIN 28120/PN 6



size		1	2	3	4	5	6
normal bore	DN	50	80	100	125	150	200
pressure rating (bar)	PN	10/16	10/16	10/16	(6) 10/16	(6) 10/16	(6) 10
viewing diameter	d1	80	100	125	150	175	225
sight glass disc	d3	100	125	150	175	200	250
	S	15/15	15/20	20/25	(20) 20/25	(20) 25/30	(25) 30
flanges	D	165	200	220	250	285	340
	k	125	160	180	210	240	295
	d6	18	18	18	18	22	22
	h1	16/16	20/20	22/22	(18) 25/25	(18) 30/30	(20) 35
	h2	30	30	30	30	36	36
fastening bolts	no.	4	8	8	8	. 8	8
	size	M 16	M 16	M 16	M 16	M 20	M 20
gaskets (side with product	d1	80	100	125	150	175	225
contact and atmospheric side)	d7	102	127	152	177	202	252
tightening torque for bolts lubricant factor/µ 0.1	Nm	28/32	20/23	26/30	32/34	47/54	63

#### • Order data:

- Lumiglas sight glas fitting, circular (DIN)
- nominal bore (DN) / nominal pressure (PN)
- material: base flange, test certification 3.1/3.2 on request cover flange, test certification 3.1/3.2 on request bolts
  glass disc

• Pressure rating conversion: 6 bar = 87 psi

6 bar = 87 psi 10 bar = 145 psi 16 bar = 232 psi

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 07.15



gaskets



### Lumiglas Sight Glass Fitting, Circular, Stainless Steel, For Non-Pressurized Vessels

#### Viewing diameter based on DIN 28120

Sight glass fittings are circular flanged ports for welding into or onto a vessel wall. The block and the cover flange are screwed together tightly, with the sight glass disk and an independent gasket to the upper and the lower flange respectively positioned between them.

The advantages of these lightweight low profile windows for pressureless vessels (over the standard 28120 format) are:

- smaller outer diameter and therefore vessel cutout
- shallower height above weld
- lower weight
- easier to clean
- lower cost
- Viewing diameter: 80 to 225 mm

#### Application:

For observation of interior of tanks, silos, stirred vessels, separators, pipelines etc.

#### Operating conditions:

Pressure: non-pressurized

Temperature: max. 150°C with sodalime glass DIN 8902 max. 280°C with borosilicate glass DIN 7080 higher temperatures on request

#### Possible combinations:

Can be combined with Lumistar luminaires when used in explosion hazardous as well as non explosion hazardous areas. The cover flange is then drilled and tapped to suit luminaire mounting bracket.

A Lumiglas disc wiper SW 1 and a Lumiglas spray device can also be mounted.

#### Certificates/testing:

Depending on customer requirements and at extra cost, can be provided to DIN EN 10204 3.1/3.2

#### Component materials shown in adjoining exploded view are:

item	part	material
1	base flange	stainless steel 1.4571 (316 Ti) or other
2	gasket	KLINGERsil C-4400, Silikon, PTFE or other
3	sight glass disc	<ul> <li>sodalime glass:</li> <li>toughened DIN 8902</li> <li>borosilicate glass:</li> <li>toughened DIN 7080</li> </ul>
4	cover flange	stainless steel 1.4571 (316 Ti) or other
5	securing bolts	stainless steel A2 or other

#### Installation:

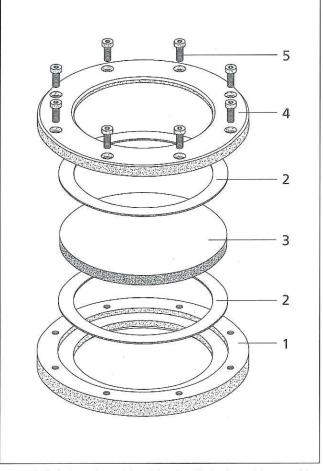
After welding in the base flange (1) into the vessel wall, gaskets (2), glass sight glass disc (3) and cover flange (4) are carefully laid and bolted together with bolts (5). Tighten progressively on a diametric cross basis with socket spanner.



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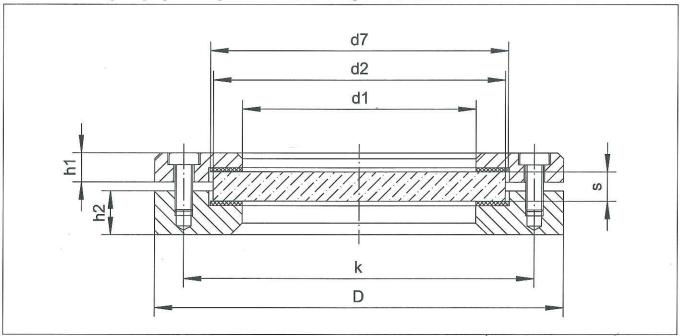
Lumiglas sight glass fitting in stainless steel



Exploded view of Lumiglas sight glass fitting in stainless steel



#### • Dimensions for Lumiglas sight glass fitting in stainless steel, viewing diameter based on DIN 28120



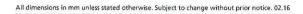
			2 ba	~		1 bar		No Par
Size		1	2	3	4	5	6	7
Nominal bore	DN	50	80	100	125	150	200	300
Viewing diameter	d1	80	100	125	150	175	225	300
Sight glass disc	d2	100	125	150	175	200	250	325
	S	10	10	10	10	10	10	15
Flanges	D	140	165	190	215	240	290	370
	k	120	145	170	195	220	270	345
	h1	10	10	10	10	10	10	15
	h2	15	15	15	15	15	15	20
Fastening bolts	no.	4	8	8	8	8	8	12
	Size	M 6	M 6	M 6	M 6	M 6	M 6	M 8
Gaskets (side with product	d1	80	100	125	150	175	225	300
contact and atmospheric side)	d7	102	127	152	177	202	252	327

#### Order data:

- Lumiglas sight glass fitting (DIN) and construction

- Nominal bore (DN) / nominal pressure (PN)

- Material: base flange, test certification 3.1/3.2 on request cover flange, test certification 3.1/3.2 on request bolts
glass disc
gaskets







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## **Lumiglas Sight Glass Fitting, Circular** DIN 28121 or similar

Sight glass fittings acc. to DIN 28121 are circular flanged ports that are fastened to welding neck flanges, block flanges or similar by means of bolts.

The fitting is mechanically pre-tensioned as a unit. The structure and dimensions comply with the design standards set out in DIN 28121.

. Connecting sizes: PN 10, DN 40 to DN 200

#### Application:

For viewing of internals of pressure vessels, tanks, silos, stirred vessels, separators pipelines etc.

### Operating conditions:

Pressure: 10 bar or 25 bar; vacuum Temperature: max. 200°C with borosilicate glass DIN 7080

### Possible combinations:

Can be combined with Lumiglas luminaires when used in explosion hazardous as well as non explosion hazardous areas. The cover flange is then drilled and tapped to suit luminaire mounting bracket.

higher temperatures on request

#### Certificates/testing:

Depending on customer requirements and at extra cost, can be provided to DIN EN 10204 3.1/3.2

#### Component materials shown in adjoining exploded view are

item	part	material
1	base flange	boiler plate H II DIN 17155;
	(version A)	stainless steel 1.4571
		to DIN 17440 or other
	AB1	sealing rib to DIN EN 1092-1
	AC	tongue to DIN EN 1092-1
	AE	male socket to DIN EN 1092-1
2.1	gasket	PTFE envelope resilient gaske
	(side with product contact)	with corrugated support ring
2.2	gasket	KLINGERsil C-4400
	(atmospheric side)	
3	sight glass disc	borosilicate glass:
		toughened DIN 7080
4	cover flange	boiler plate H II,
		stainless steel 1.4571 or other
5	compression bolts	steel 5.6

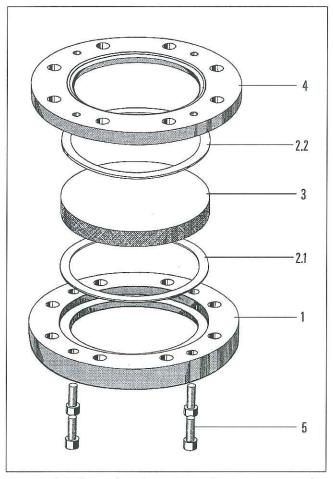
#### • Installation:

Use appropriate fastening bolts, the number and size of which are given on table overleaf, to fit the ready pre-compressed and internally sealed unit to nozzle flange, vessel pad etc.





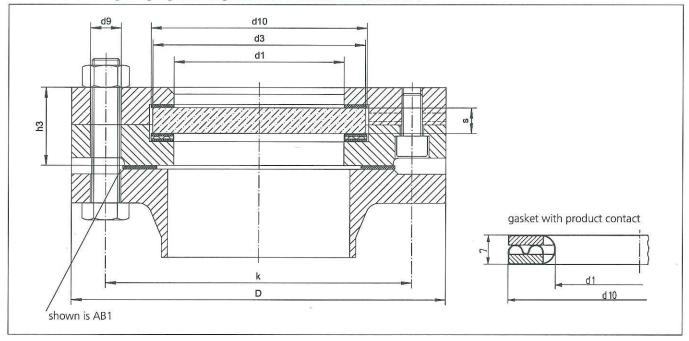
Lumiglas sight glass fitting DIN 28121



Exploded view of circular sight glass fitting DIN 28121



#### • Dimensions for Lumiglas sight glass fitting, circular, DIN 28121/PN 10 (version A)



size		1	2	3	4	5	6	7
nominal bore	DN	40	50	80	100	125	150	200
nominal pressure (bar)	PN	10/25	10/25	10/25	10/25	10/25	10/25	10/25
viewing diameter	d1	48	65	80	100	125	125	150
sight glass disc	d3	63	80	100	125	150	150	175
	S	10/12	12/15	15/20	15/25	20/30	20/30	20/30
flanges	D	150	165	200	220/235	250/270	285/300	340/360
	k	110	125	160	180/190	210/220	240/250	295/310
	h3	36/38	38/41	46/50	46/59	54/66	54/66	54/66
fastening bolts	no.	4	4	8	8	8	8	8/12
(not included in supply)	size	M 16	M 16	M 16	M 16/M 20	M 16/M 24	M 20/M 24	M 20/M 24
	d9	18	18	18	18/22	18/26	22/26	22/26
gaskets	d1	48	65	80	100	125	125	150
	d10	65	82	102	127	152	152	177

#### Ordering details:

- fitting (DIN) and construction
- nominal bore (DN) / nominal pressure (PN)
- material: base flange (and form of sealing face), test certification 3.1/3.2 on request cover flange, test certification 3.1/3.2 on request bolts

glass disc gaskets

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 11.15





### **Lumiglas Double Glass Safety Sight Glass Fitting**

also available with inter glass heating

A pair of circular recessed flanges housing twin glass discs four seals and a supporting spacer ring, for bolting onto weld neck nozzle flanges, weld pads etc.

The exploded view below shows how the glass disc, their respective seals and the spacer ring are sandwiched and mechanically compressed into a single entity by socket head bolts.

#### Connecting sizes: PN 10/16

The design of the supporting spacer ring ensures that each of the two glasses discs is able to withstand the maximum rated operating pressure and max. permissible temperature independently of the other.

#### Application:

For viewing of internals of pressure vessels, silos, stirred vessels, separators, pipelines and other normally enclosed systems. Continuous monitoring for leakage is possible with externally fitted pressure gauge.

#### Operating conditions:

Pressure: 10 bar (higher pressure ratings on request) Temperatures: 280°C with toughened borosilicate glass to

**DIN 7080** 

150°C with toughened Sodalime to DIN 8902

(higher temperatures on request)

#### Combinations:

These units can be combined with Lumiglas luminaires for use in Ex hazardous as well as non hazardous areas.

The cover flange can be drilled and tapped to suit the luminaire mounting brackets.

#### Parts and material alternatives

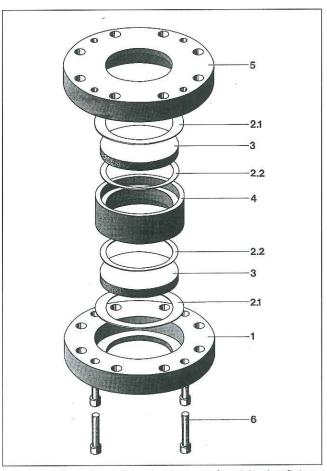
the adjoining diagram shows:

the aujon	ning diagram shov	V5.
Item	Part	Material
1	Base flange	Steel RST 37-2
	<del></del>	Stainless steel 1.4571 or other
2.1+2.2	Seal	KLINGERsil C-4400, Silicon, PTFE
		or other
3	Sight glass-	Sodalime glass DIN 8902,
	discs	Borosilicate DIN 7080
4	Spacer support	Steel RST 37-2, Stainless steel 1.4571
	ring	or other
5	Cover flange	Steel RST 37-2, Stainless steel 1.4571
	SANGER-SANGER WITTERS-LIVE - CO.	or other
6	Compression	DIN 912
	bolts	

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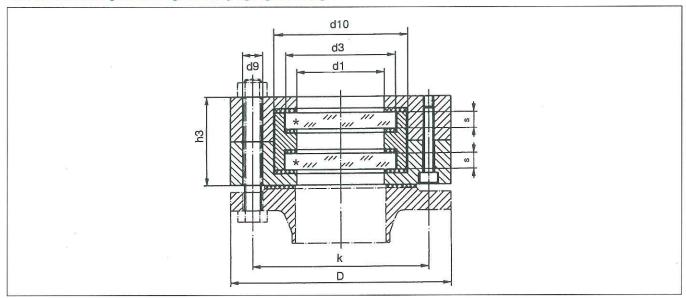
Lumiglas double glass safety sight glass fitting



Exploded view of a Lumiglas double glass safety sight glass fitting



#### • Dimensions of Lumiglas double glass safety sight glass fitting:



#### Mounting:

The preassembled and compressed package is mounted onto nozzle weld flange, pad or similar, using the number and size of securing bolt shown on the following table.

Size		1	2	3	4	5	6
Nominal nore	DN	50	80	100	125	150	200
Viewing diameter	d1	65	80	100	125	150	175
Sight glass discs	d3	80	100	125	150	175	200
	S	10	15	15	20	20	25
Flanges	D	165	200	220	250	285	340
	k	125	160	180	210	240	295
	h3	77	81	85	102	102	102
Fastening bolts and nuts	number of	4	8	8	8	8	8
(are not part of delivery)	thread	M 16	M 16	M 16	M 16	M 20	M 20
	d9	18	18	18	18	22	22
Seals	d10	97	127	152	177	202	227
	d1	65	80	100	125	150	175
	d4 *	82	102	127	152	177	202

<sup>\*</sup>size d4 (not shown) results from size d3 + 2 mm. d4 = outer diameter of two inner seals.

#### • Order data:

Please specify the selected items as follows: Fitting: nominal bore (DN), nominal pressure (PN) Material:

- Base flange, e. g. stainless steel 1.4571 (if flat face is not required, please indicate form of sealing face)
- Cover flange, e. g. stainless steel 1.4571
- Glass disc, e. g. Sodalime DIN 8902
- Seal, e. g. Silicon

 Test certificate type to DIN EN 10204 alternatively 3.1/3.2: customer request (extra cost)

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15





## **Lumiglas Screwed Sight Glass Fitting MV**

Screwed sight glass fittings, similar to DIN 11851 (dairy standard fittings) with see-through circular glasses. Threaded nozzles have weld necks.

#### Application:

Weld-on sight glass fitting with screwed cover flange. Sightport for viewing into Bioreactors, Laboratory mixers, filters as well as into process vessels, separators, pipelines and other usually closed containers.

Particularly suitable for pharmaceutics, food and beverage processing, e. g. breweries, dairies etc.

#### Operating Conditions:

Pressure: 6 bar (higher pressure ratings on request), vacuum

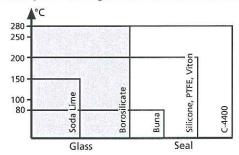
• Temperatures: Fittig: max. 280°C, with flat sealing face and flat gasket and with requisite profile seal (4) - see temperature diagram.

#### Combinations:

This sight glass unit can be combined with several Lumiglas lumi naires. Lumiglas wiper type SW I can be fitted to sizes DN 50 and larger. Combination of luminaire plus wiper can be fitted to size DN 125.

<ul> <li>Parts a</li> </ul>	nd materials, shown i	n adjoining exploded view, are
Items	Parts	Material options
1	slotted cover nut	stainless steel 1.4301, 1.4307
2	flat gasket	KLINGERSII C-4400
3	sight glass disc	<ul> <li>soda lime glass: toughened (tempered), material acc. to DIN 8902, for max. temp. 150°C</li> <li>borosilicate glass: toughened (tempered), material acc. to DIN 7080, for max. temp. 280°C</li> </ul>
4	O-ring seal	Viton, PTFE, Perbunan (NBR), Silicone, EPDM
5	weld neck nozzle	stainless steel 1.4301, 1.4307, 1.4404

#### • Temperature diagramm serves for choice of material option:



vessel wall

#### Assembly:

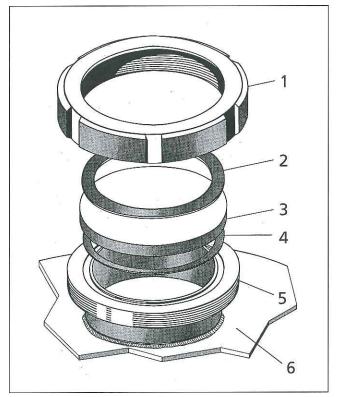
6

After welding nozzle (5) into the vessel wall (6), O-ring seal (4), glass discs (3) and flat gasket (2) are assembled in the sequence shown and tightened down by the slotted cover nut (1) against nozzle (6).





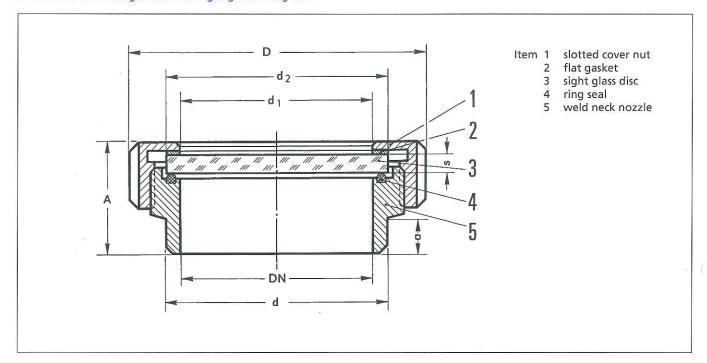
Complete screwed of a Lumiglas screwed sight glass fitting MV



Exploded view of a Lumiglas screwed sight glasss fitting MV



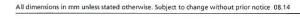
#### • Dimensions of a Lumiglas screwed sight glass fitting MV:



Size		1	2	3	4	5	6
Nominal bore	DN	50	65	80	100	125	150
Viewing diameter	d,	50	65	80	100	125	150
Sight glass disc	d <sub>2</sub>	63	80		141	166	
	S	10	12	12	15	15	15
Fitting	D	92	112	127	148	178	210
	d	61	79	93	114	136	163
	Α	44	52	57	69	59	62
	a	21	24	25	34	22	22

### • Ordering Information: e. g.

- Lumiglas screwed sight glass fitting MV, material acc. to DIN 11851 nominal size: DN 80 PN 6 bar
- materials to be spezified for:
- slotted cover nut (restricted to 1.4301, 1.4307)
- weld neck nozzle
- sight glass discs
- seals







## Lumiglas Aseptic Screwed Sight Glass Fitting MV-S

similar to DIN 11864.1 (dairy type screwed fittings)

Aseptic pipeline screwed fittings with fused metal sight glass discs for visual process observation. The screwed nozzles have weld necks.

#### Application:

For observing the internals of process vessels such as bioreactors, laboratory mixers, filters as well as tanks, stirred vessels, separators, pipelines and other normally closed systems.

Particularly suited to aseptic operating conditions as well as pharmaceutical and food industries.

#### Operating conditions:

Pressure: up to approx. 25 bar, depends on size, vacuum

#### Temperatures:

approx. 300°C at fitting; dependant on material of metal surround of fused metal glass sight glass disc (METAGLAS®).

#### Component materials shown in adjoining view are

item	part	material
1	slotted cover nut	stainless steel 1.4301 (1.4307) or
		1.4404

2+3 slotted cover nut sight glass disc METAGLAS®

metal surround alternatively: 1.4462 up to 280°C 2.4602, 2.4605, 2.4610

up to 300°C,

borosilicate glass, approx. 25 bar

gasket either:

EPDM; HNBR; FKM; MVQ

5 welding nozzle

stainless steel 1.4404 or 1.4435

#### Mounting:

4

After welding the nozzle (5) into the vessel wall, gasket (4) and fused sight glass disc (2) and (3) are laid into the nozzle seating in the order shown and the cover nut (1) tightened down.

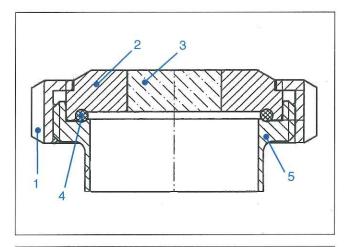
#### Caution:

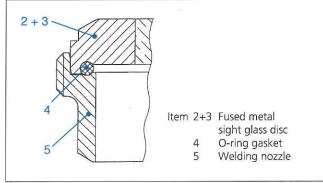
Check and ensure that the fused metal sight glass disc (2 + 3) and the O-ring gasket (4) lie correctly in the nozzle fitting (5)!

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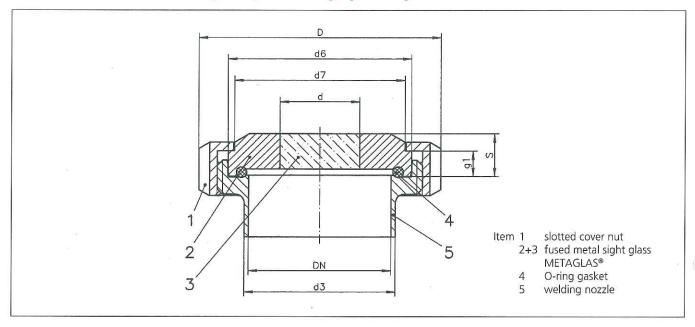
Complete scope of supply of the Lumiglas aseptic screwed sight glass fitting MV-S





Assembly of Lumiglas aseptic screwed sight glass fitting MV-S

#### • Dimensions and electrical data of Lumiglas aseptic screwed sight glass fitting MV-S



Size		1	2	3	4	5
Nominal bore	DN	40	50	65	80	100
Fitting	D	78	92	112	127	148
Fitting	d3	41	53	70	85	104
O-ring		40 x 5	52 x 5	68 x 5	83 x 5	102 x 5
Viewing dia.	d	28	34	37	47	55
Outside-Ø under side	d6	54.9	66.9	84.9	98.9	118.9
Outside-Ø approx. upper side	d7	48	61	79	93	114
Thickness, total	S	14	15	20	20	25
Thickness	g1	10	11	12	12	15
Pressure approx.	bar	25	25	16	16	10

#### Possible combination:

Combination with various sterile technology Lumiglas luminaires is possible, both in Ex and non Ex-environment.

#### Order data:

- Aseptic screwed sight glass fitting similar to DIN 11864.1
- Nominal bore: DN 80 PN, max. 16 bar, 300°C
- Please indicate desired material of construction
- Should the fused metal sight glass be supplied with an adapter for mounting on a sterile technology Lumiglas luminaire?





## **Lumiglas Sight Glass Fitting Rectangular**

The base flange of the sight glass unit is welded into or onto the vessel wall; the glass plate with gasket either side is firmly held in place by bolted on cover flange.

#### Application:

For viewing the internals of pipelines, containers, pressure vessels, reactors, silos etc. used principally as a liquid level indicator

#### · Operating pressure:

Pressure 16 bar

Vacuum

NB: Before putting the fitting into operation, the strength of the cutout reinforcement in combination with the vessel wall should be checked in accordance with TÜV leaflet.

#### Operating temperature:

100°C when using sodalime glass, DIN 8903 243°C when using borosilicate glass, DIN 7081

These temperatures refer to unprotected glass (i. e. without mica protective sheet).

#### Certification/acceptance test:

If required by customer, and against additional charge, testing and certification can be provided to DIN EN 10204 3.1/3.2

#### Parts and available materials in explosion drawing on the right:

item	parts	material options
1	base frame	carbon steel RSt 37-2;
		stainless steel 1.4571, 316 Ti
		or alternative
2	seal	KLINGERSil C-4400; Neoprene;
		PTFE or alternative
3	sight glass plate	-soda lime glass: thermally
		prestressed, DIN 8903, max 100°C
		-borosilicate glass: thermally
		prestressed, DIN 7081, max 243°C
4	cover frame	carbon steel RSt 37-2;
		stainless steel 1.4571, 316 Ti
		or alternative
5	securing bolts	carbon steel 8.8 or stainless
<b>≥</b> \v		steel A4

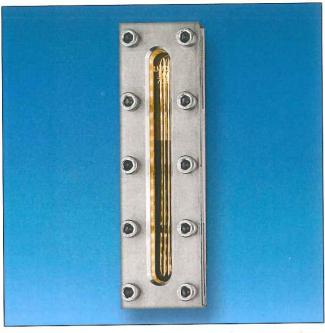
#### · Assembly:

Prior to assembling check the base flange (1) to ensure that the seating for the glass is flat and free from any distortion resulting from welding into/onto the vessel wall. Any distortion or uneven spots can lead to leakage or even breakage of the glass when cover flange is tightened down.

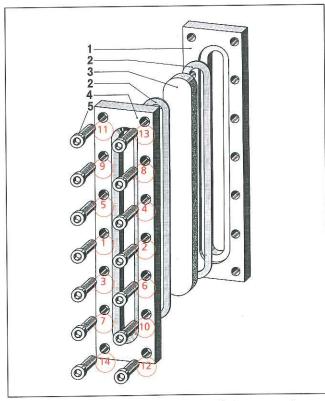
After the base flange (1) is welded correctly, place glass (3) gaskets (2) and cover frame (4) in the order shown in adjoining illustration into the recess of base flange (1) and locate with bolts (5) ensuring all is properly seated when bolts are handtight.

Progressively and carefully tighten down cover flange commencing with bolts in middle of flange and working outwards in crosswise alternating sequence (refer to sequence numbers 1-14 in illustration.



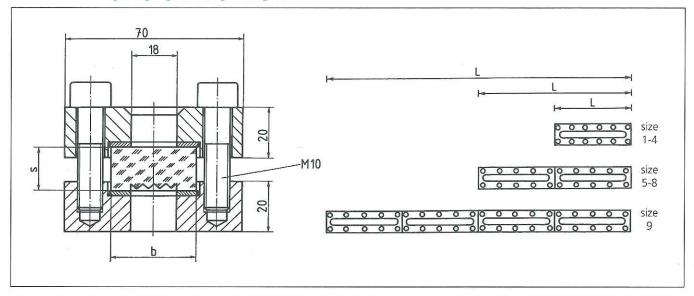


Complete assembly of a Lumiglas sight glass fitting rectangular



Exploded view of a Lumiglas sight glass fitting rectangular

#### • Dimensions of Lumiglas sight glass fitting rectangular:



size		1	2	3	4	5	6	7	8	9
fitting	L,	250	300	350	400	500	600	700	800	1000
sight glass	quantity	1	1	1	1	2	2	2	2	4
plate *)	1	220	280	320	370	220	280	320	370	220
	b	34	34	34	34	34	34	34	34	34
	S	17	17	17	17	17	17	17	17	17

- \*) Standard is reflex glass. Please specify in your order if you wish the optionally available transparent type glass.
- The lengths shown under L are the available standard sizes.
- Alternative versions in shape, size and material are available on request.
- External radiusing of the flanges 2 x R is available at extra cost.
- Lumiglas sight glass fitting rectangular are also available with closed base frame (see sketch on the right) for use as external liquid level indicator. In that case the unit is fed via pipes through holes in the base frame plate. The unit comes with such holes suitable drilled or tapped.

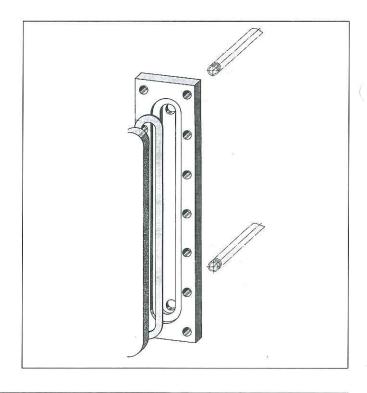
#### • Order data:

Please specify the selected item as follows:

- Lumiglas sight glass fitting rectangular, size: ...
- Length: ...
- Material: base frame; open or closed (plate): ... cover frame: ...

(when required, each with test certificate type 3.1/3.2)

- Sight glass plate: ...
- Seals: ...



All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15





### **Lumiglas Oblong Oval Sight Glass Fitting**

Suitable for welding into or onto vessel walls, this sight glass fitting comes complete with an oblong oval glass plate sealed by gaskets inserted on either side of it and bolted firmly in place.

#### Application:

Ideal for viewing the insides of pipes, vessels, containers, reactors, silos, etc., and used primarily as a liquid level indicator for monitoring e. g. filling levels.

#### Operating conditions:

- Pressure 2.5/6/10/25 bar
- Vacuum
- Prior to using the fitting, the cut-out reinforcement together with the relevant material of the vessel should be checked in accordance with AD-Merkblatt.

#### Operating temperature:

100°C when using soda-lime glass to DIN 8903 (on request only) 243°C when using borosilicate glass to DIN 7081

These temperatures refer to unprotected glass, i. e. without a protective layer of mica).

#### Certification/Approval:

Testing and certification can be provided to DIN EN 10204 3.1/3.2 as required by the customer (at extra charge).

#### Components and alternative materials:

in nebenstehender Ansicht sind:

Item ComponentMaterial options1 Base frame\$235JRG2 (RST37-2);

stainless steel 1.4404 or other grades
Gaskets KLINGERSil C-4400; Neoprene;

PTFE or others

3 Sight glass plate -Soda-lime glass: thermally prestressed to DIN 8903,

max. operating temperature: 100°C

-Borosilicate glass: thermally prestressed to DIN 7081,

max. operating temperature: 243°C

4 Cover frame S235JRG2 (RST37-2);

stainless steel 1.4404 or other grades

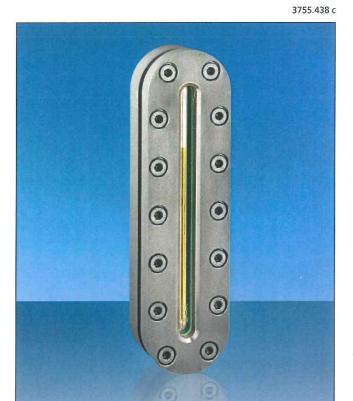
5 Fastening bolts Steel 8.8 or stainless steel A4

#### Assembly:

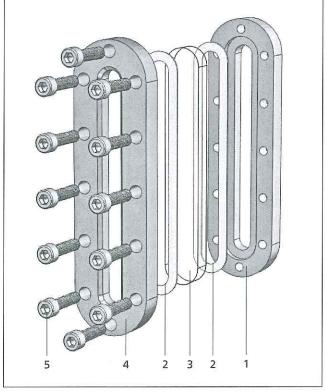
Prior to fitting the glass plate, check to ensure that the base frame (1) is free of any distortion and the sealing surface is flat. Any tension or unevenness can lead to leakage or may even cause the sight glass to break.

After the base frame has been welded into or onto the pipe or vessel wall, the gaskets (2), the sight glass plate (3) and the cover flange (4) are positioned in the order illustrated and then fastened to the base frame (1) with the bolts (5).

When securing the cover flange, the bolts should be tightened with a uniform torque, starting with the bolts in the middle and working crosswise towards the ends, i.e. in an alternating sequence.



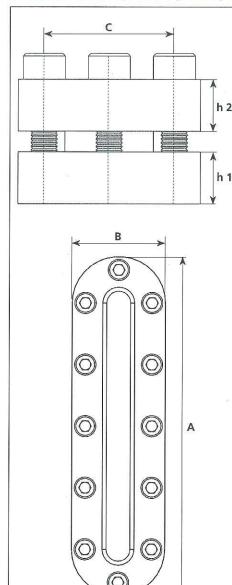
Complete assembly of a Lumiglas oblong oval sight glass fitting



Exploded view of a Lumiglas oblong oval sight glass fitting



#### • Dimensions of a Lumiglas oblong oval sight glass fitting:



Size	Nominal pressure		llation nsions		ving dth	M10	) bolts	Glass		nge kness	Weigh
3126	PN	Α	В	Length	Width	Pcs.	С	dimensions	h 1	h 2	kg
1	2.5	266	116	200	50	8	94	70/10x220	25	15	6.3
2	2.5	341	116	275	50	10	94	70/10x295	25	15	7.6
3	2.5	416	116	350	50	12	94	70/10x370	25	15	9.8
4	2.5	491	116	425	50	14	94	70/10x445	25	15	11.0
5	2.5	566	116	500	50	16	94	70/10x520	25	15	12.3
6	2.5	641	116	575	50	18	94	70/10x595	25	15	14.2
8	2.5	791	116	725	50	22	94	70/10x745	25	15	18.0
1	6	261	96	195	30	10	74	50/10x215	25	15	5.6
2	6	316	96	250	30	12	74	50/10x270	25	15	7.0
3	6	371	96	305	30	14	74	50/10x325	25	15	8.0
4	6	426	96	360	30	16	74	50/10x380	25	15	8.9
5	6	481	96	415	30	18	74	50/10x435	25	15	10.0
6	6	536	96	470	30	20	74	50/10x490	25	15	12.0
8	6	646	96	580	30	24	74	50/10x600	25	15	13.7
1	10	260	80	198	18	12	58	35/10x215	25	15	5.0
2	10	305	80	243	18	14	58	35/10x260	25	15	5.8
3	10	350	80	288	18	16	58	35/10x305	25	15	6.5
4	10	395	80	333	18	18	58	35/10x350	25	15	7.5
5	10	440	80	378	18	20	58	35/10x395	25	15	8.0
6	10	485	80	423	18	22	58	35/10x440	25	15	9.5
8	10	575	80	513	18	26	58	35/10x530	25	15	13.0
1	25	186	80	121	15	10	58	34/17×140	25	20	4.0
2	25	211	80	146	15	10	58	34/17x165	25	20	4.5
3	25	236	80	171	15	12	58	34/17x190	25	20	5.0
4	25	296	80	231	15	14	58	34/17x250	25	20	6.0
5	25	326	80	261	15	16	58	34/17x280	25	20	6.8
6	25	366	80	301	15	18	58	34/17x320	25	20	7.5
8	25	386	80	321	15	18	58	34/17x340	25	20	8.0

#### Externally mounted liquid level indicator:

Lumiglas oblong oval sight glass fittings are also available with a closed base frame for use as an external liquid level indicator. In this case, the indicator is fed via pipes that run through holes in the base frame plate. The base frame is provided with the relevant drilled or tapped holes for this purpose.

#### • Order data:

Lumiglas Oblong oval sight glass fitting

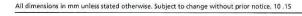
Nominal pressure:...

Size:... Material: Base frame:... Length:... Cover frame:...

Sight glass plate:...

Gaskets:...

(Inspection certificates 3.1/3.2 can be provided on request.)







### **Lumiglas Tubular Sightglass/Flow Indicator**

flanged at both ends to DIN 2642 for fitting into pipelines

#### Application:

For visual control of state of fluid and flow in pipelines

#### · Connecting flanges:

Flanges to DIN 2642 (mating sizes PN 10)

### Length over flange:

DIN 3202 F1

#### Operating conditions:

Operating pressure: up to 6 bar, depending on wall thickness (higher ratings on request)

Operating temperature: up to 220°C

#### Materials of components

referred to in adjoining exploded view:

item	Part	iviateriai
1	Connecting flange	Stainless steel 1.4571 or other
2	Glass cylinder	Borosilicate glass (DURAN)
3	Ring seals	Silicon rubber or other
4	Spacer bars	Stainless steel 1.4301 or other
5	Securing bolts	A 2 or other
		(with spring washer)

#### Special versions:

- with stainless steel or protective plexiglass outer shell
- ANSI flanges
- customised length

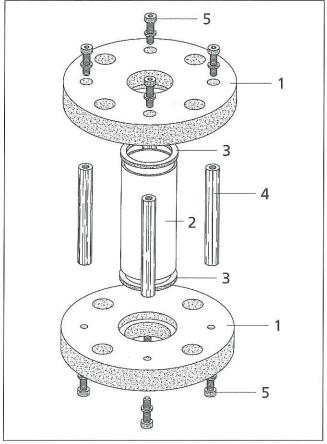
#### • Installation:

- The flow indicator is bolted, using suitable gaskets, directly between the mating flanges of the pipeline.
- The flow indicator should be fitted so that no stresses (tensile, compression or torsional) are caused on tightening up.

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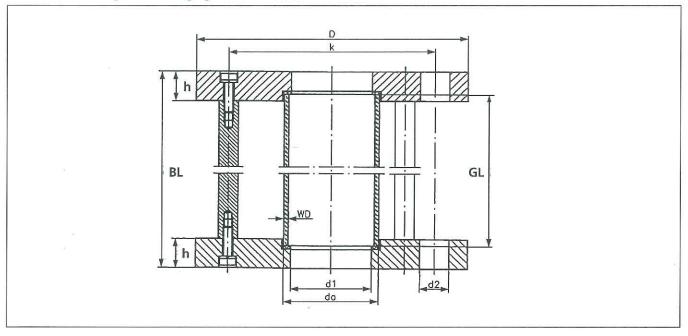
Lumiglas tubular sightglass/flow indicator



Exploded view of a Lumiglas tubular sightglass/flow indicator



#### • Dimensions for Lumiglas tubular sightglass/flow indicator:

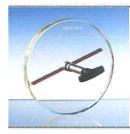


Fit	ting	Part No.	max. pressure		Flanges		Conn. Bo	lt Hole + Sec	uring Bolts	G	ass Cylin	der
DN	BL		bar	D	d1	h	k	No.	d2	da	WD	GL
10	130	0201.081.00	6	90	10	16	60	4	14	15	1.2	106
15	130	0201.082.00	6	95	15	16	65	4	14	18	1.2	106
20	150	0201.083.00	6	105	20	16	75	4	14	24	1.2	126
25	160	0201.084.00	6	115	25	18	85	4	14	30	1.4	132
32	180	0201.085.00	6	140	32	18	100	4	18	38	2.0	152
40	200	0201.086.00	6	150	40	18	110	4	18	48	2.3	172
50	230	0201.087.00	5.6	165	50	18	125	4	18	58	2.5	202
65	290	0201.088.00	5.6	185	65	18	145	4	18	75	3.2	262
80	310	0201.089.00	6	200	80	20	160	8	18	95	5.0	278
100	350	0201.090.00	5.3	220	100	20	180	8	18	115	5.0	318
125	400	0201.091.00	4.2	250	125	20	210	8	18	140	7.0	368
150	480	0201.092.00	5.0	285	150	20	240	8	22	170	7.0	448
200	600	0201.093.00	4.9	340	200	22	295	8	22	225	9.0	564

#### Ordering information:

e. g. Lumiglas tubular sightglass/flow indicator DN 100, material 1.4571, borosilicate glass, 6 bar operating pressure, length over flanges 350





## Accessories for sight glass fittings

Sight glass wiper SW I 3755.171
Sight glass wiper with flexible drive SW II BW 3755.172
Ex motor drive 3755.436
Spray device 3755.173

## Lumiglas

### **Lumiglas Sight Glass Wiper SW I**

for circular sight glass assemblies to DIN 28120 or similar as well as screwed sight glass assemblies

#### Installation:

Into sight glass disc with 10.5 mm central hole (to DIN 7080/8902 or similar, suits sight glass assemblies to DIN 28120 from nominal size DN 50 to DN 400 as well as screwed sight glass assemblies similar to DIN 11851, DN 50, 65, 80, 100, 125, 150.

#### Application:

For manual cleaning, when required, of inside glass surface in sightports.

#### Operating conditions:

Vacuum tight; pressure tight to at least 2 bar and, depending on glass diameter, to 6 bar. Max. permissible temperature 220°C (though this depends on glass type used).

#### Possible combinations:

Unit can simultaneously be combined with a spray device. Combination with Lumistar luminaire mounted on the sight glass unit is possible from viewing dia. 125 (DIN 28120, DN 100) depending on luminaire size (see table overleaf). Lumistar luminaire series USL and ESL can also be combined with the unit. With screwed sight glass assemblies combination with Lumistar luminaire SLM or Lumistar ME is possible with size DN 125. Also available with ratchet-drive lever.

#### Certification/testing:

Certification issued by the state material testing authority of Nordrhein-Westfalen, Dortmund, are available.

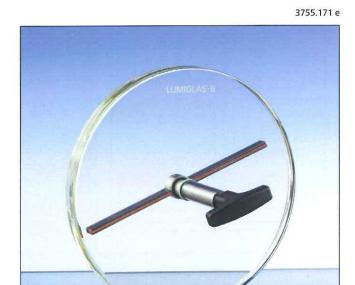
#### Assembly and material alternatives for the complete supply:

Item art

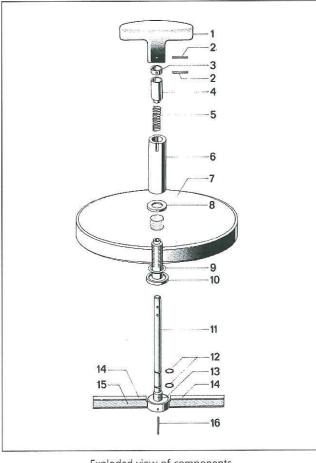
- 1 T grip (or ratchet-drive lever at extra cost)
- Polycarbonate (bush brass)
- 2 locating pins 1.4310
- 3 spacer collar locating brass or PEEK
- 4 spacer collar with spigot brass or PEEK
- compression spring 1.4310
- 6 bush threaded female 1.4401
- 7 glass disc Sodalime or Borosilicate
- 8 gasket non asbest fibre, BAS 400 green
- 9 O-ring seal Viton
- 10 bush threaded female 1.4401 or 1.4404
- 11 wiper spindle 1.4401 or 1.4404
- 12 O-ring seals Viton
- 13 bearing sleeve PTFE
- 14 wiper blade silicon, PTFE or EPDM
- 15 wiper arm 1.4571
- 16 locating pin 1.4310
- drive lever 1.4305
- lever knob Polycarbonate (bush brass)
- freewheel unit steel
- drive boss 1.4305
- dust cab synthetic resin
- all product contact parts stainless steel

#### Fitting and assembly instructions:

If the wiper is ordered separately, i. e. not installed into sight glass disc by the manufacturer, the assembly has to be done with regard to separate installation an operating instructions, attached to the delivery.



Lumiglas sight glass wiper SW I built into a sight glass disc

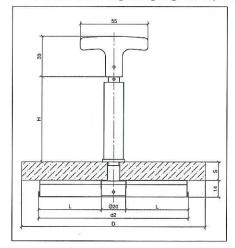


Exploded view of components

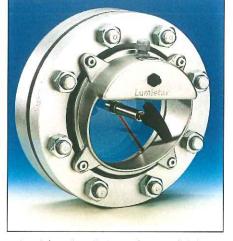
F.H.Papenmeier GmbH & Co. KG · division Lumiglas Talweg 2 · 58239 Schwerte · GERMANY phone: +49-2304 205-0 · fax: +49-2304 205-206 info.lumi@papenmeier.de · www.lumiglas.de



#### • Dimensions for Lumiglas sight glass wiper SW I







Lumiglas wiper SW I, fitted into sight glass assembly DIN 28120

Lumiglas wiper SW I, as shown adjoining but with Lumistar luminaire fitted

size		3	4	. 5*	6*	7*	8*	special sizes			
								9	10	11	12
nominal diameter	DN	50	80	100	125	150	200	250	300	350	400
viewing diameter	d <sub>1</sub>	80	100	125	150	175	225	on request			
dimension für H	mm	70/70	70/70	70/65	70/65	70/65	70/60				
soda lime or	D	100	125	150	175	200	250				
borosilicate	S	15/15¹	15/15¹	15/191	15/19¹	15/19¹	15/251				
sight glass disc	PN maxbar	6/61	6/61	5/61	4/61	4/41	2/41				
wiper blade	d <sub>2</sub>	77	97	122	147	172	222	depending on glass diameter as well as insid diameter of assembly, max. 460 mm			
part no. 722300 (replace with the respective figures, e.g065.)		062.	.063.	.064.	.065.	.066.	.067.				

<sup>\*</sup> Combination with luminaire Lumistar possible, NB: Combination with Lumistar 225, drive/lever version, also in combination with some Lumistar luminaires type USL and ESL.

#### Spare parts

Wiper blades	for sizes	L	silicon rubber, part number	PTFE, part number
	3	28.5	9468.062.00	9468.072.00
	4	38.5	9468.063.00	9468.073.00
	5	51	9468.064.00	9468.074.00
	6	63.5	9468.065.00	9468.075.00
	7	76	9468.066.00	9468.076.00
	8	101	9468.067.00	9468.077.00
	9 to 12	dej	pending on glass diameter and inside	diameter of the fitting
Seals	for sizes	diam. x s	part number	
Viton-O-ring seal (no. 12 overleaf)	1 bis 6	4 x 1	0862.019.00	
Viton-O-ring seal (no. 9 overleaf)	1 bis 6	12 x 2.5	0862.024.00	

#### Ordering Information:

e. g. Lumiglas sight glass wiper SW l, size 3, wiperblade PTFE. If a sight glass disc is needed as well, please specify the following data:

- Borosilicate or soda lime glass
- Sight glass disc size (diameter x s)
- nominal fittings diameter DN
- effective operating pressure for this vessel
- for wiper blades sizes 9 and larger, please specify the inside diameter of the fitting

#### Note:

A sight glass disc is not automatically included in the supply. Please order sight glass disc separately.

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 01.15



<sup>&</sup>lt;sup>1</sup> Data valid only for borosilicate glass



3755.172 b

### Lumiglas sight glass wiper with flexible drive SW II BW

for use with circular sight glass assemblies to DIN 28120 or similar

#### Mounting:

By means of pressure tight glands through both base and cover flange of sight glass assembly; suitable for sight glass discs corresponding to DIN 7080 or DIN 8902.

#### Application:

For manually activated cleaning, when required, of inside face of glass in sight ports. Particularly suitable for pressure and vacuum, vessels requiring test certification both in explosion hazardous as well as non hazardous operating areas. The glass discs fitted into the assemblies correspond to DIN 7080 or DIN 8902 standards.

Suitable for circular sight glass assemblies nominal size DN 100 ... DN 200.

#### Operating conditions:

Vacuum tight; pressure tight to 16 bar. Max. permissible temperature: 220°C (depending, however, on type of glass disc used).

#### Possible combinations:

Simultaneous fittings of Lumistar luminaire, flame proof or standard design, is possible with the wiper SW II BW, as is the fitting of a spray device.

#### Certification/Testing:

Test certificates issued by the state material testing authority Nordrhein Westfalen, Dortmund, are available.

#### Assembly/materials alternatives for the complete supply: Wiper blade: PTFE or silicone rubber All product contact parts are of stainless steel. Mechanical drive internal seal: PTFE



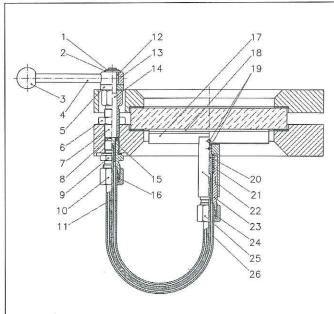
Lumiglas SW II BW mounted into sight glass fitting DIN 28120

#### Assembly and installation instructions:

The wiper is actuated by flexible shaft which engages at one end in the wiper blade holder and at the other in a lever operated ratchet drive mechanism which ensures drive shaft is always rotated in same direction.

A separate set of detailed installation instructions is included in the supply.

Should you order a complete sight glass assembly with the wiper SW II BW, the additional machining of the base will be carried out by Papenmeier.



#### Item Part

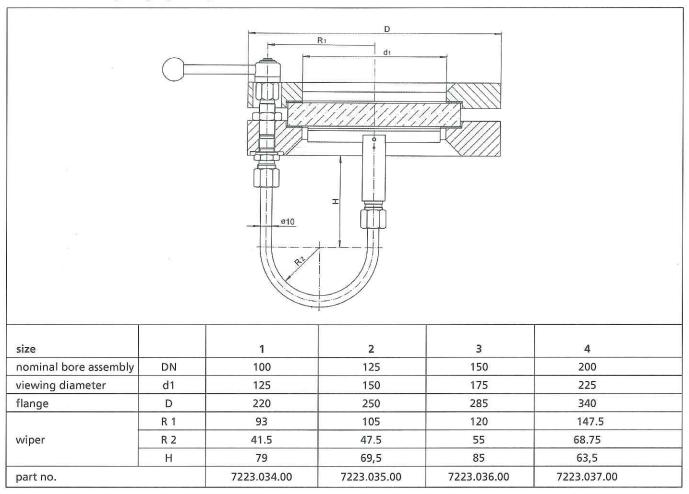
- 1 Locking circlip 1.4568
- 2 Washer A2
- 3 Actuating knob (brass insert)
- 4 Ratchet drive lever arm 1.4305
- 5 Spacer ring 1.4305
- 6 Locknut A4
- 7 Threaded bush 1.4301
- 8 Packing ring PTFE
- 9 Tube securing bush 1.4571
- 10 Compression nut 1.4571
- 11 Flexible drive shaft 1.4310 or 1.4401
- 12 Ratchet drive unit steel
- 13 Drive boss 1.4305
- 14 Shaft drive shank 1.4305

#### Item Part

- 15 Washer galvanized steel
- 16 Compression taper ring 1.4571
- 7 Wiper blade holder 1.4571
- 18 Wiper blade siliconee or PTFE
- 19 Roll pin 1.4571
- 20 Wiper arm axle 1.4571 or 1.4401
- 21 Coil spring 1.4310
- 22 Wiper carrier shroud 1.4571 or 1.4401
- 23 Guide spigot 1.4571 or 1.4401
  - 24 Compression taper ring 1.4571
- 25 Compression nut 1.4571
- 26 Guide tube 1.4571



#### • Dimensions for Lumiglas sight glass wiper SW II BW:



#### Spare parts:

wiper blades	for size/DN	wiper blade length (mm)	silicone part no.	PTFE part no.	
	1/100	115	9468.020.00	9468.031.00	=
	2/125	140	9468.021.00	9468.032.00	
	3/150	165	9468.022.00	9468.033.00	
	4/200	215	9468.023.00	9468.034.00	(8)
flexible drive	for size/DN	part no.			
	1/100	9323.014.00			
	2/125	9323.014.00			
	3/150	9323.016.00			
	4/200	9323.016.00			

#### · Order data:

e. g. Lumistar sight glass wiper SW II BW, size 3, wiper blade silicone rubber.

If ordering with complete sightport assembly please give the following additional information:

1. Sight glass assembly (DN/PN), materials.

2. Type and size of sight glass disc (borosilicate/sodalime).

All dimensions in mm unless stated otherwise. Subject to change without prior notice, 09.15





## Lumiglas Ex Motor Drive EMA I-Ex Ex d IIC T5

specifically developed for connecting to various control elements in potentially explosive environments.

- Versatile, high-performance Ex-class motor drive with compact dimensions for numerous applications
- This data sheet also incorporates the installation and operating instructions

#### Applications:

The Ex-class motor drive is mainly intended for operating wipers on sight glasses and is suitable for short- or long-term operation.

Special advantages of the Lumiglas Ex-class motor drive:

Especially in environments that require the remote monitoring of processes in reactors (e. g. biogas plants), ex-type cameras are frequently mounted on sight glasses, enabling process engineers to observe what is going on in the vessel from a central control room, which is frequently located at some distance from the reactor itself.

This eliminates the need for physical presence at a reactor, frequently entailing safety-relevant situations made more difficult by adverse environmental conditions, e. g. bad weather.

In certain processes, problems can arise if there are deposits of the substance in the reactor on the sight glass screen, thus making it difficult or even impossible for the camera to view the process. This can be remedied by using one of the proven wipers from the Lumiglas range: SW I and SWII. These wipers are normally operated by hand when the observer wants to inspect the reactor.

In many cases, however, the remote observation of reactors, e. g. via Lumiglas camera technology, is mandatory, making it essential to install a motor-driven wiper that can be actuated remotely from the control room.

The Ex motor drive EMA I-Ex has been developed specifically for such applications.

Because remote observation is mainly carried out in potentially explosive environments, an Ex-class motor drive is now available in addition to the Ex camera.

#### Small dimensions, great effectiveness:

The Ex-class motor drive is designed for both short-term and continuous operations.

### All development targets have been achieved:

Compact overall size; high turning moment; excellent motor power; low energy consumption.

The Ex motor drive is thus ideally suited for operating, for instance, Lumiglas screen wipers:

- a) SW I (the wiper blade axis passes through a hole in the sight glass) for low pressure
- b) SW II (the wiper blade axis is operated from the side through a hole in the sight glass fitting by means of a flexible shaft) – for higher pressure

Combination with a spray facility is also possible.





Lumiglas Ex motor drive

#### · General operating conditions:

- Approved for use in potentially explosive environments, zones 1 and 2 as well as 21 and 22
- Approved for use in ambient temperatures of between -20°C and +50°C

#### • Type of protection:

Terminal connection and motor enclosure IP68, motor shaft IP54

### Structure of compact unit:

The unit is made up of a DC electric motor with a flanged drive and special coupling by way of which (e. g.) the wiper axis of a screen wiper is turned.



#### Special characteristics of the individual components:

#### 1. Motor

- Explosion-proof high-precision DC motor with non-ferrous armature
- High acceleration rate thanks to low weight of rotor
- High degree of efficiency (75% by 4.8 W power output) because there is no hysteresis loss
- Shaft supported on both sides by pre-stressed ball bearings
- Protected against excessive enclosure temperature: the motor is equipped with two non-resettable thermal fuses as protection; operation is also admissible with only one thermal fuse (see instructions for terminal connection)
- Type of protection: EEx d IIC T5
- Nominal voltage: 12 V DC
- Nominal current: up to 0.5 A continuous load at ambient temperature 40°C
- Direction of rotation: as required
- Connecting cable: 5 x 0.5 mm<sup>2</sup>, 5 metres in length, fitted
- Material of motor enclosure: steel

#### 2. Flanged drive

- Planetary gear set, reduction gear ratio (nominal) 159:1
- Turning moment: 2 Nm for continuous operations,
- 4 Nm for short-term operations
- Direction of rotation of shaft: reversible in direction of arrow
- Drive shaft bearing: ball bearings, pre-stressed
- Material: stainless steel

#### 3. Helical coupling

- Material: aluminium (also available as a special version in stainless steel)

#### 4. Mounting

- The individually adapted stainless steel fittings for use in pressure environments (SWII) and in normal environments (SW I) are shown in the illustrations opposite.



Ex-class motor drive combined with Lumiglas wiper SW II



Ex-class motor drive combined with Lumiglas wiper SW I





#### • Installation/Assembly

#### 1. Mounting

To enable wiper operations, the compact Ex-class motor drive is affixed to the cover flange of a round sight glass fitting by means of a special adapter. Each mounting (stainless steel) is individually adapted and depends on

a) the type and size of the sight glass fitting

b) the type of wiper.

Please provide accurate details of the application in your enquiry!

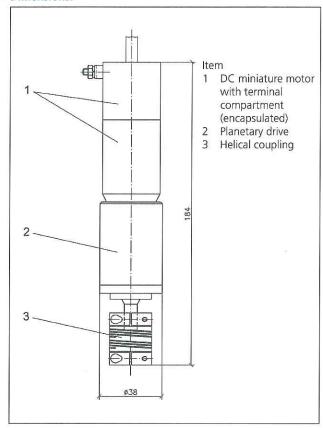
#### 2. Coupling

- Once the mounting has been fastened to the planetary drive, the coupling is fitted on the drive shaft of the transmission and secured to the same with a hexagon socket screw.
- The wiper axis in then guided into the coupling. After that, the Ex-class motor drive is aligned with the attachment and mounted.
- Finally, when it has been positioned free of tension, the wiper blade axis is fixed over the hexagon socket screw.
- It is essential to avoid any strain when installing the coupling and the extension for actuating operating elements (wipers).

#### Order data:

- Ex-class drive 12 V DC 0.5 A, part no. 3942.001.00
- Coupling, part no. 3065.001.00
- Ex-class terminal box, part no. 2507.020.00
- Non-Ex power supply unit 230 V AC / 12 V DC 0.42 A, part no. 9306.005.00

#### • Dimensions:

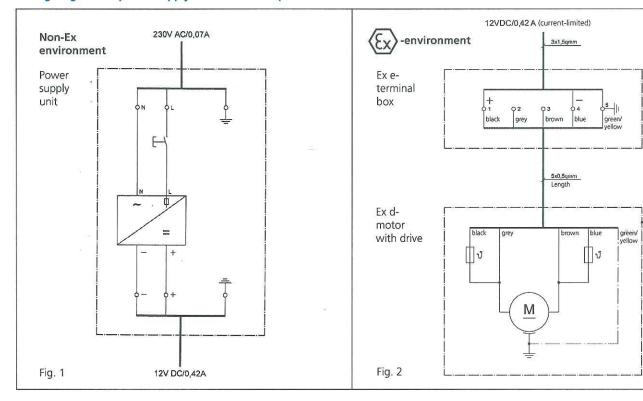


#### Technical data:

reciffical data.	
EC Type-Examination Certificate	PTB 03 ATEX 1131
Ignition protection type motor with drive	EEx d IIC T5 CE IIC GD 95°C
Explosion group	IIC (all explosion groups, includes explosion groups IIA and IIB)
Temperature classification	T5
Type of protection	Terminal connection and motor enclosure IP68, motor shaft IP54 acc. to EN 60529
Operating voltage	12V DC
Ambient temperature	-20°C ≤ Ta ≤ +50°C
Terminals (connecting cable fitted)	5 x 0.5 mm², cable 5 m
Nominal current	Up to 0.5 A continuous load at 40°C
Direction of rotation	User-defined
Speed	Approx. 13 rpm
Material: motor	Steel, zinc-plated, passivated
Material: drive	Stainless steel with anodised adaptor flange (aluminium)
Material: coupling	Aluminium 7075-T651
Weight	Approx. 1.1 kg



#### • Wiring diagram for power supply unit and Ex d wiper drive via terminal box:



### Installation and Operating Instructions

#### Essential precautions:

The Lumiglas Ex-class motor drive should only be installed, connected and serviced by staff who have been expressly trained and authorised for this purpose.

EC Type-Examination Certificate PTB03 ATEX 1131 must be complied with.

The operating permit for the equipment expires if it is used incorrectly.

#### Electrical termination

The electrical supply required is 12V DC / 0.42 A (current-limited). If this is not available on-site, a suitable power supply unit is obtainable (to be ordered separately).

When the Lumiglas Ex motor drive is used in potentially explosive environments, the voltage from the non-Ex area is laid to a special Ex-e terminal box to be installed in the explosive zone (to be ordered separately).

The supply voltage is conducted via a 3 x 1.15 mm<sup>2</sup> line to the Ex-e terminal box and wired to the terminals as follows (see also Fig. 2):

+ to terminal 1

- to terminal 2

Protective conductor to terminal 5

The Ex-d motor is fitted with a connecting cable, 5 metres in length with  $5 \times 0.5$  mm<sup>2</sup> wires.

The wires in the connecting cable are inserted and fixed by screws in the individual terminals as follows:

Black to terminal 1

Grey to terminal 2

Brown to terminal 3

Blue to terminal 4

Protective conductor (green/yellow) to terminal 5

The two thermal fuses (non-resettable) installed in the motor are activated as a result of this termination.

#### Caution:

Under certain circumstances, it is possible for the motor to run without the two thermal fuses. It is however essential that this operating mode is verified and approved by an expert prior to start-up!

If the motor is to be operated without thermal fuses, it is only necessary to connect the grey wire to terminal 2, brown to terminal 3, and the protective conductor to terminal 5





### **Lumiglas Spray Device**

• for circular circular sight glass fittings to DIN 28120 and similar

#### • Installation:

Pressure tight screwed gland nozzles, as supplied, pass through clearance hole in cover flange and tapped hole in base flange of sight glass assembly.

#### Application:

For intermittent or continuous automatic cleaning of underside of sight port glass disc. Suitable for pressure and vacuum vessels subject to pressure test certification for all standard ratings and use in explosion hazardous as well as non hazardous areas.

#### Operating conditions:

Correspond to sight glass fitting rating.

#### Combination with other features:

Can be combined simultaneously with Lumiglas luminaire and wiper. Care must, however, be taken that max. permissible operating temperature and resistance to temperature cycling for the relevant glass disc are considered.

#### · Materials

All metallic contact parts are of stainless steel quality 1.4571. Seals: PTFE

#### Scope of delivery:

Spray jet head, locknut, two seals, connecting nozzle 10 mm OD x 1.5 mm bore with hexagon shank and fitting instructions

#### Mounting:

When supplied as part of a complete sight glass assembly, the flanges are ready drilled and tapped to suit at the Lumiglas suppliers works.

Depending on operating requirements, the spray feed line may require a non return valve.

#### • Parts and materials referred to in adjoining diagram:

item	part	material
1	connecting nozzle	stainless steel, part no. 1.4571
2	seals	PTFE
3	locknut	stainless steel A4
4	spray head	stainless steel, part no. 1.4571

#### Dimensions:

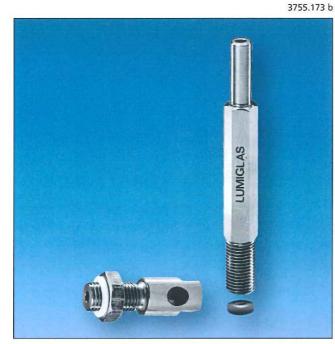
The spray device fits all standard sizes of sight glass assembly. Depending on application, two or more units may be fitted.

#### Ordering information:

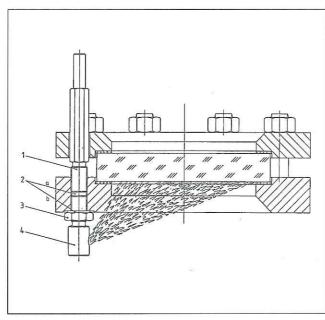
Lumiglas spray device, part no. 1.1098.005.91

If ordering in combination with complete sight glass assembly, please indicate type of fitting and intended form of installation: 1. sight glass fitting (DN/PN), materials.

dimensions and type of sight glass disc (borosilicate/sodalime glass).



Lumiglas spray device



Lumiglas spray device installed in a sight glass assembly DIN 28120

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 04.14

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## Lumiglas



## Lumistar luminaires (non-Ex)

also available in LED-technology

data sheet no

			data sheet no.
Sight glass lumina	ires 'half-moon-ty	pe', Lumistar	
Lumistar luminaire	e, aluminium		3755.158
Lumistar luminaire	225-LED		3755.437
Lumistar luminaire	SLM, aluminium		3755.174
Lumistar luminaire	ME, stainless stee	ı]	3755.192
Circular sight glass fully encapsulated,			
Lumistar luminaire	USL 05		3755.175
Lumistar luminaire	USL 06		3755.176
Lumistar luminaire	USL 07		3755.179
Lumistar luminaire	USL 08 and ��-lis	ted types	3755.191
Lumistar luminaire	ASL 55-LED		3755.432
Lumistar luminaire	ASL 57-LED		3755.314
Circular sight glass fully encapsulated,			
Lumistar luminaire	ESL 25		3755.198
Lumistar luminaire	ESL 26		3755.153
Lumistar luminaire	ESL 27		3755.352
Lumistar luminaire	ESL 39 CDM-R illu	ıminant-HID bulb	
Lumistar luminaire	ESL 53-LED		3755.322
Lumistar luminaire	ESL 55-LED		3755.432

Continuation -

Continuation



## Lumistar luminaires (non-Ex)

also available in LED-technology

		data sheet no.
Circular sight glass luminaires, stainle fully encapsulated compact luminaires low weight design		
Lumistar luminaires USL 01 and USL 3	1	3755.272
Lumistar luminaire USL 03		3755.155
Lumistar luminaires USL 13 and USL 33 and (n)-listed types	3	3755.199
Lumistar luminaires USL 15 and USL 35 and (n)-listed types	5	3755.239
Lumistar luminaires USL 16 and USL 36 and (n)-listed types	5	3755.492
Lumistar luminaires accessories		
Lumiglas timer		3755.320
Lumiglas transformer		3755.316



### **Lumiglas luminaire Lumistar**

#### · For use on circular sight glass fittings

For combination of sight glass and light glass. Suitable for circular sight glass fittings to DIN 28120 and similar, DN 50 to DN 200.

#### Application:

For illumination of internals of pressure vessels, tanks, bunkers, silos, stirred vessels and other normally enclosed containers in non explosion hazardous areas. Suitable for use in food processings.

When correctly fitted, dust and water jet tight to IP 65 and EN 60 529/DIN VDE 0470 part 1.

#### Operating Conditions:

Independent of internal vessel pressure/vacuum; max. permissible ambient temperature measured at cable entry gland 80°C. Where ambient temp. > 40°C, heat resistant cable (e. g. type Sinotherm 110 H05GG-F 3G 1,5 mm<sup>2</sup>) must be fitted. The max. ambient temperature for Lumistar luminaires in LED-technology is: 40°C.

#### • Electrical data:

Power supply: 24 V (230 V on request) 2-pin Halogen filament lamp Lamp:

depending on type 20 W, 50 W, 100 W Halogen Power:

filament lamp or 2 up to 22 W LED

#### • Lamp holder: 2-pin socket

• Transformers: Can be supplied as special accessory.

#### • Integral switch for brief 'ON' mode:

Not maintained push button switch fitted as standard.

#### Mechanical installation:

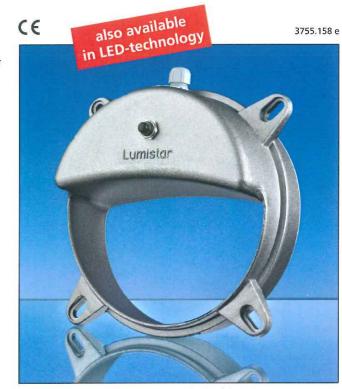
- Before commencing installation please read information sheet 'Important guidelines for mounting sight glass fittings...'.
- Caution: Do not look into light danger of impaired eyesight!
- -The luminaire is attached to the cover flange of the circular sight glass unit by two or four bolts. A ring gasket with bridge provides the seal between luminaire and sight glass disc.
- -The fixing bolts (stainless steel A2) are part of the supply. - Against additional cost, the Lumistar luminaire can be supplied
- complete with connecting cable.

#### Electrical connection:

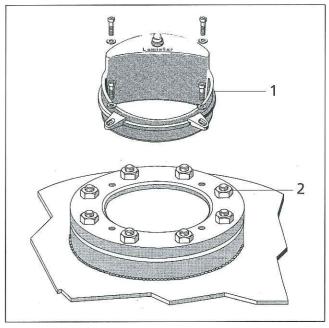
- Select connecting cable to suit operating conditions
- Cable diameter to suit cable entry gland (M16 x 1.5)
- Remove reflector
- Bare cable core ends
- Pass cable through gland into lamp chamber and connect to terminals (max. 2.5 mm²)
- Tighten cable entry gland
- Fit separately packed lamp using protective cloth
- Replace reflector

#### Lamp exchange:

- Caution: check luminaire temperature before commencing
- Ensure power to luminaire switched off
- Remove luminaire from cover flange
- Remove reflector and pull out lamp
- Fit new lamp by holding it with protective cloth and carefully



A complete unit, as supplied, of the Lumistar



Sight- and light glasses are combined. (1) Lumiglas luminaire Lumistar, with fixing screws (2) Sight glass fitting DIN 28120 welded into vessel wall

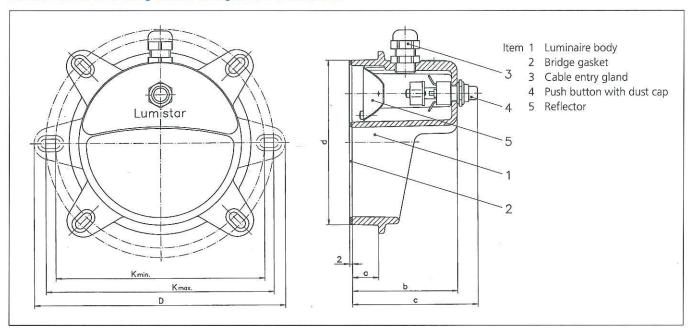
locating into 2-pin socket and push home

- Replace reflector, checking for cleanliness
- Check condition of bridge gasket and replace if necessary
- -Set luminaire on cover flange and bolt tight
- Switch on power





#### • Dimensions and connecting data for Lumiglas luminaire Lumistar



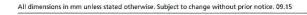
#### Parts, construction and materials:

Luminaire body: Corrosion resistant die cast aluminium Paint finish: RAL 9007

Size		1	2	3*	4*	5*	6*
Type Lumistar (= viewing diameter)		Lumistar 80	Lumistar 100	Lumistar 125	Lumistar 150	Lumistar 175	Lumistar 225
Matches to fitting DIN 28120	DN	50	80	100	125	150	200
Operating voltage	V	24	24	24	24	24	24
Power	W	20	50	50 or 100	50 or 100	50 or 100	50 or 100
Bolt pitch circle Ø	K min.	104	126	155	180	208	258
	K max.	118	140	169	194	222	282
	D	135	157	186	211	243	303
	d	77	97	122	147	172	222
	a	13	17	19	22	27	32
	b	65	75	77	80	85	95
	С	80	90	92	95	100	110
Fixing holes	oval hole	2 p.: 14 x 7	2 p.: 14 x 7	4 p.: 14 x 7	4 p.: 14 x 7	4 p.: 16 x 9	4 p.: 21 x 9
Bolts		M 6 x 16	M 8 x 16	M 8 x 16			
Weight appx.	kg	0.300	0.450	0.550	0.650	0.800	1.400
Part no.		3544.001.00	3544.007.00	3544.014.00	3544.019.00	3544.024.00	3544.029.00

<sup>\*</sup>Can be combined with Lumiglas sight glass wiper SW1

Order data: e. g. Lumiglas luminaire Lumistar 125, 24 V/100 W
 The appropriate lamp, corresponding to the required power, is separately packed as part of the supply.
 Hence the importance of stating desired lamp power; in absence of such information, a lamp considered correct for the specified luminaire model will be sent.





<sup>\*\*</sup> also available in LED-technology



### **Lumiglas Luminaire Lumistar 225-LED**

#### · For mounting on sight glass fittings:

Suitable for combining as sight glass and light glass; can be installed on circular sight port fittings acc. to DIN 28120 DN 200

#### Application:

For illuminating the interiors of vessels and tanks, hoppers, silos, stirring plant and similar, usually enclosed, containers in facilities where there is no potentially explosive environment.

#### The special advantages of Lumiglas LED technology:

- Resistant to vibration
- Long service life and high operating safety
- Service life: Up to 50,000 hours
- Optimal for fittings that are difficult to access
- No heat radiation in light beam (cold light)
- No additional heat which would be undesirable for chemical and/or biological processes.
   High-definition illumination

#### · Type of protection:

Dust- and water-jet-tight if properly installed, IP 65 acc. to EN 60529/DIN VDE 0470 Part 1

#### Operating conditions:

Independent of inside pressure of vessel/vacuum; max. admissible ambient temperature at cable gland 50°C. Temperature-resistant cable (e.g. Sinotherm 110 H05GG-F 3G 1.5 mm²) should be used if ambient temperatures exceed 40°C.

#### · Electrical data:

- Operating voltage AC/DC: alternative 12 V; 24-48 V; 120-230 V
- Lamp: 2 x 3 high-power LED
- Power: ca. 22 W
- Pushbutton operation possible
- Angle of reflected beam: 25° (alternative 10° or 40°)

#### Mechanical installation:

- Prior to installation, please read the information sheet 'Important guidelines for mounting sight glass fittings'
- -The luminaire is fastened to the cover flange of the circular sight glass unit by two or four bolts. The sealing between the sight glass disk of the fitting and the lamp enclosure is established by a ring gasket with bridge.
- Fastening bolts (material stainless steel A2) are included in the scope of supply.
- -The Lumistar luminaire can be supplied complete with connecting cable at an extra charge.

#### • Electrical connection:

- A suitable connecting cable should be selected to suit the operating conditions
- Cable diameter should match the screwed gland (Ø 4,5-10 mm)
- Unscrew and remove reflector
- -Strip the insulation from the cable ends
- Guide the cable through the screwed gland into the lamp chamber and wire to terminals (max. 2.5 mm²)
- -Tighten screws
- Replace reflector
- Install luminaire
- -Safety precautions: Do not open the luminaire if it is still live!

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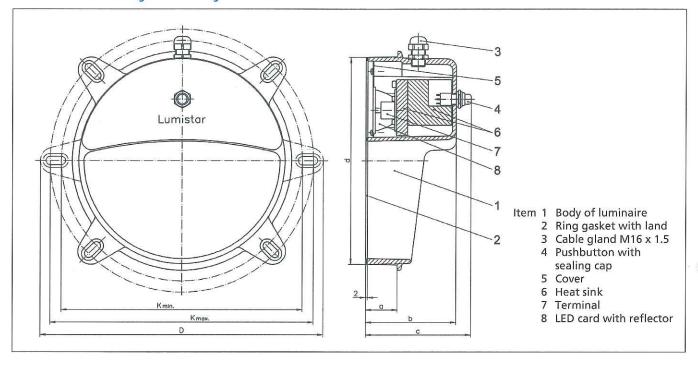
Lumiglas luminaire Lumistar 225-LED



Lumiglas luminaire Lumistar 225-LED



#### • Dimensions and connecting data for Lumiglas luminaire Lumistar 225-LED



Size		1	2	3	
Lumistar (+ viewing diameter)		Lumistar 225-LED	Lumistar 225-LED	Lumistar 225-LE	
Suitable for sight glass fitting to DIN 28120	DN	200	200	200	
Operating voltage AC/DC	V	12	24-48	120-230	
Power	W	22	22	22	
Angle of reflected beam		25°	25°	25°	
	K min.	258	258	258	
	K max.	282	282	282	
	D	303	303	303	
Dimensions	d	222	222	222	
	а	32	32	32	
	b	95	95	95	
	с	110	110	110	
Fastening holes	oval	4 pcs.: 21 x 9	4 pcs.: 21 x 9	4 pcs.: 21 x 9	
Bolts Weight approx. kg		M 8 x 16	M 8 x 16	M 8 x 16	
		2.2	2.2	2.2	
Part No. without pushbutton		3544.144.00	3544.147.00	3544.141.00	
Part No. with pushbutton		3544.153.00	3544.156.00	3544.150.00	

Combination with type SWI screen wiper is possible!

#### Parts, construction and materials:

Body of luminaire: Corrosion-resistant die-cast aluminium Paint finish: RAL 9007

#### · Order data: :

e. g. Lumiglas luminaire Lumistar 225-LED, without pushbutton, 24-48 V/22 W, Part No. 3755.147.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice, 10.15





## Lumistar Luminaire SLM in high quality cast aluminium alloy version

for use coupled with screwed sight glass fittings
 For the combination of sight and light port, suited to circular screwed sight glass fittings to DIN 11851 or similar, DN 65 to DN 125

#### Application:

For the internal illumination of bio-reactors, laboratory mixers, filters, as well as internals of pressure vessels, storage tanks, stirred vessels, pipelines and other normally enclosed systems in non explosion hazardous areas. Particularly suitable for pharmaceutical and food processing industries, e. g. breweries, dairies etc.

#### · Protection:

When correctly fitted, dust and water jet proof to IP 65 and EN 60 529 / DIN VDE 0470 part 1

#### Operating conditions:

Independent of internal vessel pressure/vacuum; max. permissible ambient temperature measured at cable entry gland, 80°C. When ambient temperature > 40°C heat resistant cable e. g. Sinotherm 110 H05GG-F 3G 1.5 mm² must be used.

#### · Electrical data:

Power supply Lamp 24 V (12 V is optionally available) 2 pin Halogen filament lamp

depending on model 20 W, 50 W or 100 W

#### • Lamp holder: 2 pin socket

- Transformers: Can be supplied as special accessory
- Integral switch: The luminaires are all fitted with integral push button switch as standard

#### Mechanical installation:

- Caution: Do not look into light danger of impaired eyesight!
- Remove slotted cover nut from sight glass unit
- Pass cover nut over luminaire body
- Check that glass disc correctly seated in fitting
- Place cover nut with luminaire over weld nozzle and tighten nut
- Caution: Only after mechanical installation can electrical connection be made.

#### Important note to installation:

If luminaire SLM is to be fitted to an existing screwed sight port, a matching slotted cover nut should be ordered with the luminaire or the existing cover nut modified to suit.

#### • Electrical connection:

- Select correct cable to suit operating conditions
- Cable diameter must suit cable entry gland
- Loosen lamp box cover screws and remove cover
- Pass cable through gland and wire to terminals
- Tighten gland
- Fit undamaged gasket to lid and tighten screws

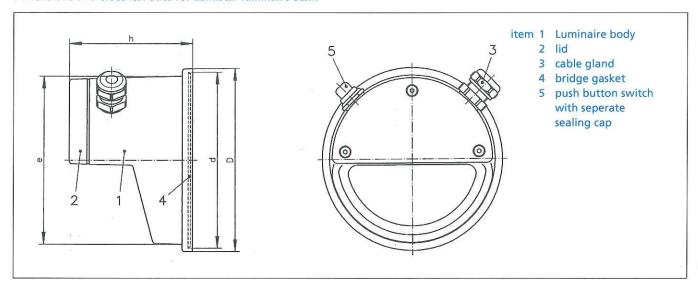


Fully equipped Lumistar luminaire SLM



Lumistar luminaire SLM built in a screwed sight glass fitting

#### • Dimensions and electrical data for Lumistar luminaire SLM:



#### Parts construction and materials:

- Luminaire of corrosion resistant die cast aluminium alloy, painted RAL 9007 (also available in stainless steel: stainless steel Lumistar luminaire Lumistar ME).
- Suitable for use in food processing.
- Luminaire lid (2) with resilient gasket screws onto luminaire body (1) (terminal box).
- Push button switch (non maintained for short period operation) with sealing cap (5) is fitted as standard.
- Electrical connection via cable gland (3) to internal terminals 2.5 mm<sup>2</sup>.

#### • Ordering Information: e. g. Lumistar luminaire SLM 80/24 V, 20 W, Part No. 4005.438.00

Size		1	2	3	4
Lumistar luminaire	type	SLM 65	SLM 80	SLM 100	SLM 125
Compatible with screwed sight glass fittings to DIN 11851 or similar	DN	65	80	100	125
Voltage	V	24 ≃	24 ≃	24 ≃	24 ≃
Wattage	W	20	20	50	50 or 100
Dimensions	D	90	102	123	151.5
	d	84	96	118.5	146.5
	e	78	92	113	136
	h	66	76	83	89
Weight approx.	kg	0.325	0.425	0.720	0.850
Part No.		4005.321.00	4005.438.00	4005.439.00	4005.440.00

• Combination: Lumistar luminaire SLM 125 can be combined with sight glass wiper SW l.

#### Lamp exchange:

Attention: Check temperature and pressure before loosing cover nut and lifting off luminaire!

- a) Port assembly not under pressure
   Switch off power to luminaire.
  - Loosen slotted cover nut and lift off luminaire from assembly.
  - Withdraw defective lamp.
  - Gripping new lamp with protective material, locate carefully in 2 pin socket and push firmly home.
  - Refit and tighten luminaire and cover nut.
  - Switch power on.

- b) Port under operating pressure
  - Switch off power to luminaire.
  - Unscrew lid (2) and loosen lamp holder fitted in terminal box section luminaire of body (1).
  - Withdraw lamp holder complete with defective lamp.
  - Change lamp as described under a).
  - Refit holder with lamp in luminaire body.
  - Replace lid with seal and tighten.

All dimensions in mm unless stated otherwise. Subject to change without prior notice 11.15







### Lumistar luminaire ME, stainless steel

 Sturdy, attractive stainless steel shape, protected by registered design

For use with screwed sight glass fittings

Ideal for combined sight and light glass ports, suitable for circular screwed sight glass fittings to DIN 11851 or similar, sizes DN 65 to DN 125

#### Application:

Designed for illuminating inside visual flow indicators, pipelines, laboratory mixers, as well as the interiors of vessels, tanks, agitators, stirrers and other normally closed containers in non explosive operating areas.

Suitable for use in food processing industries.

#### Protection:

When correctly fitted, dust and splash water protected, IP65 to EN 60 529/DIN VDE 0470 part 1

#### Operating conditions:

Independent of vessel pressure/vacuum; max. permissible ambient temperature at cable gland: 80°C

#### Electrical data:

Operating voltage: 24 V (12 V available as alternative) Lamp: 2-pin halogen lamp, depending on type 20 W, 50 W or 2 W LED

- Lamp holder: 2-pin socket
- Transformer: Available as a special accessory

#### Integral switch:

An integrated push button switch is standard on all luminaires.

#### Please note:

The luminaire should not be connected to the power supply until the mechanical installation is complete.

#### • Electrical connection:

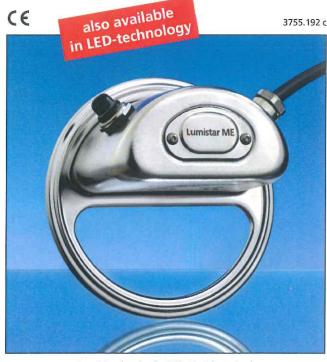
The Lumistar luminaire ME, stainless steel is factory-fitted with a 3-metre cable tail which is temperature-resistant up to 90°C (Lapptherm 105). All internal wiring is complete and ready for use.

#### • Installing a different/new cable:

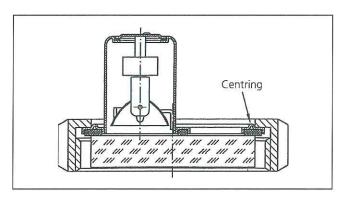
- Select a connecting cable that is suitable for the operating conditions.
- -The cable diameter should be the same as the cable gland.
- Remove the reflector.
- Insulate the cable ends.
- Insert the cable through the cable gland into the lamp chamber and wire to the terminals or push-on blades (leading the protective earth along the housing wall).
- Tighten the cable gland.
- Re-install the reflector.
- It is easier to carry out the connection process if the filament lamp is removed first. The user then has more space, and damage to the lamp is avoided.

#### • Mechanical installation:

- Loosen the slotted cover nut of the screwed sight glass fitting.
- Lead the slotted cover nut over the connecting cable and lamp housing.



Lumistar luminaire ME, stainless steel



- Ensure that the sight glass is correctly positioned in the fitting.
- Focus the luminaire, making sure to align the centring feature on the slotted cover nut (see drawing).
- Screw the slotted cover nut tight against the welding adapter with the luminaire fitted.

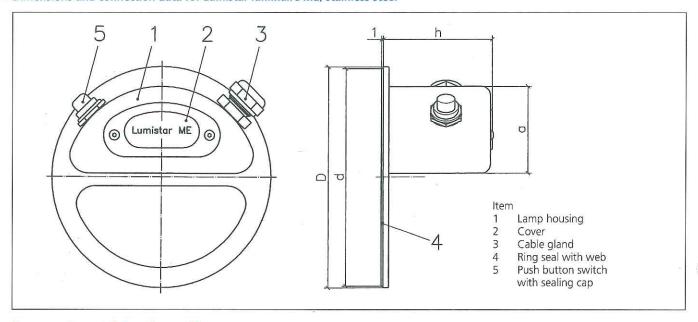
#### Changing the lamp:

- Caution! Before opening the luminaire, check that it is not too hot!
- Disconnect the luminaire from the power supply.
- Tip: By loosening the cable gland slightly it is easier to work on the luminaire as the internal wiring has more space.
- Open the cover and pull it out together with the installed lamp holder and the defective filament lamp.
- Remove the defective filament lamp.
- Using a protective cloth to hold the new filament lamp, insert it carefully into the 2-pin socket and push it into place.
- Replace the cover with lamp holder and new filament lamp, check that the cables are in the correct position before screwing on the cover.
- Tighten the cable gland whenever the lamp has been replaced. Reconnect the power supply.





#### · Dimensions and connection data for Lumistar luminaire ME, stainless steel



#### · Components, materials and assembly:

- Luminaire made of 1.4301 stainless steel
- Optimally suited for the pharmaceutical, food processing industries, etc.
- Lamp cover (2) is fitted with resilient flat seal and screws into the luminaire housing (1) (terminal box)
- Push button switch (5) with separate sealing cap is a standard feature for short-term operation
- Electrical cable connection through cable gland (3) to internal terminals 2.5 mm<sup>2</sup>
- Supply cable: 3 m cable tail is works-fitted and internally wired ready for use, Lapptherm 105 up to 90°C

Size		1	2	3	4
Lumistar luminaire	Туре	ME 65	ME 80	ME 100*	ME 125*
Compatible with screwed sight glass fittings to DIN 11851 or similar	DN	65	80	100	125
Operating voltage	V	24	24	24	24
Wattage	w	20	20	50	50
Dimensions	D	89	102	122	152
	d	86	99	119	149
	a	35	35	48	48
	h	45	45	60	60
Weight approx. (with connecting cable, without packaging)	kg	0.320	0.340	0.440	0.460
Part no.	_	3544.121.00	3544.122.00	3544.123.00	3544.124.00

<sup>\*</sup> available in LED technology

- Combination: The Lumistar luminaire ME, stainless steel 125 can be combined with the Lumiglas sight glass wiper SW I.
- Ordering data: e. g. Lumistar luminaire ME, stainless steel 100 / 24 V-50 W, part no. 3544.123.00

#### · Important, please note when ordering!

If the Lumistar luminaire ME, stainless steel is to be mounted on an already installed screw-type sight glass fitting, a specially adapted slotted cover nut should be ordered at the same time, or any existing one must be mechanically adapted. If necessary, please consult your Lumiglas sales contact! (See also hole diameter 'd 8' acc. to DIN 11851).

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15





#### **Lumistar Luminaire USL 05**

#### · For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light arrangements (single-flange version) or with two separate ports (2-flange version).

#### · Compact design; powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, screw-type sight glass fittings in compliance with DIN 11851, and for visual flow indicators.

 Generous light aperture and convenient lamp replacement thanks to optimally designed screwed lens closure.

#### Application:

For illuminating the interior of tanks, hoppers, silos, agitators and other, usually closed, vessels and reactors as well as visual flow indicators in non-explosive environments.

Suitable for use in food processing industries.

 Protection class: dust- and splash-proof, IP 65 acc. to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure/vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly.

 Maximum admissible ambient temperature at the cable entry gland with halogen version: 80°C; with LED version: 40°C.
 When used in ambient temperatures exceeding 40°C and with halogen version, temperature-resistant cable such as Sinotherm 110 H05GG-F 3G 1.5 mm² should be used.

### Very easy to install using special mountings, ensuring convenience of use:

The luminaire is attached to the cover flange of the circular sight glass fitting or the visual flow indicator by means of a hinged bracket, or fastened to the grooved nut on screw-type sight glass fittings.

#### Lumistar luminaires USL 05 fit the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 25
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 25
- d) Screw-type sight glass fittings in compliance with DIN 11851:
  - DN 65, DN 80 are fastened using a separate flanged adapter
  - sizes DN 80 and up are secured by way of a hinged bracket
- Voltage type: AC/DC, depending on luminaire type

#### Operating voltage:

#### without integrated transformer:

 24 V
 Halogen lamp
 20 W, 50 W

 120 V
 Halogen lamp
 50 W

 230 V
 Halogen lamp
 25 W/50 W

with integrated transformer:

PTC-protected (5 W), otherwise thermal fuse (> 5 W)

120 V Halogen lamp 12 V/5 W 230 V Halogen lamp 12 V/5 W



Lumistar luminaire USL 05



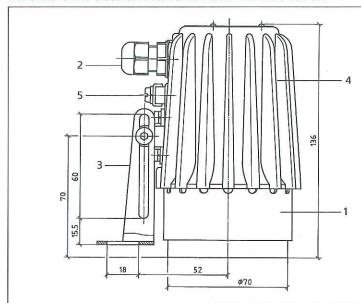
Application as combined sight and light glass on a sight glass fitting acc. to DIN 28120, mounted using a hinged bracket

#### Transformers:

Transformers for 24 V secondary voltage can be supplied on request.



#### • Dimensions and electrical data for Lumistar luminaire USL 05:



Part 1 Screw-in lens

- 2 Cable gland M20 x 1.5
- 3 Stainless steel hinged bracket
- 4 Body of luminaire
- 5 Grounding terminal

#### Weight:

without integrated transformer: 0.8 kg with integrated transformer: 1.2 kg

#### • Components and materials:

- Body of luminaire made of non-corrosive cast aluminium alloy, GK-AISi10Mg
- Grounding terminal: The interior of the lamp is already fully wired; there is an additional grounding terminal on the outside of the housing
- Light aperture: Unit made of aluminium ring and glass with Viton seal
- Mounting parts: Stainless steel 1.4301 (see accessories)

#### Connecting data:

		replacem	ent haloge	n lamp/LED					
item	USL 05	part no.	nominal voltage V	integrated transformer	push- button	timer	voltage/ wattage	socket	part no.
1	(230 V) 50 W	3540.068.00	230 ≃	without	with	without	230 V/50 W	GZ10	3232.261.00
2	(230 V/12 V) 5 W	3540.090.00	230 ~	with	with	without	12 V/5 W	G4	3232.221.00
3	(120 V/12 V) 5 W	3540.086.00	120 ~	with	with	without	12 V/5 W	G4	3232.221.00
4	(24 V) 20 W	3540.093.00	24 ≃	without	with	without	24 V/20 W	G4	3232.222.00
5	(24 V) 20 W	3540.094.00	24 ≃	without	without	without	24 V/20 W	G4	3232.222.00
6	(24 V) 20 W	3540.060.00	24 ~	without	with	with	24 V/20 W	G4	3232.206.00
7	(24 V) 50 W	3540.091.00	24 ≃	without	with	without	24 V/50 W	GY6.35	3232.242.00
8	(24 V) 50 W	3540.092.00	24 ≃	without	without	without	24 V/50 W	GY6.35	3232.242.00
9	(230 V) 25 W	3540.046.00	230 ~	without	with	with	230 V/25 W	G9	3232.276.00
10	(230 V) 5 W	3540.042.00	230 ~	without	without	without	230 V	GZ10	3233.029.00
11	(230 V) 5 W	3541.961.00	230 ~	without	with	without	230 V	GZ10	3233.029.00

#### Accessories:

item	component	part no.
1	hinged bracket for mounting luminaire, stainless steel	0354.014.00
2	flange adapter for mounting luminaire, stainless steel	1356.010.00
3	timer (external) for time-dependent illumination, Lumiglas timer push-button	on request
4	claw spanner for screw-in lens, for opening the luminaire	6816.001.00

#### • Order data:

e. g. Lumistar luminaire USL 05, 24 V/20 W, part no. 3540.093.00, without integrated transformer, with pushbutton, without timer, with hinged bracket, part no. 0354.014.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 02.16



#### **Lumistar Luminaire USL 06**

#### · For use with sight glass fittings

Versatile luminaire is ideally suited for use with integral light/sight port (single flange version) or separate light and sight port (dual flange version).

#### · Compact but powerful:

Provides glare free illumination; fits bolted circular sight glass assemblies to DIN 28120/DIN 28121 or similar as well as screwed sight glasses similar to DIN 11851 and visual-flow-indicators. Sizes, depending on style, from DN 50 upward.

#### Excellent illumination by special designed ring and lens unit

#### Application:

Illumination of the internals of vessels, tanks, bunkers, silos, mixers and other closed boilers and reactors and also visual flow indicators in non "Ex" hazardous production areas. Suitable for use in foodstuffs processing.

#### Protection index:

Dust and waterjet proof, IP 65 to EN 60529/DIN VDE 0470 part 1

#### Ambient conditions:

Independent of internal vessel pressure or vacuum. The maximum ambient temperature for halogen lamp version is 80°C at the cable gland. With ambient temperature in excess of 40°C, temperature resistant cable (e. g. Sinotherm 110 HO5GG-F 3G 1,5 mm²) is required.

The maximum ambient temperature for the LED version is 40°C. On no account may the luminaire be used as a closure/means of sealing of a (pressure) vessel i. e. without a suitable sight glass fitting.

#### Power supply:

without built-in-transformer:

12 V AC/DC halogen lamp 20 W

24 V AC/DC halogen lamp 20 W, 50 W or 100 W

halogen lamp 12 V/20 W

230 V AC/DC halogen lamp 50 W

with built-in-transformer; PTC-secured fuse:

120 V AC halogen lamp 12 V/20 W

230 V AC LED variant:

24 V AC/DC LED 4 W

230 V AC LED 5 W

#### Lamp socket:

Please see table overleaf

#### • Transformers:

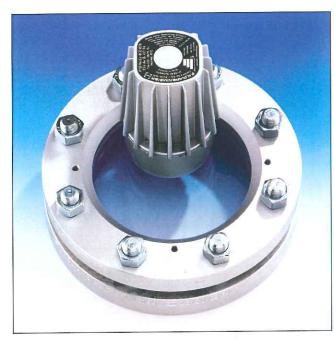
Available as separate units, AC mains to 12 V/24 V secondary output

#### Additions:

- Mounting hinged bracket or adapter flange (all stainless steel)
- -Special claw spanner: for opening/tightening the lens ring
- Internal or external delay switch
- Installed automatic delay switch Lumiglas timer, operating time: five minutes
- Connecting cable
- Push button



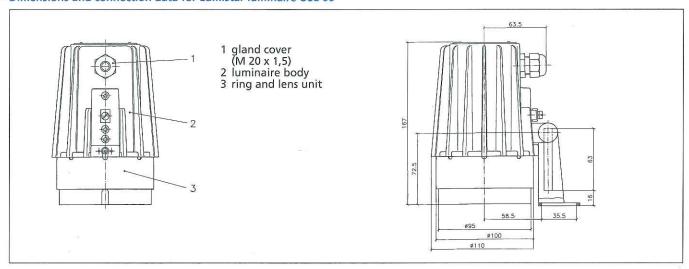
Lumistar luminaire USL 06



Application as combined light/sight port, fitted to a circular sight glass assembly to DIN 28120; fastened with hinged bracket



#### Dimensions and connection data for Lumistar luminaire USL 06



#### · Parts, construction and materials:

- Luminaire body: Corrosion resistant die cast aluminium GK-Al Si 12 Mg
- Light outlet: Unit of aluminium ring and glass, gasket O-ring
- Fastenings: Stainless steel (see under spares)
- Weight: 1.7 kg (without integral transformer), 2.3 kg (with integral transformer)

#### Connecting data:

Lumistar luminaire USL 06						Replacement parts:			
Item	Type USL 06	Part no.	Supply	Integral transformer	Socket	Power	ogen lamps/LED illuminants ower   Part no.		
1	(12 V) 20 W	3540.701.00	12 ≃	without	GY6.35	12 V/20 W	3232.240.00	halogen	
2*	(24 V) 20 W	3540.711.00	24 ≃	without	G4	24 V/20 W	3232.206.00	halogen	
3	(120 V/12 V) 20 W	3540.718.00	120 ~	with	GY6.35	12 V/20 W	3232.240.00	halogen	
4	(230 V/12 V) <b>20 W</b>	3540.720.00	230 ~	with	GY6.35	12 V/20 W	3232.240.00	halogen	
5**	(120 V/12 V) <b>20 W</b>	3540.768.00	120 ~	with	GY6.35	12 V/20 W	3232.240.00	halogen	
6	(24 V) 50 W	3540.737.00	24 ≃	without	GY6.35	24 V/50 W	3232.242.00	halogen	
7	(120 V) 50 W	3540.741.00	120 ~	without	GY6.35	120 V/50 W	3232.265.00	halogen	
8	(230 V) 50 W	3540.742.00	230 ≃	without	GZ10	230 V/50 W	3232.261.00	halogen	
9	(24 V) 100 W	3540.748.00	24 ≃	without	GY6.35	24 V/100 W	3232.244.00	halogen	
10	(24 V) 4 W	3541.526.00	24 ≃	without	GU5.3	4 W	3232.005.00	LED	
11	(230 V) 5 W	3541.528.00	230 ~	without	GZ10	5 W	3232.029.00	LED	

<sup>\*</sup> with integrated reflector in ring lens unit

#### Accessories:

Item	Part	Part no.
1	luminaire mounting (hinged bracket)	0354.016.00
2	luminaire mounting (adapter flange) for DN 65-100	1356.015.00
3	special claw spanner	6805.001.00
4	Lumiglas timer	on request

#### · Order data:

e. g. Lumistar luminaire USL 06, 230 V/50 W (part no. 3540.742.00) with hinged bracket (part no. 0354.016.00) and claw spanner (part no. 6805.001.00)

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 04.16



<sup>\*\*</sup> with terminal box

#### **Lumistar Luminaire USL 07**

#### • For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light glass arrangements, either as a single flange version or with two separate flanged ports.

#### · Compact design, powerful light output: :

Glare-free illumination; intended for use with circular sight glass fittings to DIN 28120 / DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in visual flow indicators.

Nominal sizes according to the fitting: from DN 50 up.

Optimally designed screw-in lens ensures maximum light efficiency.

#### Application:

For illuminating the interior of tanks, hoppers, silos, agitators and other – usually closed – vessels as well as visual flow indicators in potentially non-explosive environments.

Suitable for use in food processing operations.

 Protection: dust-proof and splash water-protected, IP 65 acc. to DIN EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of internal pressure/vacuum in the vessel; max. permissible ambient temperature at cable entry gland 80°C. When being installed in ambient temperatures > 40°C, heat-resistant 1.5 mm² cable such as e. g. Sinotherm 110 H05GG-F 3G should be utilised.

On no account should a sight glass luminaire be used on its own to close a vessel port or as a substitute for the cover flange or the sight glass/flange assembly.

#### • Electrical data and equipment:

- Voltage type: Alternating/direct current, depending on lamp
- Operating voltage:

without integrated transformer:

24 V... Halogen lamp 50 W, 100 W DC/AC

230 V... Halogen lamp 50 W, 75 W, 100 W DC/AC

#### with integrated transformer:

120 V... Halogen lamp 12 V/50 W AC 230 V... Halogen lamp 12 V/50 W AC

• Lamp socket: see separate chart

#### • Transformers:

Transformers for 24 V secondary voltage can be supplied on request.

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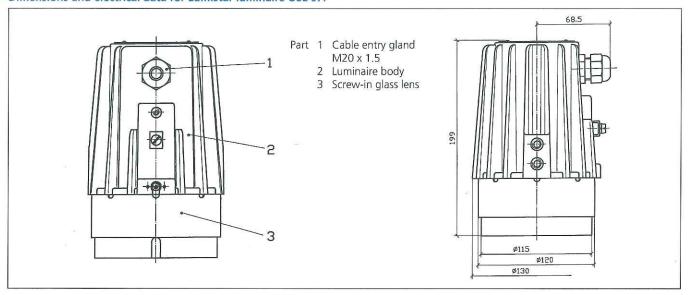


Lumistar luminaire USL 07 with mounting parts



Application as a combined sight and light glass on a sight glass fitting acc. to DIN 28120, mounting by way of luminaire fastening

#### • Dimensions and electrical data for Lumistar luminaire USL 07:



#### • Components and materials:

- Body of luminaire: non-corrosive cast aluminium alloy, GK-AI Si 10 Mg
- Light aperture: unit made of aluminium ring and glass, O-ring seal
- Fastening elements: G-Al Si 10 Mg (see accessories section)
- Weight (without connecting cable): without built-in transformer 2.0 kg; with built-in transformer: 3.0 kg

#### Connecting data:

Lumis	tar luminaire USL 07				replacement parts		
no.	USL 07	part no.	nominal voltage	integrated transformer	socket	halogen lamp   voltage/wattage	part no.
1	(24 V) 50 W	3540.604.00	24 ≃	without	GY6.35	24 V/50 W	3232.242.00
2	(230 V) 50 W	3540.607.00	230 ≃	without	E27	230 V/50 W	3232.241.00
3	(230 V/12 V) 50 W	3540.614.00	230 ~	with	GY6.35	12 V/50 W	3232.238.00
4	(120 V/12 V) 50 W	3540.612.00	120 ~	with	GY6.35	12 V/50 W	3232.238.00
5							
6	(230 V) 75 W	3540.024.00	230 ≃	without	E27	230 V/75 W	3232.239.00
7							
8	(24 V) 100 W	3540.631.00	24 ≃	without	GY6.35	24 V/100 W	3232.244.00
9	(230 V) 100 W	3540.634.00	230 ≃	without	E27	230 V/100 W	3232.247.00

Further versions with terminal box on request.

#### Accessories:

item	component	part no.
1	fixture for luminaire, straight, DN 50 to 100	0354.005.00
2	fixture for luminaire, angled, DIN 125 to 200	0354.006.00
3	Lumiglas timer module, integrated, for individually timed illumination, 5 min.	on request
4	Lumiglas timer module, external, for individually timed illumination, Ex-timer switch	on request
5	claw spanner for screw-in lens, for opening the luminaire	6805.002.00

#### • Order data:

Example: Lumistar luminaire USL 07, 24 V/50 W, part no. 3540.604.00 with fixture, straight, DN 50 (part no. 0354.005.00) and claw spanner (part no. 6805.002.00).

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15





### Lumistar Luminaires ASL 55-LED (alu) and ESL 55-LED (stainless steel)

#### • For mounting on sight glass fittings

Sight glass luminaire for universal applications; ideally suited for sight glass and light port combinations (single-flange version) and for separate configurations (double-flange version).

#### • The specific advantages of Lumiglas LED technology:

- Insensitive to vibration
- Long service life and high operational reliability
- Continuous operation for LED up to about 50,000 hours
- The ideal solution wherever fittings are difficult to access
- No heat radiation in the light port (cold light)
- No additional heat which would be undesirable for chemical and/or biological processes
- Extreme high-contrast lighting

#### Compact yet powerful:

Dazzle-free illumination; suitable for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in sight flow indicators.

#### Applications:

The optimum solution in the pharmaceutical and food processing industries, ideal for illuminating bioreactors, laboratory mixers and filters as well as the interiors of boilers, tanks, agitators, separators, pipes and other – usually sealed – vessels in operating environments that are not potentially explosive.

#### • Type of protection:

Dust-tight and waterjet-proof, IP 65 acc. to EN 60529/ DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the pressure/vacuum inside the vessel

- Lumiglas lamps must never be used for sealing vessel openings in place of a suitable sight glass fitting.
- Maximum permissible ambient temperature: 40°C

#### • Two simple installation options are practice-proven:

- a) by means of a hinged mounting, or
- b) by fitting the luminaire over a special raised edge on the cover flange (ideal in aseptic and sterile areas)

#### • Electrical data:

 Convenient electrical link-up: The Lumistar luminaire is equipped with a factory-mounted screwed cable gland. CE

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Lumistar luminaire ESL 55-LED with hinged mounting bracket, available as an accessory



Lumistar luminaire ASL 55-LED

Туре	Part No.	Voltage	Illuminant	Wattage	Material
ACL EE LED	3541.602.00	24-48 V ≃	3 LED	11 W	aluminium
ASL 55-LED	3541.642.00	24 V ≃	6 LED	15 W	aluminium
ACL EE LED	3541.603.00	120-230 V ≃	3 LED	11 W	aluminium
ASL 55-LED	3541.643.00	120-230 V ≃	6 LED	15 W	aluminium
ECL EE LED	3541.502.00	24-48 V ≃	3 LED	11 W	stainless steel
ESL 55-LED	3541.517.00	24 V ≃	6 LED	15 W	stainless steel
EST EETED	3541.503.00	120-230 V ≃	3 LED	11 W	stainless steel
ESL 55-LED	3541.518.00	120-230 V ≃	6 LED	15 W	stainless steel

Note: 12 V or 48 V on request

#### · Parts, design and materials:

- Luminaire shell (4) and end cover (5):
   ASL 55-LED: corrosion-resistant aluminium alloy
   ESL 55-LED: stainless steel 1.4404
- Screwed cable gland M20 x 1.5 (1)
- Light port as a unit consisting of a ring (aluminium or stainless steel) and glass (6)
- Mounting with hinged bracket (7): stainless steel 1.4301 (to be ordered extra)
- Weight: ASL 55-LED: 1.6 kg; ESL 55-LED: 3.6 kg
- Accessories to be ordered separately!
- Mounting hinged bracket, part no. 0354.025.00
- Mounting attachment flanged adapter collar for use with screw-type sight glass fittings (on request)
- Time slot modules, external, for time-dependent lighting
- Pushbutton or switch
- Optional 10° or 25° light aperture reflector

#### Mechanical installation:

When installing the round sight glass fitting or the sight flow indicator, the luminaire is mounted on the cover flange with the hinged bracket. With the screw-type sight glass fitting, the lamp is mounted on the grooved nut or by means of a flange attachment – see d) below.

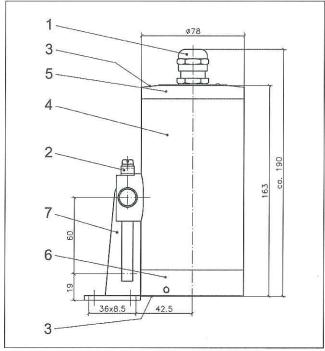
### The Lumistar luminaire ASL-/ESL 55-LED is compatible with the following nominal diameters:

- a) Circular sight glass fitting acc. to DIN 28120: DN 40
- b) Circular sight glass fitting acc. to DIN 38121: DN 40
- c) Sight glasses in flow indicators: DN 50
- d) Screw-type sight glass fittings similar to DIN 11851:
  - DN 50 is mounted by way of a separate flange attachment
  - From DN 80 up, the unit is secured using the hinged bracket

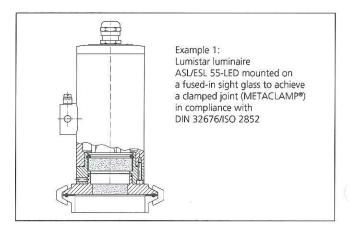
Lumistar luminaires ASL 55-LED and ESL 55-LED have a special adapter in the light port as a standard feature, making this type of lamp ideal for applications in aseptic and sterile environments. Excellent results are assured by using sight glasses fused to a metal frame (METAGLAS®) and with the BioControl (NEUMO) range of products. METAGLAS® combines optimally with clamp fittings (METACLAMP®) as well as with NA-ConnectTM technology.

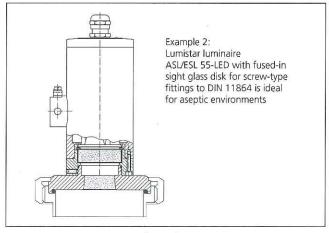
#### For Lumistar luminaires intended for sterile environments, the following installation and fastening method is practice-proven:

- The luminaire is fitted over the flared male upstand on the cover flange, where it is secured in place. An O-ring inserted between the two effectively seals the closure to the light port.
- An alternative is to mount the luminaire by means of an adapted clamped joint acc. to DIN 32676/ISO 2852.
   The mating flange to the clamped connection is a special annular construction with a fused-in sight glass (metal-glass fusion), see Example 1.
- When used with screw-type sight glass fittings, this metal-glass ring is provided with a reinforced lip over which the Lumiglas luminaire is fitted. An O-ring is inserted to seal the joint; tightening the clamp then provides the necessary closing pressure, see Example 2.



Dimensions for Lumistar luminaires ASL 55-LED and ESL 55-LED





Examples

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 10.15





#### **Lumistar Luminaire ESL 25, Stainless Steel**

#### · For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light arrangements (single-flange version) or with two separate ports (2-flange version).

#### · Compact design; powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, screw-type sight glass fittings in compliance with DIN 11851, and for visual flow indicators.

 Generous light aperture and convenient lamp replacement thanks to optimally designed screwed lens closure.

#### Application:

For illuminating the interior of tanks, hoppers, silos, agitators and other, usually closed, vessels and reactors as well as visual flow indicators in non-explosive environments. Suitable for use in food processing industries. Particularly suited for applications in sterile environments.

· Protection class: dust- and splash-proof, IP 65 acc. to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure/vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly.

 Maximum admissible ambient temperature at the cable entry gland: 80°C

When used in ambient temperatures exceeding 40°C, temperature-resistant cable such as Sinotherm 110 H05GG-F 3G 1.5 mm<sup>2</sup> should be used.

· Very easy to install using special mountings, ensuring convenience of use:

The luminaire is attached to the cover flange of the sight glass fitting or the visual flow indicator by means of a hinged bracket, or fastened to the grooved nut on screw-type sight glass fittinas.

The Lumistar luminaire ESL 25 fits the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 25
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 25
- d) Screw-type sight glass fittings in compliance with DIN 11851:
  - DN 65, DN 80 are mounted using a separate flanged adapter
  - sizes DN 80 and up are secured by way of a hinged bracket
- Voltage type: AC/DC, depending on luminaire type

#### · Operating voltage:

without integrated transformer:

5 W, 10 W, 20 W, 35 W, 50 W 12 V Halogen lamp

20 W, 50 W 24 V Halogen lamp

20 W, 50 W 120 V Halogen lamp

with integrated transformer:

PTC-protected (5 W), otherwise thermal fuse (> 5 W)

120 V Halogen lamp

12 V/5 W, 10 W Halogen lamp 12 V/5 W, 10 W 230 V

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Lumistar luminaire ESL 25, stainless steel



Application as a light port on a sight glass fitting acc. to DIN 28120, mounted using a hinged bracket

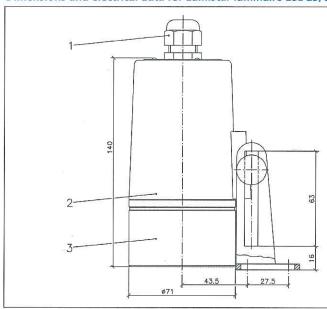
· When intended for applications in sterile environments, this luminaire is available with an additional collar that fits over a special adapter lip on the cover flange.

#### Transformers:

Transformers for 12 V or 24 V secondary voltage can be supplied on request.



#### • Dimensions and electrical data for Lumistar luminaire ESL 25, stainless steel



Part 1 Cable entry gland M20 x 1.5

2 Body of luminaire

3 Screwed glass lens

#### Weight:

without integrated transformer: 1.8 kg with integrated transformer: 2.2 kg

#### Components and materials:

- Body of luminaire: Stainless steel 1.4404, polished
- Mounting parts: Stainless steel 1.4301 (see accessories)
- Cable entry gland M20 x 1.5

#### Connecting data::

	Lumistar lui	minaire ESL 25, st	replacement halogen lamp				
item	ESL 25	part no.	nominal voltage V	integrated transformer	voltage/ wattage	socket	part no.
1	(12 V) 5 W	3540.952.00	12 ≃	without	12 V/5 W	G4	3232.221.00
2	(120 V/12 V) 5 W	3540.954.00	120 ~	with	12 V/5 W	G4	3232.221.00
3	(230 V/12 V) 5 W	3540.956.00	230 ~	with	12 V/5 W	G4	3232.221.00
4	(12 V) 10 W	3540.957.00	12 ≃	without	12 V/10 W	G4	3232.224.00
5	(120 V/12 V) 10 W	3540.958.00	120 ~	with	12 V/10 W	G4	3232.224.00
6	(230 V/12 V) 10 W	3540.960.00	230 ~	with	12 V/10 W	G4	3232.224.00
7	(12 V) 20 W	3540.962.00	12 ≃	without	12 V/20 W	GU4	3232.258.00
8	(12 V) 20 W	3540.964.00	12 ≃	without	12 V/20 W	G4	3232.229.00
9	(24 V) 20 W	3540.966.00	24 ≃	without	24 V/20 W	G4	3232.222.00
10	(120 V) 20 W	3540.968.00	120 ≃	without	120 V/20 W	GY6.35	3232.267.00
11	(12 V) 35 W	3540.970.00	12 ≃	without	12 V/35 W	GY6.35	3232.232.00
12	(12 V) 50 W	3540.972.00	12 ≃	without	12 V/50 W	GY6.35	3232.238.00
13	(24 V) 50 W	3540.973.00	24 ≃	without	24 V/50 W	GY6.35	3232.242.00
14	(120 V) 50 W	3540.974.00	120 ≃	without	120 V/50 W	GY6.35	3232.265.00

#### Accessories:

item	component	part no.
1	hinged bracket for mounting luminaire, stainless steel	0354.019.00
2	flange adapter for mounting luminaire, stainless steel	1356.010.00
3	timer (external) for time-dependent illumination, Lumiglas timer push-button	on request
4	claw spanner for screw-in lens, for opening the luminaire	6816.001.00

• Order data: e. g. Lumistar luminaire ESL 25, 24 V/20 W, part no. 3540.966.00, with hinged bracket, part no. 0354.019.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 03.14





#### Lumistar Luminaire ESL 26, Stainless Steel

#### For mounting on sight glass fittings:

This sight glass luminaire is made of stainless steel and designed for universal applications. It is ideal for use in combined sight and light ports (single-flange version) or with two separate ports (2-flange version).

#### · Compact design, powerful light output:

Glare-free illumination; fits circular sight glass fittings to DIN 28120/DIN 28121 or similar, screw-type sight glass fittings in compliance with DIN 11851, and sight glass fittings in visual flow indicators. Nominal sizes DN 50 and upward, depending on fitting.

· Large light exit and convenient lamp replacement thanks to optimised screwed lens design

#### Application:

For illuminating the interior of pressure vessels, tanks, silos, agitators and other, usually closed, vessels and reactors as well as visual flow indicators in non-explosive environments. Recommended for use in food processing industries.

 Protection class: dust- and splash-proof, IP 65 acc. to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure / vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly.

· Maximum admissible ambient temperature at the cable entry gland: 80 °C

In ambient temperatures of > 40°C, heat-resistant cable should be used, such as Sinotherm 110 H05GG-F 3G 1.5 mm<sup>2</sup>.

#### Very easy to install using special mountings, ensuring convenient use:

The luminaire is attached to the cover flange of the circular sight glass fitting or the visual flow indicator by means of a hinged bracket, or fastened to the grooved nut on screw-type sight glass

#### The Lumistar luminaire ESL 26 fits the following sizes:

- a) Circular sight glass fittings acc. to DIN 28120, DIN 28021 and visual flow indicators; mounting on cover flange: from DN 50
- b) Screw-type sight glass fittings in compliance with DIN 11851: mounting on or below the grooved nut:
  - -DN 65, 80, 100: by flange adapter
  - -DN 80, 100, 125: by hinged bracket
  - DN 80 and 100: by flange adapter or hinged bracket
- Voltage type: AC/DC, depending on type of luminaire

#### Operating voltage:

#### without integrated transformer:

12 V Halogen lamp 24 V

20 W or 50 W, AC/DC

Halogen lamp 230 V Halogen lamp 20 W, 50 W or 100 W, AC/DC 50 W or 75 W

with integrated transformer:

PTC-protected (5 W), otherwise thermal fuse (> 5 W)

Halogen lamp 120 V

12 V/20 W AC

230 V Halogen lamp 12 V/20 W AC

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Lumistar luminaire ESL 26, stainless steel with integrated terminal box and hinged bracket fastening

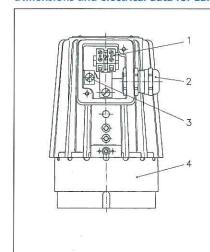


Application as a combined sight and light glass mounted on a sight glass fitting acc. to DIN 28120 using a hinged bracket

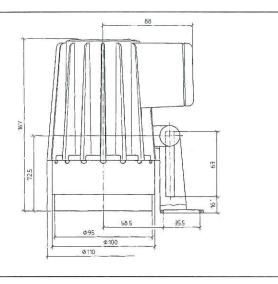
#### Transformers:

Transformers for 12 V or 24 V secondary voltage can be supplied on request.

#### • Dimensions and electrical data for Lumistar luminaire ESL 26:



- Part 1 Terminal block
  - 2 Cable entry gland (M20 x 1.5)
  - 3 Internal protective conductor terminal
  - 4 Screwed lens ring



#### Components, design and materials:

- -Luminaire body: Stainless steel 1.4404 (316LF), polished
- -Mounting parts: Stainless steel 1.4301 (see Accessories)
- -Cable entry gland M20 x 1.5

#### • Weight:

- without integrated transformer: 1.7 kg
- with integrated transformer 2.3 kg

#### Connecting data:

	Lum	istar luminaire ES	L 26		replace	ement halogen	lamp
item	ESL 25	part no.	nominal voltage V	integrated transformer	voltage/ wattage	socket	part no.
1	(12 V) 20 W	3540.851.00	12 ≃	without	12 V/20 W	GY6.35	3232.240.00
2	(24 V) 20 W	3540.753.00	24 ~	without	24 V/20 W	G4	3232.206.00
3	(120 V/12 V) 20 W	3540.858.00	120 ~	with	12 V/20 W	GY6.35	3232.240.00
4	(230 V/12 V) 20 W	3540.860.00	230 ≃	with	12 V/20 W	GY6.35	3232.240.00
5	(12 V) 50 W	3540.876.00	12 ~	without	12 V/50 W	GY6.35	3232.238.00
6	(24 V) 50 W	3540.881.00	24 ~	without	24 V/50 W	GY6.35	3232.242.00
7	(230 V) 50 W	3540.885.00	230 ≃	without	230 V/50 W HISPOT ESD50	GZ10	3232.261.00
8	(230 V) 50 W	3540.886.00	230 ≃	without	230 V/50 W PAR 20	E27	3232.241.00
9	(230 V) 75 W	3540.888.00	230 ≃	without	230 V/75 W HISPOT ESD50	GZ10	3232.263.00
10	(24 V) 100 W	3540.895.00	24 ≃	without	120 V/20 W	GY6.35	3232.244.00

#### Accessories:

item	component	part no.
1	hinged bracket for mounting luminaire, stainless steel	0354.016.00
2	flange adapter for DN 65-100, stainless steel	1356.015.00
3	timer (external) for time-dependent illumination, Lumiglas timer push-button	auf Anfrage
4	claw spanner for screw-in lens, for opening the luminaire	6805.001.00

 Order data: e. g. Lumistar luminaire ESL 26, 230 V/50 W, part no. 3540.885.00, with hinged bracket, part no. 0354.016.00 and claw spanner, part no. 6805.001.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 10.15





#### **Lumistar Luminaire Stainless Steel ESL 27**

#### For mounting onto sight glass fittings

The product is a universally applicable sight glass luminaire ideally suited for use on combined sight/light glass units (single flanged port arrangement) as well as for separate flanged ports.

#### · Compact, high light output:

Dazzle free illumination; suits circular sight glass fittings to DIN 28120/DIN 28121or similar as well as screwed sight glass assemblies similar to DIN 11851 and flow indicators. Sizes, depending on style, from DN 50 upward.

- · Large light aperture thanks to screwed lens ring design
- Applications: suitable for pharmaceutical and food industries and especially for sterile areas!
   For the illumination of flow indicators, pipelines, laboratory mixers, bioreactors as well as internals of tanks, pressure vessels stirred reactors and otherwise normally closed containers.
- 🐼 version also available
- Protection: Dust and water jet tight, IP65 to EN 60529/DIN VDE 0470 part 1

#### Operating conditions:

Independent of vessel internal pressure/vacuum. On no account may a sight glass luminaire be used to replace a cover flange or a complete flange assembly or in any way as a lid to cover a vessel opening.

- Maximum ambient temperature at cable entry: 80°C
- Electrical data and components:
  - Power supply: AC or DC, depending on luminaire type

#### - Supply voltage:

excluding integral transformer

12 V... Halogen filament lamp 50 W

24 V... Halogen filament lamp 50 W or 100 W 230 V... Halogen filament lamp 50 W, 75 W

#### including integral transformer

120 V... Halogen filament lamp 12 V/50 W 230 V... Halogen filament lamp 12 V/50 W 240 V... Halogen filament lamp 12 V/50 W

- Filament lamp socket: see table overleaf
- · Specially designed bracket ensures simple, practical mounting!

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Lumistar luminaire ESL 27 with hinged bracket

- Problem free electrical connection
- · Lens ring unscrews to provide ideal lamp exchange facility
- Accessories:
- Mounting parts: stainless steel hinged bracket
- Lens ring peg spanner for opening the luminaire
- Time delay switch, separate enclosure, for timed illumination

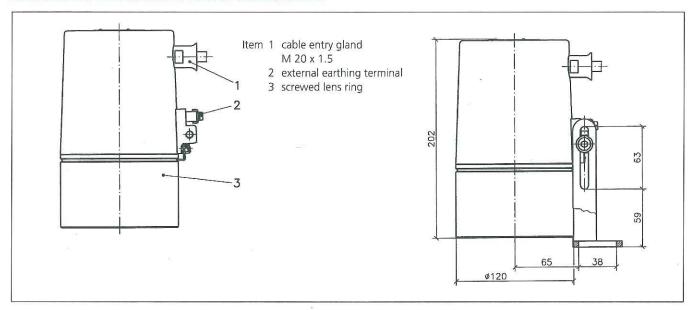
#### • Mounting alternatives:

With circular sight glass units and with flow indicators the luminaire is mounted on the cover flange using the hinged bracket with screwed sight glass fittings the luminaire is secured to the slotted cover nut.

- The Lumistar luminaire ESL 27 suits the following fittings nominal sizes upwards:
- a) circular sight glass unit style DIN 28120: DN 50
- b) circular sight glass unit style DIN 28121: DN 50
- c) flow indicator: DN 50
- d) screwed sight glass unit similar to DIN 11851: DN 100
- For sterile area applications a version of the luminaire is available with a sleeve to fit over the raised lip machined into the cover flange.



#### • Dimensions and electrical data for Lumistar luminaire ESL 27:



#### • Electrical connection:

Cable and entry gland are fitted at manufacturers' works for either side or top entry (please indicate preference when ordering).

Connecting cable length 3 m (alternative lengths on request)

With ambient temperatures  $> 40^{\circ}\text{C}$  a temperature resistant cable suitable for at least 110 $^{\circ}\text{C}$  should be used e. g. Sinotherm 110 H0GG-F 3G 1.5 mm<sup>2</sup>.

#### Ordering information:

e. g. Lumistar luminaire ESL 27 (230 V/12 V) 50 W, part no. 3541.267.00 with 3 m connecting cable, side entry!

#### · Parts, material and finish:

- Luminaire body: stainless steel 1.4404, polished
- Mounting bracket: stainless steel (see under accessories)
- Cable entry gland: M 20 x 1.5

#### Weight (with 3 m connecting cable)

- Without integral transformer: 7.2 kg
- With integral transformer: 8.2 kg

#### Accessories:

ltem	Part	Part no.
1	luminaire mounting hinged bracket	0354.021.00
2	lens ring peg spanner	6816.002.00
3	time delay switch unit	on request

#### Connecting data:

Item	Type ESL 27	Part no.	Supply V	Intergral transformer	Halogen filament lamp			
				transformer	Socket	Voltage	Part no.	
1	(12 V) 50 W	3541.264.00	12 ~	without	GY 6.35	12 V/50 W	3232.238.00	
2	(24 V) 50 W	3541.265.00	24 ≃	without	GY 6.35	24 V/50 W	3232.242.00	
3	(120 V/12 V) 50 W	3541.266.00	120 ~	with	GY 6.35	12 V/50 W	3232.238.00	
4	(230 V/12 V) 50 W	3541.267.00	230 ~	with	GY 6.35	12 V/50 W	3232.238.00	
5	(240V/12 V) 50 W	3541.268.00	240 ~	with	GY 6.35	12 V/50 W	3232.238.00	
6	(230 V) 50 W	3541.269.00	230 ≃	without	GZ 10	230 V/50 W	3232.261.00	
7	(230 V) 75 W	3541.272.00	230 ≃	without	GZ 10	230 V/75 W	3232.263.00	
8	(24 V) 100 W	3541.275.00	24 ≃	without	GY 6.35	24 V/100 W	3232.244.00	

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 10.15





### lumiglas

vorläufige Information: Datenblatt 06.39

# Lumiglas-Leuchten Edelstahl, Baureihe ESL39 vollgekapselte Hochvolt Power-Leuchte mit CDM-R Leuchtmittel

- zum Aufsetzen auf Schauglas-Armaturen
- Schraubglas-Öffnung mit Ringansatz für Clamp-Verschraubung, Standard: 6"
- extrem hohe Lichtleistung bei alternativ nur 35W oder 70W
- ca. 70% weniger Energieverbrauch bei vergleichbarer Lichtleistung einer normalen Halogenglühlampe
- Lebensdauer des Leuchtmittels 10.000 Stunden
- Anschluss-Spannung: 120-240V AC
- Vorschaltgerät: ist in der Leuchte eingebaut, somit Entfall der sonst üblichen externen Baugruppe
- Gewicht: 11,5 kg
- Preis und Lieferzeit: auf Anfrage



F.H. Papenmeier GmbH & Co. KG, Talweg 2, 58239 Schwerte



### Lumiglas

#### Lumistar Luminaire ESL 53-LED, Stainless Steel

ESL 53-LED-KS: for general use with hinged bracket
ESL 53-LED-B: special sterile version for flange attachment
for fitting over flanges, collars, etc.

#### For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications and is ideal either in combined sight and light ports (single-flange version) or with separate ports (two-flange version).

#### Compact design, powerful light output:

Glare-free illumination; fits circular sight glass fittings to DIN 28120/DIN 28121 or similar, screw-type sight glass fittings in compliance with DIN 11851, as well as METAGLAS® and BioControl fittings.

#### Applications in the chemicals, pharmaceutical, biogas and food processing industries:

For illuminating the interior of vessels, tanks, agitators, silos and other generally closed containers and reactors and also in visual flow indicators in non-explosive environments.

 Protection class: dust-tight and water jet-proof, IP 65 acc. to EN 60 529 / DIN VDE 0470 part 1

#### Operating conditions:

Independent of vacuum/pressure in the vessel. Under no circumstances should a sight glass luminaire be used as a substitute for the cover flange or instead of the complete sight glass flange assembly, or on its own to close a vessel port.

#### Maximum admissible ambient temperature: 40°C

#### Straightforward installation using a special attachment, ensuring convenience of use:

The luminaire is fixed to the cover flange by a hinged bracket in the case of circular sight glass fittings and visual flow indicators. With screw-type sight glass fittings, the luminaire can be fastened with a flange adapter or with a Metaglas unit.

### Lumistar luminaires ESL 53-LED fit the following nominal sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 25
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicator: from DN 25
- d) Screw-type sight glass fitting in compliance with DIN 11851: from DN 50

#### Mounting elements:

- for ESL 53-LED-KS: The hinged bracket is included in the scope of supply
- for ESL 53-LED-B: The flanged adapter for mounting on a screw-type sight glass fitting needs to be ordered separately
- Caution: Never look into the light source risk of damage to the eyes!
- Voltage type: AC/DC
   Operating voltage: 24 V AC/DC
   Output: 7 W
- Transformers for 230 V AC / 24 V AC are available on request

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Lumistar luminaire ESL 53-LED-KS with hinged bracket

#### Operation:

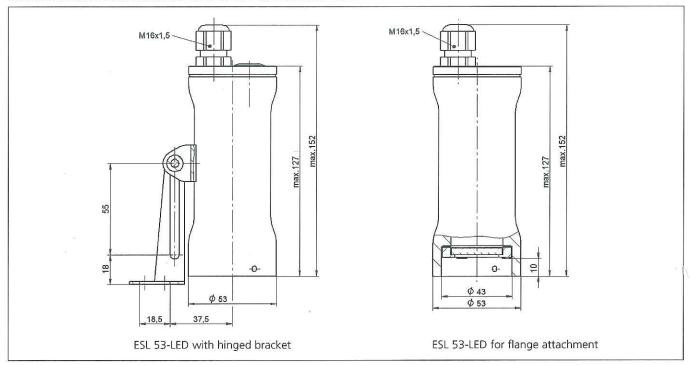
This luminaire is designed for continuous operations. As an alternative, however, it can also be supplied with a switch or pushbutton (see chart).







#### • Dimensions and electrical data for Lumistar luminaires ESL 53-LED:



#### Description and materials:

- Luminaire body: stainless steel 1.4404
- Hinged bracket and flange adapter for fastening the luminaire to screw-type sight glass fitting DN 50/65: stainless steel 1.4301
- Connecting cable: 3 m (3 x 0.75 mm²) factory-fitted (other lengths on request)
- Weight: 1.1 kg including hinged bracket and cable

#### Connecting data:

No.	Type	Push button	Switch	Hinged bracket	Flange attachment	Part no.
1	ESL 53-LED-KS	with	without	with	without	3541.901.00
2	ESL 53-LED-KS	without	without	with	without	3541.902.00
3	ESL 53-LED-B	with	without	without	with	3541.903.00
4	ESL 53-LED-B	without	without	without	with	3541.904.00
5	ESL 53-LED-KS	without	ut with with without		3541.905.00	
6	ESL 53-LED-B	without	with	without	with	3541.906.00

#### Accessories (for ESL 53-LED-B only)

Item	Luminaire mounting element	Part no.
1	Flange adapter DN 50, stainless steel (hinged bracket not required / DIN slotted nut)	1356.027.00
2	Flange adapter DN 65, stainless steel (hinged bracket not required / slotted nut with 65 mm viewing aperture)	1356.030.00
3	Flange adapter DN 80, stainless steel (hinged bracket not required / DIN slotted nut)	1356.031.00

• Order data: e. g. Lumistar luminaire ESL 53-LED-KS, with pushbutton, part no. 3541.901.00





### Lumistar Luminaires ASL 55-LED (alu) and ESL 55-LED (stainless steel)

#### • For mounting on sight glass fittings

Sight glass luminaire for universal applications; ideally suited for sight glass and light port combinations (single-flange version) and for separate configurations (double-flange version).

#### • The specific advantages of Lumiglas LED technology:

- Insensitive to vibration
- Long service life and high operational reliability
- Continuous operation for LED up to about 50,000 hours
- The ideal solution wherever fittings are difficult to access
- No heat radiation in the light port (cold light)
- No additional heat which would be undesirable for chemical and/or biological processes
- Extreme high-contrast lighting

#### · Compact yet powerful:

Dazzle-free illumination; suitable for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in sight flow indicators.

#### Applications:

The optimum solution in the pharmaceutical and food processing industries, ideal for illuminating bioreactors, laboratory mixers and filters as well as the interiors of boilers, tanks, agitators, separators, pipes and other – usually sealed – vessels in operating environments that are not potentially explosive.

#### • Type of protection:

Dust-tight and waterjet-proof, IP 65 acc. to EN 60529/ DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the pressure/vacuum inside the vessel

- Lumiglas lamps must never be used for sealing vessel openings in place of a suitable sight glass fitting.
- Maximum permissible ambient temperature: 40°C

#### Two simple installation options are practice-proven:

- a) by means of a hinged mounting, or
- b) by fitting the luminaire over a special raised edge on the cover flange (ideal in aseptic and sterile areas)

#### · Electrical data:

- Convenient electrical link-up: The Lumistar luminaire is equipped with a factory-mounted screwed cable gland.

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Lumistar luminaire ESL 55-LED with hinged mounting bracket, available as an accessory



Lumistar luminaire ASL 55-LED

Туре	Part No.	Voltage	Illuminant	Wattage	Material
Control of	3541.602.00	24-48 V ≃	3 LED	11 W	aluminium
ASL 55-LED	3541.642.00	24 V ≃	6 LED	15 W	aluminium
0.000 (0.000 (0.000 (0.000 (0.000)))	3541.603.00	120-230 V ≃	3 LED	11 W	aluminium
ASL 55-LED	3541.643.00	120-230 V ≃	6 LED	15 W	aluminium
	3541.502.00	24-48 V ≃	3 LED	11 W	stainless stee
ESL 55-LED	3541.517.00	24 V ≃	6 LED	15 W	stainless stee
Velocities in a second or or whose	3541.503.00	120-230 V ≃	3 LED	11 W	stainless stee
ESL 55-LED	3541.518.00	120-230 V ≃	6 LED	15 W	stainless stee

Note: 12 V or 48 V on request



#### Parts, design and materials:

- Luminaire shell (4) and end cover (5):
   ASL 55-LED: corrosion-resistant aluminium alloy
   ESL 55-LED: stainless steel 1.4404
- Screwed cable gland M20 x 1.5 (1)
- Light port as a unit consisting of a ring (aluminium or stainless steel) and glass (6)
- Mounting with hinged bracket (7): stainless steel 1.4301 (to be ordered extra)
- Weight: ASL 55-LED: 1.6 kg; ESL 55-LED: 3.6 kg
- Accessories to be ordered separately!
- Mounting hinged bracket, part no. 0354.025.00
- Mounting attachment flanged adapter collar for use with screw-type
- sight glass fittings (on request)
- Time slot modules, external, for time-dependent lighting
- Pushbutton or switch
- Optional 10° or 25° light aperture reflector

#### · Mechanical installation:

When installing the round sight glass fitting or the sight flow indicator, the luminaire is mounted on the cover flange with the hinged bracket. With the screw-type sight glass fitting, the lamp is mounted on the grooved nut or by means of a flange attachment – see d) below.

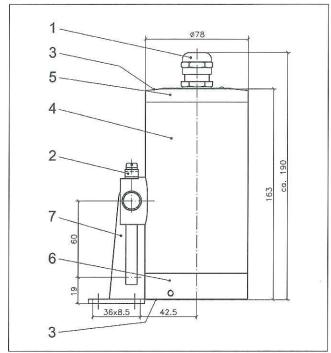
### The Lumistar luminaire ASL-/ESL 55-LED is compatible with the following nominal diameters:

- a) Circular sight glass fitting acc. to DIN 28120: DN 40
- b) Circular sight glass fitting acc. to DIN 38121: DN 40
- c) Sight glasses in flow indicators: DN 50
- d) Screw-type sight glass fittings similar to DIN 11851:
  - DN 50 is mounted by way of a separate flange attachment
  - From DN 80 up, the unit is secured using the hinged bracket

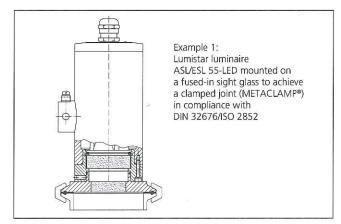
Lumistar luminaires ASL 55-LED and ESL 55-LED have a special adapter in the light port as a standard feature, making this type of lamp ideal for applications in aseptic and sterile environments. Excellent results are assured by using sight glasses fused to a metal frame (METAGLAS®) and with the BioControl (NEUMO) range of products. METAGLAS® combines optimally with clamp fittings (METACLAMP®) as well as with NA-ConnectTM technology.

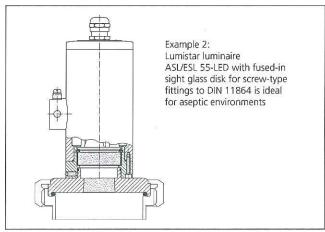
#### For Lumistar luminaires intended for sterile environments, the following installation and fastening method is practice-proven:

- The luminaire is fitted over the flared male upstand on the cover flange, where it is secured in place. An O-ring inserted between the two effectively seals the closure to the light port.
- An alternative is to mount the luminaire by means of an adapted clamped joint acc. to DIN 32676/ISO 2852.
   The mating flange to the clamped connection is a special annular construction with a fused-in sight glass (metal-glass fusion), see Example 1.
- When used with screw-type sight glass fittings, this metal-glass ring is provided with a reinforced lip over which the Lumiglas luminaire is fitted. An O-ring is inserted to seal the joint; tightening the clamp then provides the necessary closing pressure, see Example 2.



Dimensions for Lumistar luminaires ASL 55-LED and ESL 55-LED





Examples

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 10.15





#### Lumistar Luminaire ASL 57-LED, Aluminium

For mounting on sight glass fittings

This sight glass luminaire is designed for universal applications and is ideal for use in combined sight and light ports (single-flange version) or with two separate ports (2-flange version).

- The specific advantages of Lumiglas LED technology:
- vibration-resistant
- long service life and operational reliability
- LED functions up to about 50,000 hours in continuous operations
- optimal for fittings that are difficult to access
- no heat radiation in the light aperture (cold light)
- no unwanted additional heat in chemical and/or biological processes
- extremely high-contrast illumination
- Compact design, powerful light output: Glare-free illumination; fits circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851, and for sight glass fittings on flow indicators.
- Application: For illuminating visual flow indicators, pipelines, laboratory mixers, bio-reactors as well as the interior of tanks, hoppers, silos, agitators and other, normally closed, vessels and reactors in non-explosive environments.
- Protection class: IP 65
- Operating conditions: Independent of vacuum/pressure in the vessel. Under no circumstances should a sight glass luminaire be used as a substitute for the cover flange or instead of the complete sight glass flange assembly, or on its own to close a vessel port.
- Lumistar luminaires of this type are approved for use in ambient temperatures of between -20°C and +40°C.
- Operating voltage:

24 V AC/DC 35 W; 120-230 V AC 35 W, equipped with one high-power LED

- Voltage type: AC/DC
- Fastening options:

Luminaires for sight glasses on circular fittings and visual flow indicators are mounted on the cover flange using the hinged bracket. With the screw-type sight glass fitting acc. to DIN 11851 or similar, the luminaire is fastened with a flange collar or direct on the slotted nut.

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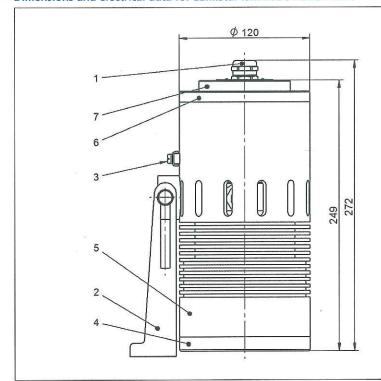
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Lumistar luminaire ASL 57-LED



#### • Dimensions and electrical data for Lumistar luminaire ASL 57-LED:



#### Part

- 1 Cable gland (M20 x 1.5)
- 2 Mounting attachment for luminaire (hinged bracket)
- 3 External protective conductor terminal (potential equalisation)
- 4 Light port lens
- 5 Luminaire body
- 6 Terminal housing (power supply unit)
- 7 Cover of terminal box

#### Components, design and materials:

- Luminaire body (5) and cover of terminal box (7): Aluminium alloy EN AW-2007, paint finish RAL 9007
- Light port lens (4): Unit consisting of ring flange (aluminium alloy EN AW-2007, paint finish RAL 9007) and borosilicate glass
- Hinged mounting bracket (2): Stainless steel 1.4301 (see Accessories)
- Cable gland (1): M20x1.5

#### • Weight: 4.5 kg

#### Connecting data:

Item	ASL 57-LED	Part No.	Nominal voltage Volt	Illuminant
1	(24 V) 35 W	3541.492.00	24 ≃	1 high-power LED
2	(120-230 V) 35 W	3541.491.00	120-230 ~	1 high-power LED

#### Accessories:

Item	Product	Part No.	
1	Luminaire mounting – hinged bracket	0354.029.00	
2	Luminaire mounting – flanged adapter collar for weldingon MV65on MV80on MV100 and MV125	1356.063.00 1356.062.00 1356.023.00	
3	External timer switch, 12-240 V AC, (time range: 0.1 sec. to 20 h)	8670.051.00	

#### Order data: e.g.

Lumistar luminaire ASL 57-LED (24 V) 35 W, Part No. 3541.492.00, luminaire mounting, hinged bracket, Part No. 0354.029.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 05.15





#### stainless steel

USL 01: for general applications, mounted with hinged bracket, clamp fastening or flanged adapter collar

USL 31: special variant for sterile environments with adapter collar for fitting over flanges, etc.

### · Perfect combination of flush screwed assembly and smooth

This sight glass luminaire is designed for mounting on sight glass fittings in universal applications. It is ideal for use in combined sight and light ports (single-flange version) or arranged separately (two-flange version). The integrated fastening clamp enables convenient mounting on a Lumiglas sight glass wiper assembly SW I.

#### Compact design; powerful light output:

Glare-free illumination; suitable for use with circular sight glass fittings to DIN 28120 / DIN 28121 or similar, or with screw-type sight glass fittings in compliance with DIN 11851.

#### Application in chemical, pharmaceutical, biogas and food processing industries:

It is ideal for illuminating bioreactors, laboratory mixers and filters as well as the interiors of tanks, agitators, separators, pipelines and other, usually closed, vessels in non-explosive operating environments.

 Protection class: Dust- and waterjet proof, IP 65 according to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure/vacuum in the vessel. Under no circumstances should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or the complete sight glass flange assembly.

#### Maximum permitted ambient temperature at the cable entry gland: 90°C

#### · Very easy to install using special fastening system, ensuring convenience of use:

The luminaire can either be attached to the cover flange of the circular sight glass fitting or the visual flow indicator using the hinged bracket, or fastened to the slotted nut on screw-type sight glass fittings.

Caution: Avoid looking into the light source – risk of damage to the eyes!

#### Lumiglas luminaire USL 01 and USL 31 fit the following sizes:

- a) Circular sight glass fitting to DIN 28120: from DN 25
- b) Circular sight glass fitting to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 25
- d) Screw-type sight glass fittings similar to DIN 11851: from DN 50

#### Voltage type: AC/DC

Operating voltage: 12 V, 24 V

Wattage: up to 20 W, depending on operating voltage

#### Operating voltage:

12 V... Halogen bulb 5 W, without integrated pushbutton switch 24 V... Halogen bulb 20 W, with integrated pushbutton switch

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Mini Lumistar luminaire USL 01, mounted on a screw-type sight glass fitting with Lumiglas sight glass wiper SW I



Mini Lumistar luminaire USL 31 for BioControl applications

#### Transformers:

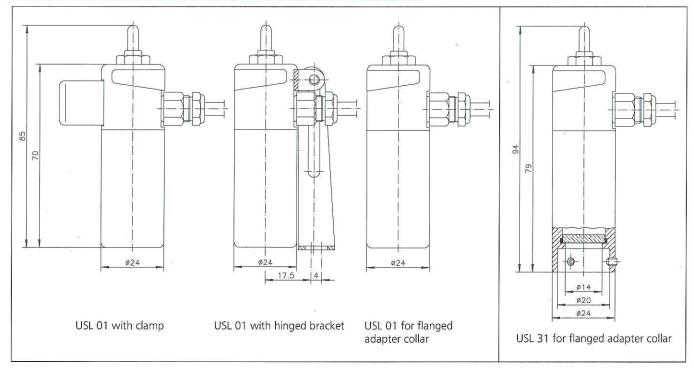
Transformers for 12 V or 24 V secondary voltage can be supplied on request.

#### Pushbutton:

20 W luminaires are always supplied with pushbutton switch.



#### • Dimensions and electrical data for Mini Lumistar luminaires USL 01 and USL 31:



#### Components and materials:

- Body and head of luminaire: stainless steel 1.4404
- Fastening elements: stainless steel 1.4301 (hinged bracket or flanged adapter collar for attachment to screw-type sight glass fitting)
- Connecting cable: 3 m (3 x 0.75 mm²) works fitted
- Weight: 0.150 kg

#### Connecting data:

	Mini Lumistar	luminaires USL 0	Re	Replacements halogen lamps			
Item	Туре	Part No.	Voltage V	Push- button	Voltage/ wattage	Socket	Part No.
	USL 01 with clamp fastening						
1	(12 V) 5 W	3540.001.00	12 ≃	without	12 V/5 W	G4	3232.221.00
2	(24 V) 20 W	3540.002.00	24 ≃	with	24 V/20 W	G4	3232.206.00
	USL 01 with hinged mounting						
3	(12 V) 5 W	3540.003.00	12 ≃	without	12 V/5 W	G4	3232.221.00
4	(24 V) 20 W	3540.004.00	24 ≃	with	24 V/20 W	G4	3232.206.00
	USL 01 with flanged adapter collar						
5	(12 V) 5 W	3540.005.00	12 ≃	without	12 V/5 W	G4	3232.221.00
6	(24 V) 20 W	3540.006.00	24 =	with	24 V/20 W	G4	3232.206.00
	USL 31 with flanged adapter collar						
7	(12 V) 5 W	3540.007.00	12 ≃	without	12 V/5 W	G4	3232.221.00
8	(24 V) 20 W	3540.008.00	24 ≃	with	24 V/20 W	G4	3232.206.00

#### • Order data: e. g.

Mini Lumistar luminaire USL 01, stainless steel, 24 V/20 W, with pushbutton, part no. 3540.002.00, clamp fastening

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 11.15





#### Lumistar Luminaire USL 03/USL 03-LED

#### · For mounting on sight glass fittings:

This ultra-compact sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light ports (single-flange version) or with two separate ports (2-flange version).

#### Compact design, powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar and for screw-type sight glass fittings in compliance with DIN 11851.

#### Application:

For illuminating the interior of tanks, hoppers, silos, agitators and other, usually closed, vessels and reactors as well as visual flow indicators in non-explosive environments.

Recommended for use in the food processing industry.

 Protection class: dust- and waterjet-proof, IP 65 acc. to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure/vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly. The LED version should not be used in ambient temperatures of over 40°C.

#### Operating voltage:

without integrated pushbutton:
24 V AC/DC halogen lamp 20 W, 2-pin socket G4
12 V/24 V AC/DC LED 2 W, 2-pin socket GU4
with integrated pushbutton:
24 V AC/DC halogen lamp 50 W, 2-pin socket GY6.35
(12 V available as an alternative option)

#### Transformers:

Transformers for 24 V secondary voltage can be supplied on request.

#### Momentary pushbutton:

50-watt luminaires should only be operated by pushbutton (not in continuous mode).

#### · Lamp change:

- Switch off the luminaire and disconnect the power supply
- Loosen the two screws in the head of the luminaire
- Open the luminaire
- Replacing the light bulb or LED illuminant (always using the same type with the same wattage!)
- Caution: Never touch the glass bulb with bare fingers, always use a cloth!
- Reassemble the luminaire
- Screw the front and rear parts of the luminaire housing together

#### Installation:

The unit is supplied complete with a works-fitted 3 m cable tail. The luminaire is usually mounted with a hinged bracket (included in scope of supply) to fasten it to the cover flange of the circular sight glass fitting or visual flow indicator, or attached to the grooved nut on screw-type sight glass fittings.

The required M6 screw is included in the scope of supply.

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Lumistar luminaire USL 03 in stainless steel



Lumiglass luminaire USL 03 with hinged bracket, made completely of stainless steel, mounted on a circular sight glass fitting to DIN 28120

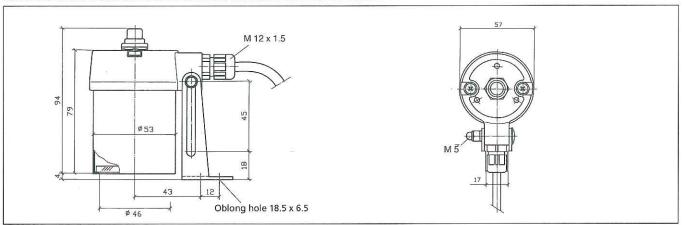
#### The Lumistar luminaire USL 03 fits the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 25
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 25
- d) Screw-type sight glass fittings in compliance with DIN 11851: from DN 65





#### • Dimensions and electrical data for Lumistar luminaire USL 03/USL 03-LED:



#### Components and materials:

- Luminaire housing: stainless steel 1.4301; head of luminaire: stainless steel 1.4552 Mounting parts (hinged bracket or flanged adapter): stainless steel 1.4301
- Power cable: 3 m (3 x 0.75 mm²)
- Weight: 0.7 kg

#### • Order data:

No.	Item	Part-No.
1	Lumistar luminaire USL 03, 24 V/20 W, without pushbutton	3540.015.00
2	Lumistar luminaire USL 03, 24 V/20 W, with pushbutton	3540.020.00
3	Lumistar luminaire USL 03, 24 V/50 W with pushbutton	3540.022.00
4	Lumistar luminaire USL 03-LED, 12 V/2 W GU4, without pushbutton, 5 m UL-connecting cable	3541.381.00
5	Lumistar luminaire USL 03-LED, 24 V/2 W without pushbutton, 5 m UL-connecting cable	3541.377.00
6	Luminaire mounting (hinged bracket)	0354.023.00
7	Reflector for 20 W	5904.022.00
8	Reflector for 50 W	5904.025.00
9	O-ring seal between front and rear part of luminaire housing, 50 x 2 mm, 80 shore, Viton	0862.000003
10	2-pin socket G4	1202.011.00
11	2-pin socket G4	1202.012.00
12	2-pin socket GY6.35	1202.023.00
13	LED 12 V/2 W GU4	3233.206.00
14	Halogen lamp 24 V/20 W G4	3232.242.00
15	Halogen lamp 24 V/50 W GY6.35	3232.003.00
16	Pushbutton with cap	8531.011.00
17	O-ring seal for pushbutton, 12 x 2 mm	0862.016.00
18	O-ring seals for fastening screws in head of luminaire, 3.5 x 1.2 mm	0862.076.00







### Lumistar luminaires stainless steel USL 13 and USL 33 and (4)-listed types

USL 13: for general applications, mounted with hinged bracket
USL 33: special variant for sterile environments with adapter collar
for fitting over flanges, etc.

#### • For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light ports (single-flange version) or for two separate ports (2-flange version).

#### · Compact design, powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851, and for METAGLAS® and BioControl fittings.

#### Application in chemical, pharmaceutical, biogas and food processing industries:

It is ideal for illuminating bioreactors, laboratory mixers and filters as well as the interiors of tanks, agitators, separators, pipelines and other, usually closed, vessels in non-explosive operating environments.

Protection class: Dust- and waterjet proof,
 IP 65 according to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure/vacuum in the vessel. Under no circumstances should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or the complete sight glass flange assembly.

 Max. admissible ambient temperature at the cable entry gland with halogen version: 90°C; with LED version: 40°C.

#### Very easy to install using special mountings, ensuring convenience of use:

**USL 13:** The luminaire is attached to the cover flange of the circular sight glass fitting or the visual flow indicator with a hinged bracket, or fastened to the grooved nut on screw-type sight glass fittings.

USL 33: The luminaire is mounted over an adapter collar.

Caution: Do not look into light - Danger of impaired eyesight!

Lumistar luminaire USL 13 and USL 33 fit the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 25
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 25
- d) Screw-type sight glass fittings in compliance with DIN 11851: from DN 50

#### Voltage type: AC/DC

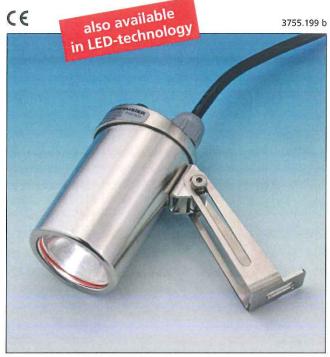
Operating voltage: 12 V, 24 V, 120 V Wattage: up to 50 W, depending on operating voltage

#### • Transformers:

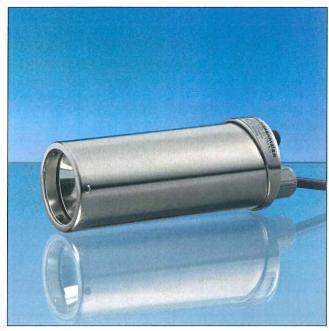
Transformers for 12 V or 24 V secondary voltage can be supplied on request.

#### Push-button:

50-watt luminaires should only be operated by push-button (not in continuous mode). Should an integrated push-button not



Lumistar luminaire USL 13 with hinged bracket mounting



Lumistar luminaire USL 33

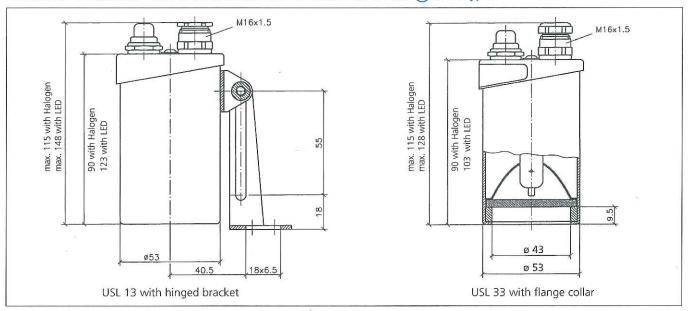
be included in the order/scope of supply, it is essential for an external momentary-contact push-button or a timer to be installed in the power supply line, outside the luminaire! Under no circumstances should the maximum temperatures specified for the luminaire be exceeded.

#### • Mounting parts for USL 13:

The luminaire mounting (hinged bracket) is included in the scope of supply. The flange collar for mounting on screw-type sight glass fittings of DN 50/65 and greater should be ordered separately.



#### • Dimensions and electrical data for Lumistar luminaires USL 13 and USL 33 and USL 33 and



#### · Components and materials:

- Luminaire body and cover: Stainless steel 1.4404
- Hinged bracket and flange collar for attachment to screwtype sight glass fitting DN 50/65): Stainless steel 1.4301
- Connecting cable: 3 m (3 x 0.75 mm²) works fitted
- Weight: 0.58 kg

#### Connection data:

Item	Type USL 13/33	Nominal Voltage V	Push- button	Trans- former	Socket	USL 13 Part. No.	USL 33 Part. No.	USL 13-UL Part. No.	USL 33-UL Part. No.
1	(12 V) 20 W	12 ≃	with	without	GY6.35	3540.206.00	3540.341.00	-	-
2	(12 V) 20 W	12 ≃	without	without	GY6.35	3540.207.00	3540.342.00	=	#
3	(24 V) 20 W	24 ≃	with	without	G4	3540.208.00	3540.223.00	3540.441.00	3540.443.00
4	(24 V) 20 W	24 ≃	without	without	G4	3540.209.00	3540.224.00	3540.442.00	3540.444.00
5	(120 V) <b>20 W</b>	120 ≃	with	without	GY6.35	3540.210.00	3540.212.00	1941	=
6	(120 V) 20 W	120 ≃	without	without	GY6.35	3540.211.00	3540.21300	-	1772.5
7	(120 V) 20 W	120 ≃	with	without	BA15d	-	_	3540.593.00	3540.595.00
8	(120 V) 20 W	120 ≃	without	without	BA15d	=	=4	3540.594.00	3540.596.00
9	(230 V) <b>20 W</b>	230 ≃	with	without	G9	3540.277.00	_	n=n	-
10	(12 V) 50 W	12 ≃	with	without	GY6.35	3540.215.00	3540.216.00		<del></del> 2
11	(24 V) 50 W	24 ≃	with	without	GY6.35	3540.217.00	3540.218.00	3540.975.00	3540.977.00
12	(120 V) 50 W	120 ≃	with	without	BA15d	-	-:	3540.685.00	3540.687.00
13	(120 V) 50 W	120 ≃	with	without	GY6.35	3540.219.00	3540.221.00	-	_
14	(120 V) 50 W	120 ≃	without	without	GY6.35	3540.220.00	3540.222.00	:=:	-
	LED Versions						<del>(</del>		
15	(24 V) 2 W	24 ≃	with	Wandler	GU4	3541.414.00	-		-
16	(24 V) 2 W	24 ≃	without	Wandler	GU4	3541.415.00	3541.417.00	-	<u> </u>

Further versions on request.

#### Accessories (for USL 13 only):

Item	Luminaire mounting	Part No.
1	Flange collar DN 50, stainless steel (no hinged mounting bracket required)	1356.000004
2	Flange collar DN 65, stainless steel (no hinged mounting bracket required)	1356.030.00

• Order data: e. g. Lumistar luminaire USL 13, 24 V/20 W, with push-button, part no. 3540.208.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 08.14





### Lumistar luminaires USL 15 and USL 35 and (1)-listed types, stainless steel

USL 15: for general applications, mounted with hinged bracket
USL 35: special variant for sterile environments with adapter collar
for fitting over flanges, etc.

#### • For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light ports (single-flange version) or with two separate ports (2-flange version).

#### · Compact design, powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851, and for METAGLAS® and BioControl fittings.

#### Application in chemical, pharmaceutical, biogas and food processing industries:

It is ideal for illuminating bioreactors, laboratory mixers and filters as well as the interiors of tanks, agitators, separators, pipelines and other, usually closed, vessels in non-explosive operating environments.

Protection class: Dust- and waterjet proof,
 IP 65 according to EN 60 529 / DIN VDE 0470, Part 1

#### Operating conditions:

Independent of the internal pressure/vacuum in the vessel. Under no circumstances should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly.

 Max. admissible ambient temperature at the cable entry gland with halogen version: 90°C; with LED version: 40°C.

### Very easy to install using special mountings, ensuring convenience of use:

**USL 15:** The luminaire is attached to the cover flange of the circular sight glass fitting or the visual flow indicator by means of a hinged bracket, or fastened to the grooved nut on screw-type sight glass fittings.

**USL 35:** The luminaire is placed over an adapter flange and secured. **Caution:** Do not look into light – danger of impaired eyesight!

#### Lumistar luminaires USL 15 and USL 35 fit the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 40
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 40
- d) Screw-type sight glass fittings in line w. DIN 11851: from DN 65

#### Voltage type: AC/DC

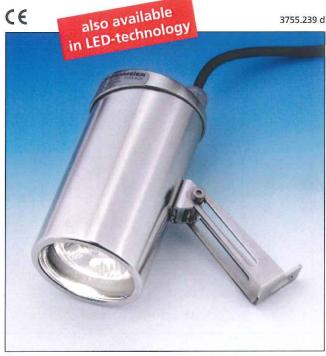
Operating voltage: 12 V, 24 V, 120 V, 230 V Wattage: up to 100 W, depending on operating voltage

#### Transformers:

Transformers for 12 V or 24 V secondary voltage can be supplied on request.

#### Push-button:

Luminaires with a wattage of 50 W and more should only be operated by push-button (not in continuous mode). Should an integrated push-button not be included in the order/scope of supply, it is essential for an external momentary-contact



Lumistar luminaire USL 15 with hinged bracket mounting



Lumistar luminaire USL 35 mounted on a BioControl sight glass with sterile technology

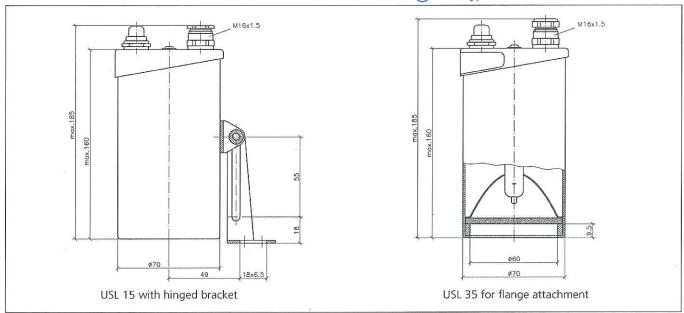
push-button or a timer to be installed in the power supply line, outside the luminaire! Under no circumstances should the maximum temperatures specified for the luminaire be exceeded.

#### Mounting parts for USL 15:

The luminaire mounting (hinged bracket) is included in the scope of supply. The flange collar for mounting on screwtype sight glass fittings of DN 65 must be ordered separately.



#### • Dimensions and electrical data for Lumistar luminaires USL 15 and USL 35 and (L)-listed types



#### Components and materials:

- Body and cover: Stainless steel 1.4404
- Mounting parts (hinged bracket and flanged adapter for attachment to screw-type sight glass fitting DN 65): Stainless steel 1.4301
- Power cable: 3 m (3 x 0.75 mm²) works fitted
- Weight: without integral transformer: 0.85 kg with integral transformer: 1.21 kg

#### Connecting data:

Item	Type USL 15/35	Nominal voltage V	Push- button	Trans- former	Socket	USL 15 Part. No.	USL 35 Part. No.	USL 15-UL Part. No.	USL 35-UL Part. No.
1	(12 V) 20 W	12 ≃	with	without	GY6.35	3540.231.00	3540.365.00	-	-
2	(12 V) 20 W	12 ≃	without	without	GY6.35	3540.232.00	3540.366.00	-	-
3	(24 V) 20 W	24 ≃	with	without	G4	3540.233.00	3540.367.00	3540.445.00	3540.447.00
4	(24 V) 20 W	24 ≃	without	without	G4	3540.234.00	3540.368.00	3540.446.00	3540.448.00
5	(120 V) 20 W	120 ≃	with	without	GY6.35	3540.235.00	3540.372.00		_
6	(120 V) 20 W	120 ≃	without	without	GY6.35	3540.236.00	3540.373.00	=	-
7	(230 V/12 V) 20 W	230 ~	with	with	G4	3540.237.00	3540.375.00	-	_
8	(12 V) 50 W	12 ≃	with	without	GY6.35	3540.240.00	3540.369.00	2=2	-
9	(24 V) 50 W	24 ≃	with	without	GY6.35	3540.242.00	3540.356.00	3540.981.00	3540.983.00
10	(120 V) 50 W	120 ≃	with	without	GY6.35	3540.244.00	3540.351.00	0-0	-
11	(120 V) 50 W	120 ≃	with	without	BA15d		3540.353.00	3540.691.00	3540.693.00
12	(230 V) 50 W	230 ≃	with	without	GZ10	3540.238.00	3540.380.00	(-)	
13	(24 V) 100 W	24 ≃	with	without	GY6.35	3540.247.00	3540.357.00	3540.987.00	3540.989.00
14	(120 V) 100 W	120 ≃	with	without	GY6.35	3540.249.00	3540.355.00	7(—).	-
15	(120 V) 100 W	120 ≃	with	without	BA15d	<del>=</del>	3540.354.00	3540.697.00	3540.699.00
	LED Versions								
16	(24 V) 4 W	24 ≃	with	converter	GU5.3	3541.429.00	3541.434.00	ti <del>ro</del> v)	
17	(230 V) 5 W	230 ~	with	without	GZ10	3541.426.00	3540.437.00	8=8	_

Further versions on request.

- Accessories (for USL 15 only): Flange adapter DN 65, stainless steel (no hinged bracket required), part no. 1356.010.00
- Order details: e. g. Lumistar luminaire USL 15, 24 V/20 W, with push-button, without transformer, part no. 3540.233.00







3755,492 f

Lumistar luminaires USL 16 and USL 36, stainless steel USL 16: for general applications, mounted with hinged bracket

USL 36: special variant for sterile environments with adapter collar for fitting over flanges, etc.

• The perfect combination of flush contours and smooth surface:

This sight glass luminaire is designed for universal applications. It is ideal for use in combined sight and light ports (single-flange version) or for two separate ports (2-flange version).

Compact design, powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851, and for METAGLAS® and BioControl fittings.

 Application in chemical, pharmaceutical, biogas and food processing industries:

It is ideal for illuminating bioreactors, laboratory mixers and filters as well as the interiors of tanks, agitators, separators, pipelines and other, usually closed, vessels in non-explosive operating environments.

Protection class: Dust- and waterjet proof,
 IP 65 according to EN 60 529 / DIN VDE 0470, Part 1

· Operating conditions:

Independent of the internal pressure/vacuum in the vessel. Under no circumstances should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly.

- Max. admissible ambient temperature at the cable entry gland with halogen version: 90°C; with LED version: 40°C.
- Very easy to install using special mountings, ensuring convenience of use:

**USL 16:** The luminaire is attached to the cover flange of the circular sight glass fitting or the visual flow indicator with a hinged bracket, or fastened to the grooved nut on screw-type sight glass fittings.

USL 36: The luminaire is mounted over an adapter collar.

Lumistar luminaire types USL 16 and USL 36 fit the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 40
- b) Circular sight glass fitting acc. to DIN 28121: from DN 40
- c) Visual flow indicators: from DN 40
- d) Screw-type sight glass fittings in compliance with DIN 11851: from DN 50
- Voltage type: AC/DC

Operating voltage: 24 V, 120 V, 230 V Wattage: up to 100 W, depending on operating voltage

Transformers:

Transformers for 24 V secondary voltage can be supplied on request.

• Push-button:

Luminaires with a wattage of 50 W should only be operated by push-button (not in continuous mode). Should an integrated push-button not be included in the order/scope of supply, it is essential for an external momentary-contact push-button or CE



Lumistar luminaire USL 16 with hinged bracket mounting



Lumistar luminaire USL 16, push-button operation

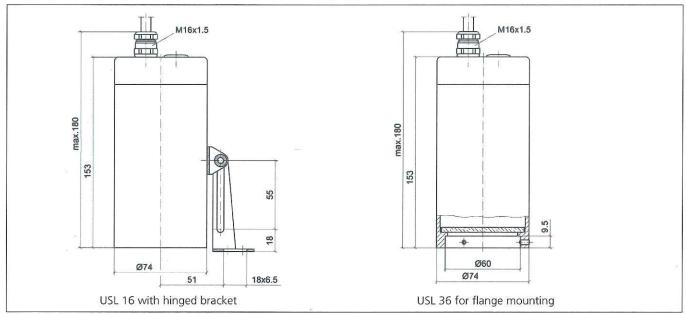
a timer to be installed in the power supply line, outside the luminaire! Under no circumstances should the maximum temperatures specified for the luminaire be exceeded.

Mounting parts for USL 16:

The luminaire mounting (hinged bracket) is included in the scope of supply. The flange collar for mounting on screwtype sight glass fittings of DN 40 and greater should be ordered separately.



#### Dimensions and electrical data for Lumistar luminaires USL 16 and USL 36



#### Components and materials:

- Body and cover: Stainless steel 1.4404
- Mounting parts (hinged bracket and flange adapter for attachment to screw-type sight glass fitting DN 50/65): Stainless steel 1.4301
- Power cable: 3 m (3 x 0.75 mm²) works fitted
- Weight: without integrated transformer: 1.42 kg with integrated transformer: 1.80 kg

#### Connecting data:

Item	Type USL 16/36	Nominal voltage V	Push-button	Transformer	Socket	USL 16 Part no.	USL 36 Part no.
1	(24 V) 20 W	24 ≃	with	without	G4	3541.703.00	3541.753.00
2	(24 V) 20 W	24 ≃	without	without	G4	3541.704.00	3541.754.00
3	(230 V/12 V) 20 W	230 ~	with	with	G4	3541.709.00	3541.759.00
4	(24 V) 50 W	24 ≃	with	without	GY6.35	3541.713.00	3541.763.00
5	(120 V) 50 W	120 ≃	with	without	GY6.35	3541.715.00	3541.765.00
6	(230 V) 50 W	230 ≃	with	without	GZ10	3541.719.00	3541.769.00
7	(24 V) 100 W	24 ≃	with	without	GY6.35	3541.723.00	3541.773.00
8	(120 V) 100 W	120 ≃	with	without	GY6.35	3541.725.00	3541.775.00
'	LED Version			h			
10	(230 V) 5 W	230 ~	with	without	GZ10	3541.743.00	3541.793.00

Further versions on request.

#### • Lumistar luminaires USL 16/USL 36 can be installed:

- on a BioControl sight glass fitting, DN 40
- on a metal fused sight glass for clamped fittings (Metaclamp), for clamp connections to DIN 32676/ISO 2852 with a metal fused sight glass disk for aseptic screw-type sight glass fittings, DIN 11864
- with a metal fused sight glass for NA-Connect® fastenings
- with a metal fused sight glass for VARIVENT® in-line housings

 Order details: e. g. Lumistar luminaire USL 16, 24 V/20 W, with push-button, without transformer, part no. 3541.703.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 02.16





#### **Lumiglas isolating transformer ETGs/EST**

Isolating transformer for universal applications, installed in a synthetic housing made of fibreglass- reinforced polyester

- suitable for Lumistar luminaires and other loads
- easy installation of housing and variable mounting of cable glands

#### Technical data

Lumiglas isolating transformer ETGs with protective housing:

Туре	ETGs 60-4	ETGs 125-4
Primary voltage	230 VA +/- 5% AC	230 VA +/- 5% AC
Output	60 VA	125 VA
Secondary voltage	24 V AC	24 V AC
Primary current	0.26 A	0.54 A
Secondary current	2.5 A	5.21 A
Protection class	IP55	IP55
Insulation class	T40 E EN 61558-2-6	T40 E EN 61558-2-6
Internal fuse	primary: 1 A secondary: 2,5 A	primary: 1 A secondary: 5 A
Weight	1.9 kg	2.5 kg
Dimensions (LxWxH)	130x130x100 mm	130x130x100 mm

### **(** € 3755.316



Isolating transformer ETGs with protective housing

#### Lumiglas isolating transformer ETS without protective housing:

Туре	EST100	EST160	
Primary voltage	230 VA +/- 5% AC	230 VA +/- 5% AC	
Output	100 VA	160 VA	
Secondary voltage	20/24 V AC	20/24 V AC	
Primary current	0,55 A	6,67 A	
Secondary current	4,1 A	5,21 A	
Protection class	IP00	IP00	
Insulation class	T40 E EN 61558	T40 E EN 61558-2-2	
Internal fuse	primär: 1 A sekundär: 4 A	primär: 1.6 A sekundär: 6.3 A	
Weight	2.7 kg	4.7 kg	
Dimensions (LxWxH)	105x97x115 mm	122x114x120 mm	

#### Order details

70.	100 Tel 100 Te	A 40 TO 10 T
Article	Part No.	Version
Isolating transformer ETGs 60-4	8709.103.00	with protective housing
Isolating transformer ETGs 125-4	8709.104.00 with protective	
Isolating transformer ETS 100	8709.003.00	without protective housing
Isolating transformer ETS 160	8709.004.00	without protective housing

Subject to change without prior notice – Dimensions in mm (unless otherwise stated) 03.15

F.H.Papenmeier GmbH & Co. KG · Fachbereich Lumiglas Talweg 2 · 58239 Schwerte · DEUTSCHLAND Telefon: 02304 205-0 · Fax: 02304 205-206 info.lumi@papenmeier.de · www.lumiglas.de



### Lumiglas



### Light/sight glass fittings

6

data sheet no.

Screwed light/sight glass fittings MV-SLM or MV-ME

3755.161

Light/sight glass fittings ESKS and SKS

3755.169

### Lumiglas Screwed Light Sight Glass Unit MV-SLM and MV-ME

Screwed light sight glass units similar to DIN 11 851 (milk-proof screw closures) with special version of Lumistar luminaire installed. Units available in stainless steel or aluminium allowing the combination of sight glass and light port, sizes DN 65 to DN 125.

- Application: For illuminating bio-reactors, laboratory mixing vessels and filters, as well as the interiors of tanks, agitators, silos, separators, pipelines, and other – usually closed – vessels in potentially non-explosive operating environments, especially in the pharmaceutical, food and beverage processing industries, e. g. breweries and dairies.
- Protection: When correctly fitted, dust and waterjet proof to IP 65. EN 60 529/DIN VDE 0470 Part 1.
- Operating Conditions: Pressure: max. 6 bar (higher pressure ratings on request), vacuum
- Temperature: Fitting: max. 220°C
  Temperature at the cable gland: 80°C.
  Where ambient temperature lies above 40°C heat resistant cable, e. g. Sinotherm 110 H05GG-F 3G 1,5 mm² must be fitted.
  Lumistar luminaires ME are equipped with 3 m cable (factorymade), temperature resistant up to 90°C.

#### • Electrical Data:

- Power supply
   Lamp
  24 V (12 V available as alternative)
   2-pin halogen lamp 20 W, 50 W, 100 W
- Lamp holder: 2-pin socket
- Pushbutton: the luminaires are supplied with built-in pushbutton
- Transformers: can be supplied optionally
- Parts and alternatively materials, drawing on the right:

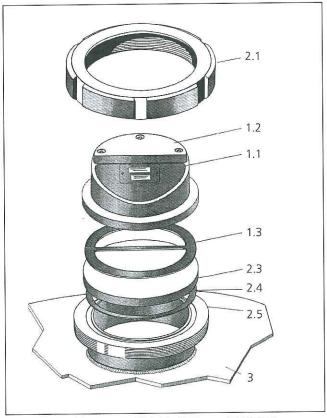
Item	Part name	Material options		
1	Lumistar luminaire			
1.1	luminaire housing	alternatively:		
1.2	luminaire cover	cast alum. painted (RAL 9007) of stainless steel 1.4301, polished		
1.3	flat seal with bridge	Silicon (max. 220°C)		
2	fitting			
2.1	slotted cover nut	stainless steel 1.4301 (1.4307)		
2.3	sight glass disc	soda lime glass toughened (tempered) to DIN 8902, max. temperature: 150°C borosilicate glass: toughened (tempered) to DIN 7080, max. temperature: 280°C		
2.4	ring seal (alternatively)	Viton, PTFE, Perbunan, Silicon		
2.5	weld neck nozzle	alternatively: stainless steel 1.4301; (1.4307); 1.4404		
3	vessel wall			

#### CE

3755.161 b

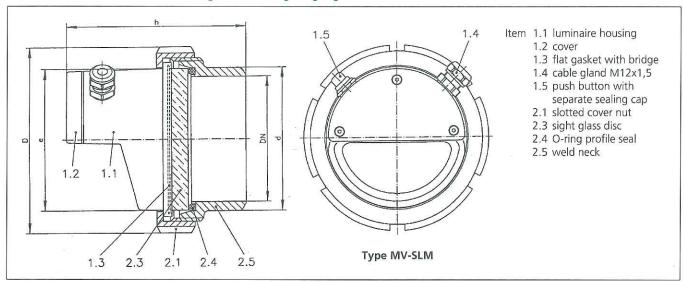


Unit of a Lumiglas screwed light sight glass unit MV-SLM with Lumistar luminaire ME in stainless steel



Lumiglas screwed light sight glass unit MV-SLM

#### · Dimensions and electrical data of Lumiglas screwed light sight glass units MV-SLM and MV-ME:



#### Parts, Construction and Materials:

- Luminaire body: Corrosion resistant die cast aluminium, painted RAL 9007 (suitable for food processing) or stainless steel 1.4301.
- Luminaire cover (1.2) is screwed to luminaire housing (1.1) with inserted flat flexible gasket to form the connector box.
- A built-in push button with separate sealing cap (1.5) for intermittent use is standard.
- Lumistar luminaire ME is inclusive 3 m cable tail to 90°C.

Size		1	2	3	4*	
Lumistar luminaire	Туре	MV 65/SLM 65	MV 80/SLM 80	MV 100/SLM 100	MV 125/SLM 125	luminaire aluminium
compatible	DN	65	80	100	125	* can be combined with Lumiglas sight glass wiper type SW I
voltage	٧	24	24	24	24	
wattage	W	20	20	50	50, (100 only SLM)	
dimensions	D	112	127	148	178	
	d	79	93	114	136	of version MV/ME (stainless steel) is
	е	78	92	113	136	lowly different.
	h	110	125	143	140	
alternatively	Туре	MV 65/ME 65	MV 80/ME 80	MV 100/ME 100	MV 125/ME 125	luminaire stainl. steel

#### Mechanical Installation:

Please note: Do not look into light – Danger of impaired eyesight! Electrical connection should be carried out only after the mechanical fitting! Lumistar luminaire and flat seal (1.3) are bonded together at the factory and come as a unit. After welding nozzle (2.5) into the vessel wall (3), fit O-ring seal (2.4), glass disc (2.3) and luminaire (1.1) as shown in the drawing overleaf. Tighten all these parts down against the nozzle by cover nut (2.1). Always use the special 'C-Spanner'. Finally check if the sight glass disc sits correctly in the fitting.

#### Ordering Information:

e. g. Lumiglas screwed light sight glass unit MV 80/ME 80, 24 V-20 W  $\,$ 

- Details: please refer to separate data sheets or installation and operating instructions:
  - Lumistar luminaires SLM (alu)
  - Lumistar luminaires ME (stainless steel)
  - Lumiglas screwed sight glass unit MV

All dimensions in mm unless stated otherwise. Subject to change without prior notice, 09.15





### **Lumiglas Light/Sight Glass Fitting ESKS and SKS**

· Hinged sight glass frame with or without luminaire

Application:

ESKS integral light/sight glass fittings have a quick release closure, so that they are a combination of charge/access port and light/sight glass. The integrated lumninaire illuminates the internal of boilers, tanks, bunkers, silos, mixers and other vessels in all non Ex hazardous areas.

SKS type sight glass ports are of the same design, except they have no luminaire. Both types are suitable for food processing. Usually these fittings come with a weld flange, but for flat vessel walls they can also be installed with a bolt-on flange.

Safety precaution:

The fitting must never be opened before the pressure inside the vessel is reduced to zero!

Protection:

When correctly fitted, dust and waterjet proof to IP 65, EN 60 529 / DIN VDE 0470 T1

Ambient condition operating range:

The fitting is vacuum proof

and resistant to: 0.5 bar type SKS/ESKS 225

1.0 bar type SKS/ESKS 150

max. vessel temp.: 150°C with soda lime glass 200°C with borosilicate glass

ambient temp.: max. 80°C at the cable gland.

When ambient temp. > 40°C heat resistant cable e. g. Sinotherm 110 H05GG-F 3G 1.5 mm<sup>2</sup>

must be used

• Electrical data:

power supply 24 V or 120 V, halogen lamp 50 or 100 W, 2-pin socket GY 6.35

- Transformers can be supplied as extra item
- Combination with sight glass wiper SW I is possible

Mechanical fitting:

Caution: Do not look into light – danger of impaired eyesight! The fitting comes ready assembled. Before welding, the sight glass frame and the hinge assembly should be removed from the base flange. Check desired position i. e. direction of swing. The lug and hinged assembly holes are not identically spread. The weld flange must be welded into the vessel wall free of distortion; bolt-on flanges require an entirely flat vessel wall.

- 1 Lumistar luminaire (only with ESKS)
- 2 luminaire frame with sight glass
- 3 weld flange (resp. bolt-on flange with drilled holes)
- 4 closure knob
- 5 closure lug
- 6 hinged assembly
- 7 astening ring (only with SKS, instead of luminaire)

· Lamp change:

Since the fitting must be opened for lamp change, reduce pressure in the vessel to zero, and put vessel out of operation. Check vessel for pressure and temperature before opening a sight glass fitting!

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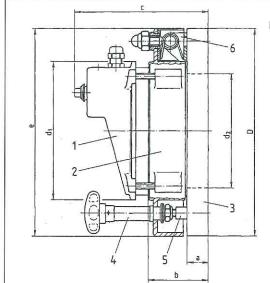
Lumiglas light sight glass fitting ESKS



Lumiglas sight glass fitting SKS

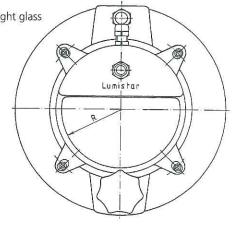


#### • Dimensions and electrical data of Lumiglas light/sight glass fittings ESKS and SKS:



Item 1 Lumistar luminaire

- 2 luminaire frame with sight glass
- 3 weld flange
- 4 closure knob
- 5 closure lug
- 6 hinged assembly



#### · Parts, construction and materials:

- Luminaire body: corrosion resistant die cast aluminium, painted RAL 9007
- Weld flange: steel RSt 37.2 oder stainless steel, e. g. 1.4541 or 1.4571
- Sight glass disc: toughened (tempered) soda-lime glass or borosilicate
- Seals: silicon rubber
- Lock: galvanized or painted steel; star handle: plastic
- Ordering information: e. g. Lumiglas light/sight glass fitting type 150, 24 V, 100 W, weld flange 1.4571, max. temp. 200°C
- Special design: Upon request all metal parts getting in contact with the product can be realised in stainless steel (304L).

Туре		ESKS 150	SKS 150	ESKS 225	SKS 225
Dimensions	a	25	25	25	25
	b	71	71	80	80
	С	185.5	90	167	100
	d1	165	165	235	235
	е	250	250	335	335
	d2	136	136	205	205
	D	250	250	335	335
	R	70	70	104	104
Voltage		24 V	no luminaire	24 V	no luminaire
Power		max. 100 W	just sight glass	max. 100 W	just sight glass

#### · Lamp change:

Before opening the port, vessel operation must be stopped and vessel must not be under pressure or temperature:

- Switch off and disconnect luminaire
- Unscrew the fastening screws from the luminaire housing and remove luminaire 1 from frame 2
- Remove reflector and withdraw defective lamp
- Replace halogen lamp with lamp of same type and size, use protective paper to ensure bare fingers do not touch the glass, insert 2-pin socket hole and push in gently but firmly
- Refit reflector, fasten luminaire 1 on frame 2 with fastening screw
- Switch power to 'ON' and check for proper function

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15





### **Ex** Lumistar luminaires

also available in LED-technology

1

Continuation ----

	data sheet no.
Circular Ex-sight glass luminaires, aluminium 'Power luminaire'	
Lumistar luminaires USL 05-Ex and USL 05-LED-Ex	3755.177
Lumistar luminaire USL 06-Ex	3755.178
Lumistar luminaire USL 07-Ex	3755.180
Lumistar luminaire USL 08-Ex and ��-listed types	3755.191
Lumistar luminaire ASL 55-LED-Ex	3755.454
Lumistar luminaire ASL 57-LED-Ex	3755.358
Circular Ex-sight glass luminaires, stainless steel 'Power luminaire'	
Lumistar luminaire ESL 25-Ex	3755.194
Lumistar luminaire ESL 26-Ex	3755.193
Lumistar luminaire ESL 27-Ex	3755.351
Lumistar luminaire ESL 55-LED-Ex	3755.453
Ex-light guide luminaires Lumistar luminaire Lumiflex USL 07 ALF-Ex	3755.265
Lumistar luminaire Lumiflex USL 08 LF-Ex, UL-listed	3755.312
Lumistar luminaire Lumiflex ESL55LED-ALF-Ex	3755.318
Lumistar Ex-luminaire for rectangular sight glass units REL 01-Ex, stainless steel	3755.196
Lumistar Ex-vehicle luminaires Forward or reverse driving light USL 07-Ex Flashing luminaire USL 45A-Ex	
Combined rearlight stop and direction indicating flasher luminaire USL 46-Ex	3755.273

### Lumiglas

Continuation



### Ex Lumistar luminaires accessories

data sheet no.

	data sileet iio.
Ex-time delay switch, Lumiglas timer built in suitable Ex-luminaire	
also for non-Ex application	3755.182
Ex-time delay switch	3755.183
Ex-motor drive	3755.436



### Lumistar Luminaire USL 05-Ex, USL 05-LED-Ex \ II 2G Ex d IIC T3/T4/T6/120°C Gb II 2G Ex a IIC 13/13/13/13/130/T195°C Db

#### · For mounting on sight glass fittings:

This Ex-type sight glass luminaire is designed for universal applications in potentially explosive environments. It is ideal for use in combined sight and light-glass arrangements, either as a single flange version or with two separate flanged ports.

#### · Compact yet powerful:

Dazzle-free illumination; for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in visual flow indicators.

- Optimal design of screw-type lens ensures max. light efficiency.
- Application: For illuminating the interior of tanks, hoppers, silos, agitators and other - normally closed - vessels and reactors as well as visual flow indicators in potentially explosive environments. Gas: Zones 1 and 2, Dust: Zones 21 and 22. Suitable for use in food processing industries.
- Protection: IP 65 and IP 67 to DIN EN 60529

#### Operating conditions:

Independent of the internal pressure/vacuum in vessel. Under no circumstances should a sight glass luminaire be used on its own to close a vessel port or to replace the cover flange or the sight glass/ luminaire assembly.

· Lumistar luminaires of this series are approved for use in ambient temperatures of up to 60°C, depending on the lamp bulb fitted.

#### Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for

a) Gas

EN 60079-0: 2009 General Requirements EN 60079-1: 2007 Flame-proof Enclosures 'd' Explosion group: IIC (includes IIA und IIB)

Temperature class: T3/T4/T6/120°C (depending on wattage)

b) Dust

EN 60079-0: 2009 General Requirements EN 60079-31: 2009 Protection by Enclosures 't' Explosion group: IIIC (includes IIIA und IIIB)

T80/T120/T130/T195°C (depend. on wattage) Temperature class:

 Certification: EC Type-Examination Certificate BVS 08 ATEX E 133 II 2G Ex d IIC T3/T4/T6/120°C Gb

II 2G Ex a IIC 13/14/10/120/T130/T195°C Db

- · Voltage: Alternating/direct current, depending on lamp
- Operating voltage:

Without integrated transformer:

12 V... Halogen lamp 5 W or 20 W 24 V... Halogen lamp 20 W 230 V... LED illuminant 4 W

With integrated transformer; PTC-protected: 120 V... Halogen lamp 12 V/5 W 230 V... Halogen lamp 12 V/5 W

 Convenient lamp replacement thanks to optimised screw-type opening.

 Connecting cable: Works-fitted cable is resin-cast in screwed cable gland for pressure-tight cable entry. Lengths: 2 m (standard), 5 m or 20 m.

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Lumistar luminaire USL 05-LED-Ex

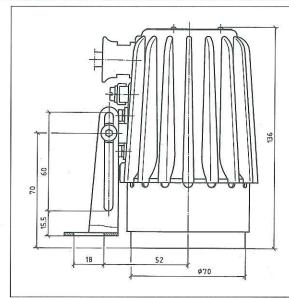


Combined light and sight glass assembly on a sight glass fitting acc. to DIN 28120; luminaire is mounted on a hinged bracket

- Simple installation by means of special bracket.
- Type USL 05-Ex fits the following nominal sizes:
- a) Circular sight glass fittings to DIN 28120, DIN 28121 and flow indicators; for attachment to cover flange: from DN 25 up.
- b) Screw-type sight glass fittings similar to DIN 11851; for attachment on or below the slotted nut:
  - DN 65, 80: by way of flanged adapter collar
- DN 65, 80, 100, 125: by way of hinged bracket

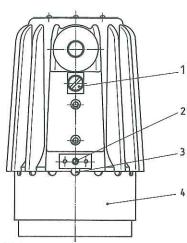


#### • Dimensions and electrical data for Lumistar luminaires USL 05-Ex and USL 05-LED-Ex:



#### Part no.

- External protective conductor terminal
- 2 Locking screw
- 3 Safety tab
- 4 Screw-in glass lens



Weight:

without built-in transformer: 0.8 kg with built-in transformer: 1.0 kg

#### Components, design and materials:

- Body of luminaire: Corrosion-resistant die-cast aluminium alloy, GK-ALSi10Mg
- Cable gland with pressure-tight resin-cast connecting cable, Sinotherm 110 H05GG-F 3G, 1.5 mm², standard cable length: 2 m
- Protective conductor terminal: Internal terminal already connected, additional external protective conductor terminal on enclosure
- Light exit: Bonded unit made of aluminium ring and glass; Viton seal
- Fastening components: See accessories

#### • Connecting data: Temperature classification and electrical parameters (see also: EC Type-Examination Certificate)

No.	Type USL 05-Ex/ Type USL 05-LED-Ex			Part No.			Ambient temp	erature ra	inge		
				former	Voltage	Socket	-20°C	≤ T <sub>a</sub> ≤ +40°C	$T_a \le +40^{\circ}C$   $-20^{\circ}C \le T_a$		
1	(12 V) 5 W	3540.031.00	12 ≃	without	12 V/5 W	G4	2G T6	2D T80°C	2G T4	2D T130°C	
2	(120 V/12 V) 5 W	3540.032.00	120 ~	with	12 V/5 W	G4	2G T6	2D T80°C	2G T4	2D T130°C	
3	(230 V/12 V) 5 W	3540.033.00	230 ~	with	12 V/5 W	G4	2G T6	2D T80°C	2G T4	2D T130°C	
4											
5	(12 V) 20 W	3540.035.00	12 ≃	without	12 V/20 W	G4	2G T4	2D T130°C	2G T3	2D T195°C	
6	(24 V) 20 W	3540.037.00	24 ≃	without	24 V/20 W	G4	2G T4	2D T130°C	2G T3	2D T195°C	
7											
8										· · ·	
9	(230 V) 4 W-LED	3540.059.00	230 ≃	without	230 V/4 W-LED	GZ10	97 <u>2</u> 9		2G T6	2D T80°C	

#### • Order data:

e. g. Lumistar luminaire USL 05-Ex, 12 V/20 W, Part no. 3540.035.00; with accessories: hinged bracket, Part no.: 0354.014.00 and claw spanner, Part no. 6816.001.00

#### Accessories:

No.	Component	Part No.
1	Luminaire mounting, hinged bracket, stainless steel	0354.014.00
2	Luminaire mounting, flanged adapter collar, stainless steel	1356.010.00
3	Lumiglas timer module, Ex-timer switch, external, for timed light switching	on request
4	Claw spanner for screw-in lens, for opening the lamp	6816.001.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15



#### **Lumistar Luminaire USL 06-Ex** II 2G Ex de IIC T3/T4 Gb II 2D Ex tb IIIC T130/T195°C Db

For mounting on sight glass fittings

This Ex-type sight glass luminaire is designed for universal applications in potentially explosive environments. It is ideal for use in combined sight and light-glass arrangements, either as a single flange version or with two separate flanged ports.

· Compact yet powerful:

Dazzle-free illumination; for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in visual flow indicators.

- Optimum screw-in lens design ensures maximum light efficiency and simplifies lamp replacement
- Application: For illuminating the interior of tanks, hoppers, silos, agitators and other - normally closed - vessels and reactors as well as visual flow indicators in potentially explosive environments. Gas: Zones 1 and 2; Dust: Zones 21 and 22. Suitable for use in food processing industries.
- Protection: IP 65 and IP 67 to DIN EN 60529
- Operating conditions: Independent of the internal pressure/

On no account should a sight glass luminaire be used on its own to close a vessel port or to replace the cover flange or the sight glass/luminaire assembly.

- Ambient temperatures: up to 60°C, depending on the lamp bulb
- Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for

a) Gas

EN 60079-0: 2012 General Requirements EN 60079-1: 2007 Flame-proof Enclosures 'd'

EN 60079-7: 2007 Increased Safety (relates to terminal box)

Explosion group: II C (includes II A and II B)

T3 to T4 (depending on wattage) Temperature class:

b) Dust

EN 60079-0: 2012 General Requirements EN 60079-31: 2009 Protection by Enclosures 't' Explosion group: III C (includes III A and III B)

Temperature class: T130/T195°C (depending on wattage)

EC type-examination certificate:

**BVS 08 ATEX E 135** 

Ex II 2G Ex de IIC T3/T4 Gb II 2D Ex tb IIIC T130/T195°C Db

- Electrical data and equipment: acc. to EC Type-Examination Certificate and table on page 3
- Voltage type: Alternating/direct current, depending on lamp

Operating voltage:

Without integrated transformer:

12 V... Halogen lamp 20 W, 35 W or 50 W

24 V... Halogen lamp 20 W or 50 W

230 V... Halogen lamp 50 W

With integrated transformer; PTC-protected:

12 V/20 W 120 V... Halogen lamp 230 V... Halogen lamp 12 V/20 W

240 V... Halogen lamp 12 V/20 W C € 0158

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Lumistar luminaire USL 06-Ex with connecting cable



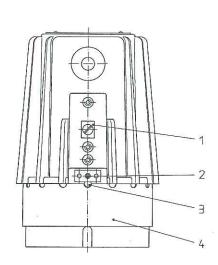
Lumistar luminaire USL 06-Ex with terminal box

- · Simple electrical connection via integrated terminal box.
- Straightforward installation thanks to special fixture: With circular sight glass fittings and visual flow indicators, the luminaire is attached to the cover flange by means of the hinged bracket.

With screw-type sight glass fittings, the luminaire is either attached to the nut or, alternatively mounted on a flanged adapter collar or hinged bracked.

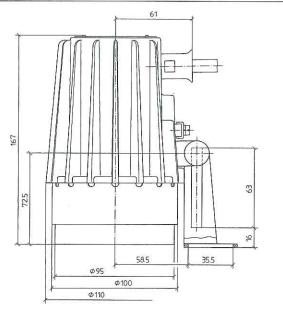


#### • Dimensions and electrical data for stainless steel Lumistar luminaire USL 06-Ex:



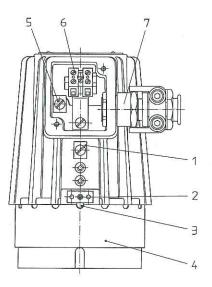
#### Part no.

- External protective conductor terminal
- 2 Locking screw
- 3 Safety tab
- 4 Screw-in glass lens



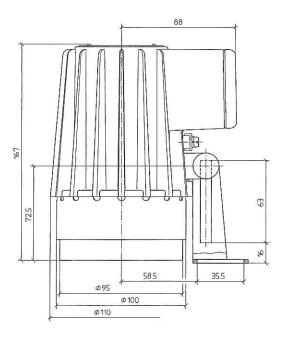
#### • Variant I (incl. connecting cable Ex d)

- Cable gland with pressure-tight resin-cast connecting cable, Sinotherm 110 H05GG-F 3G, 1.5 mm<sup>2</sup> (supplied cable length: 2 m)
- Protective conductor terminal: Internal terminal already connected, additional external protective conductor terminal on enclosure
- Weight (without connecting cable): without built-in transformer: 1.7 kg; with built-in transformer: 2.3 kg



#### Part No.

- External protective conductor terminal
- 2 Locking screw
- 3 Safety tab
- 4 Screw-in glass lens
- 5 Internal protective conductor terminal
- 6 Ex-terminal block
- 7 Cable gland M20 x 1.5



#### Variant II (incl. terminal box Ex de)

-Weight: without built-in transformer: 1.8 kg; with built-in transformer: 2.4 kg



### Connecting data: Temperature classification and electrical parameters: Variante I (including connecting cable)

No.	USL 06-Ex	Part No.	Vol-		Halogen lam	Ambient temperature range				
	Variant		tage	transf.	Voltage	Socket	-20°C ≤	$T_a \le +40$ °C	-20°C ≤	T <sub>a</sub> ≤ +60°C
1	(12 V) 20 W	3541.001.00	12 ≃	without	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
2	(12 V) 20 W	3541.003.00	12 =	without	12 V/20 W	GU5.3	2G T4	2D T130°C	2G T4	2D T130°C
3	(24 V) 20 W	3541.006.00	24 ~	without	24 V/20 W	G4	2G T4	2D T130°C	2G T4	2D T130°C
4	(120 V/12 V) 20 W	3541.011.00	120 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
5	(230 V/12 V) 20 W	3541.016.00	230 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
6	(240 V/12 V) 20 W	3541.021.00	240 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
7	(12 V) 35 W	3541.026.00	12 ≃	without	12 V/35 W	GY6.35	2G T4	2D T130°C	2G T3	2D T195°C
8	(12 V) 50 W	3541.031.00	12 ≃	without	12 V/50 W	GY6.35	2G T3	2D T195°C	-	-
9	(24 V) 50 W	3541.036.00	24 ~	without	24 V/50 W	GY6.35	2G T3	2D T195°C	-	-
10	(230 V) 50 W	3541.041.00	230 ~	without	230 V/50 W Hi-Spot	GZ10	2G T3	2D T195°C	-	-

Order data (\*please specify if flood reflector is preferred):

e. g. Lumistar luminaire USL 06-Ex with connecting cable, 24 V / 20 W, part no. 3541.006.00; with accessory: 5 m connecting cable, part no. 1084.015.00

#### Variante II (including terminal box)

No.	USL 06-Ex	Part No.	Vol-	Built-in	Halogen lam	p*	Α	mbient temp	erature ra	ange
	Variant		tage	transf.	Voltage	Socket	-20°C ≤	$T_a \le +40$ °C	-20°C ≤	T <sub>a</sub> ≤ +60°C
1	(12 V) 20 W-AK	3541.051.00	12 ≃	without	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
2	(12 V) 20 W-AK	3541.053.00	12 ≃	without	12 V/20 W	GU5.3	2G T4	2D T130°C	2G T4	2D T130°C
3	(24 V) 20 W-AK	3541.056.00	24 ~	without	24 V/20 W	G4	2G T4	2D T130°C	2G T4	2D T130°C
4	(120 V/12 V) 20 W-AK	3541.061.00	120 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
5	(230 V/12 V) 20 W-AK	3541.066.00	230 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
6	(240 V/12 V) 20 W-AK	3541.071.00	240 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
7	(12 V) 35 W-AK	3541.076.00	12 ≃	without	12 V/35 W	GY6.35	2G T4	2D T130°C		-
8	(12 V) 50 W-AK	3541.081.00	12 ≃	without	12 V/50 W	GY6.35	2G T3	2D T195°C	-	
9	(24 V) 50 W-AK	3541.086.00	24 ≃	without	24 V/50 W	GY6.35	2G T3	2D T195°C	-	-
10	(230 V) 50 W-AK	3541.091.00	230 ≃	without	230 V/50 W Hi-Spot	GZ10	2G T4	2D T130°C	_	-

Order data (\*please specify if flood reflector is preferred):

e. g. Lumistar luminaire USL 06-Ex with terminal box, 24 V / 20 W-AK, part no. 3541.056.00

#### Accessories:

No.	Component	Part No.				
1	Stainless steel mounting (hinged bracket) for luminaire	0354.016.00				
2	Stainless steel mounting (flanged adapter collar) for luminaire	1356.015.00				
3	Lumiglas timer module, integrated, for timed switching, 5 min.  Please request					
4	Lumiglas timer module, Ex-timer switch, external, for timed switching	Please request				
5	Claw spanner for screw-in lens, for opening the lamp	6805.001.00				
6	Cable gland complete with 5 m connecting cable (for Variant I)	1084.015.00				
7	Cable gland complete with 20 m connecting cable (for Variant II)	1084.017.00				



#### • Lumistar luminaire USL 06-Ex fits the following nominal sizes:

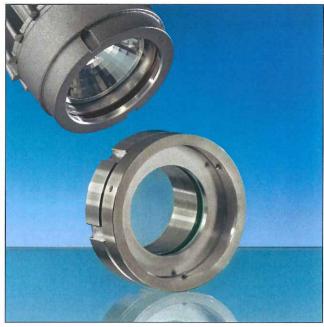
- a) circular sight glass fittings to DIN 28120, DIN 28121 and visual flow indicators; mounting on cover flange: from DN 50 up
- b) screw-type sight glass fittings similar to DIN 11851;
  - mounting on or below the nut:
  - sizes DN 65, 80, 100: on flanged adapter collar
  - sizes DN 80, 100, 125: on hinged bracket
  - sizes DN 80 and 100: either on flanged adapter collar or hinged bracket

#### Components and materials

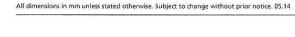
- Body of luminaire: Corrosion-resistant die-cast aluminium alloy
- Lens assembly: Bonded unit made of Al ring and glass, O-ring seal
- Fastening components: Stainless steel (see also accessories)



USL 06-Ex as a combined sight/light port on a sight glass assembly to DIN 29120; using hinged mounting bracket



USL 06-Ex as a light port, showing adapter collar fitted to a screw-type lens assembly



PAPENMEIER

#### **Lumistar Luminaire USL 07-Ex**

### II 2G Ex de IIC T3/T4/T6/120°C Gb II 2D Ex tb IIIC T80/T120/T130/T195°C Db

· For mounting on sight glass fittings:

This sight glass luminaire is designed for universal applications in potentially explosive environments. It is ideal for use in combined sight and light arrangements (single-flange version) or with two separate ports (2-flange version).

Compact design; powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, screw-type sight glass fittings in compliance with DIN 11851, and for visual flow indicators.

- Generous light aperture and convenient lamp replacement thanks to optimally designed screwed lens closure.
- Application: For illuminating the interior of tanks, hoppers, silos, agitators and other, usually closed, vessels and reactors as well as visual flow indicators in potentially explosive environments.
   Suitable for use in food processing industries.
- Protection class: dust- and splash-proof,
   IP 65 and IP 67 acc. to EN 60 529 / DIN VDE 0470, Part 1

Operating conditions:

Independent of the internal pressure/vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or instead of the complete sight glass flange assembly.

- Lumistar luminaires USL 07-Ex are approved for use in ambient temperatures of up to 60°C, depending on the type of lamp bulb used.
- Technical data, explosion protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for

a) Gas

EN 60079-0: 2009 General Requirements EN 60079-1: 2007 Flame-proof Enclosure 'd'

EN 60079-7: 2007 Increased Safety (relates to terminal box)

Explosion group: IIC (includes IIA and IIB)

Temperature class: T3/T4/T6/120°C (depending on wattage)

b) Dust

EN 60079-0: 2009 General Requirements
EN 60079-31: 2009 Protection by Enclosures 't'
Explosion group: IIIC (includes IIIA and IIIB)

Temperature class: T80/T120/T130/T195°C (depend. on wattage)

- Certification: EC Type-Examination Certificate BVS 08 ATEX E 136

  [X] II 2G Ex de IIC T3/T4/T6/120°C Gb

  II 2D Ex tb IIIC T80/T120/T130/T195°C Db
- Voltage type: AC/DC, depending on luminaire type
- Operating voltage:

without integrated transformer:

12 V Halogen lamp 50 W 24 V Halogen lamp 20 W, 50 W 230 V Halogen lamp 50 W, 75 W

with integrated transformer:

PTC-protected (5 W), otherwise thermal fuse (> 5 W)

120 V Halogen lamp 12 V/50 W

230 V Halogen lamp 12 V/20 W, 35 W, 50 W 240 V Halogen lamp 12 V/35 W, 50 W C€ 0158

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Lumistar luminaire USL 07-Ex with power supply cable



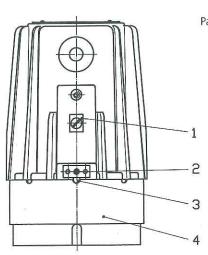
Lumistar luminaire USL 07-Ex with terminal box

#### Straightforward electrical connection via

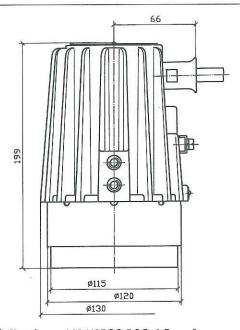
 Power supply cable (variant I only):
 Pressure-tight, resin-cast flared cable entry gland with power supply cable installed by manufacturer.
 Cable lengths: 2 m (standard), 5 m or 20 m.
 Replacement possible at any time by operating company.

- Terminal box (variant II only): Any cable length possible.

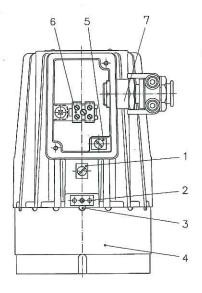
#### • Dimensions and electrical data for Lumistar luminaire USL 07-Ex



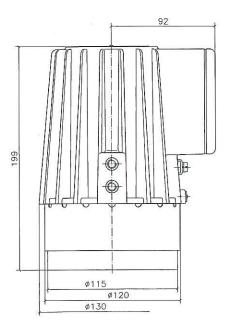
- Part 1 External grounding terminal
  - 2 Locking screw
  - 3 Safety tab
  - 4 Screw-in glass lens



- Variant I (incl. power supply cable Ex d)
- Cable entry gland with pressure-tight resin-cast power supply cord, Sinotherm 110 H05GG-F 3G, 1.5 mm² (standard length: 2 m)
- Grounding terminal: Internal terminal already connected, additional grounding terminal on outside of enclosure
- Weight (incl. power supply cable): 2.7 kg; with built-in transformer: 3.7 kg



- Part 1 External
  - grounding terminal
  - 2 Locking screw
  - 3 Safety tab
  - 4 Screw-in glass lens
  - 5 Internal grounding terminal
  - 6 Ex terminal block
  - 7 Cable entry gland M20 x 1.5



- Variant II (incl. terminal box Ex de)
- -Weight: without built-in transformer: 2.5 kg; with built-in transformer: 3.5 kg



#### Connecting data: Temperature classification and electrical parameters for variant I (incl. power supply cable)

item	type USL 07-Ex	part no.	nominal	integrated	halogen la	mp*	а	mbient temp	erature ra	inge
	variant	W.	voltage V	transformer	voltage/wattage	socket	-20°C ≤	T <sub>a</sub> ≤ +40°C	-20°C ≤	T <sub>a</sub> ≤ +60°C
1	(230 V/12 V) 20 W	3541.101.00	230 ~	with	12 V/20 W	GY6.35	2G T6	2D T80°C		
2	(24 V) 20 W	3541.103.00	24 ≃	without	24 V/20 W	G4	2G T6	2D T80°C		
3	(230 V/12 V) 35 W	3541.106.00	230 ~	with	12 V/35 W	GY6.35	2G T4	2D T130°C		_
4	(240 V/12 V) 35 W	3541.111.00	240 ~	with	12 V/35 W	GY6.35	2G T4	2D T130°C	-	-
5	(12 V) 50 W	3541.116.00	12 ≃	without	12 V/50 W	GY6.35	2G T4	2D T130°C	2G T3	2D T195°C
6	(24 V) 50 W	3541.121.00	24 ≃	without	24 V/50 W	GY6.35	2G T4	2D T130°C	2G T3	2D T195°C
7	(120 V/12 V) 50 W	3541.126.00	120 ~	with	12 V/50 W	GY6.35	2G T3	2D T195°C	_	_
8	(230 V) 50 W	3541.131.00	230 ≃	without	230 V/50 W	GZ10	2G T4	2D T130°C	2G T3	2D T195°C
9	(230 V/12 V) 50 W	3541.133.00	230 ~	with	12 V/50 W	GY6.35	2G T4	2D T130°C	<u> </u>	_
10	(240 V/12 V) 50 W	3541.136.00	240 ~	with	12 V/50 W	GY6.35	2G T3	2D T195°C	-	-
11	(230 V) 75 W	3541.141.00	230 ≃	without	230 V/75 W	GZ10	2G T3	2D T195°C	_	-

Order data: (\*please specify if flood reflector is preferred): e. g. Lumistar luminaire USL 07-Ex, variant I 230 V/50 W, part no. 3541.131.00, with luminaire fixture, straight, part no. 0354.005.00

#### for variant II (incl. terminal box)

item	type USL 07-Ex	part no.	nominal	integrated	halogen la	mp*	am	bient temper	ature ran	ge
	variant	28	voltage V	transformer	voltage/wattage	socket	-20°C ≤ T <sub>a</sub>		-20°C ≤ T	CONTRACTOR OF THE PROPERTY OF
1	(230 V/12 V) 20 W-AK	3541.151.00	230 ~	with	12 V/20 W	GY6.35	2G T6	2D T80°C	_	_
2	(24 V) 20 W-AK	3541.153.00	24 ≃	without	24 V/20 W	G4	2G T6	2D T80°C	211	-
3	(230 V/12 V) 35 W-AK	3541.156.00	230 ~	with	12 V/35 W	GY6.35	2G T4	2D T130°C		
4	(240 V/12 V) 35 W-AK	3541.161.00	240 ~	with	12 V/35 W	GY6.35	2G T4	2D T130°C	-	-
5	(12 V) 50 W-AK	3541.166.00	12 ≃	without	12 V/50 W	GY6.35	2G T4	2D T130°C	= =	=
6	(24 V) 50 W-AK	3541.171.00	24 ≃	without	24 V/50 W	GY6.35	2G T4	2D T130°C	-	- 5
7	(24 V) 50 W-AK	3541.172.00	24 ≃	without	24 V/50 W	GY6.35	2G T120°C	2D T120°C	100	4.4.
8	(120 V/12 V) 50 W-AK	3541.176.00	120 ~	with	12 V/50 W	GY6.35	2G T3	2D T195°C	= 10	
9	(230 V) 50 W-AK	3541.181.00	230 ≃	without	230 V/50 W	GZ10	2G T4	2D T130°C		_
10	(230 V/12 V) 50 W-AK	3541.183.00	230 ~	with	12 V/50 W	GY6.35	2G T4	2D T130°C		_
11	(240 V/12 V) 50 W-AK	3541.186.00	240 ≃	with	12 V/50 W	GY6.35	2G T3	2D T195°C	_	
12	(230 V) 75 W-AK	3541.191.00	230 ≃	without	230 V/75 W	GZ10	2G T3	2D T195°C		<u> </u>

Order data (\*please specify if flood reflector is preferred): e. g. Lumistar luminaire USL 07-Ex, variant II, 230 V/50 W-AK, part no. 3541.181.00, with luminaire fixture, straight, part no. 0354.005.00

#### Accessories:

item	component	part no.
1	fixture for luminaire, straight, DN 50 to 100	0354.005.00
2	fixture for luminaire, angled, DIN 125 to 200	0354.006.00
3	Lumiglas timer, integrated, for time-dependent illumination, 5 min.	on request
4	Lumiglas timer, external, for time-dependent illumination, Lumiglas Ex timer switch,	on request
5	claw spanner for screw-in lens for opening the luminaire	6805.002.00
6	cable entry gland complete with 5 m power supply cable (for variant I)	1084.015.00
7	cable entry gland complete with 20 m power supply cable (for variant I)	1084.017.00



#### Very easy to install using special mountings, ensuring convenience of use:

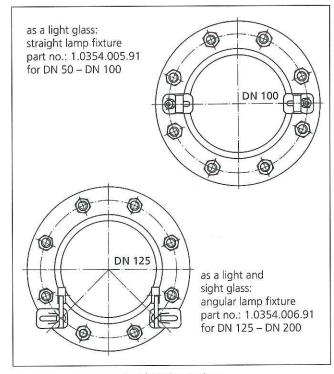
The luminaire is attached to the cover flange of the circular sight glass fitting or the visual flow indicator using the luminaire fixture, or secured to the grooved nut on screw-type sight glass fittings.

Lumistar luminaires USL 07-Ex fit the following sizes:

- a) Circular sight glass fitting acc. to DIN 28120: from DN 50
- b) Circular sight glass fitting acc. to DIN 28121: from DN 80
- c) Visual flow indicators: from DN 50
- d) Screw-type sight glass fittings in compliance with DIN 11851:
  - DN 100, DN 125 are attached using a separate flange adapter
  - sizes DN 150 and up are secured using the luminaire fixture



Application as combined sight and light glass mounted on a sight glass port to DIN 28120



Combination options





### Lumistar Luminaire USL 08-Ex, UL-listed (\$\vec{U}\_L\right) +\_c(\vec{U}\_L\right) T3B, T4A

#### · For mounting on sight glass fittings

Designed for use in combined sight and light glass arrangements (single-flange version) or with two separate ports (2-flange version), this sight glass luminaire is available in an Ex version with an integrated terminal compartment suitable for three terminating options.

#### Compact design; powerful light output:

Glare-free illumination, suitable for

- circular sight glass fittings to DIN 28120/DIN 28121 or similar, from size DN 50 up
- screw-type sight glass fittings in compliance with DIN 11851, from size DN 100 up
- in visual flow indicators with nominal widths from DN 50 up.
- Generous light emission thanks to optimal screwed lens design

#### Application:

For illuminating the interior of tanks, hoppers, silos, agitators and other, usually closed, vessels and reactors as well as visual flow indicators in potentially explosive environments with UL requirements.

#### Suitable for use in food processing industries

#### Protection:

dust-proof and splash-proof, IP 65 acc. to EN 60 529/ DIN VDE 0470, Part 1

#### Ignition protection, explosion group:

- UL 844 listed for Class I Div. 1 and 2, Groups C and D
- UL 1571 for "wet conditions"

#### Operating conditions:

Independent of the internal pressure/vacuum in vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a replacement for the cover flange or for the complete sight glass flange assembly.

- Lumistar luminaires of this series are approved for use in ambient temperatures of up to 40°C.
- Test certificate: (IL) + (IL) listed Cat No. for USL 08-Ex: 9N77
- Electrical data and equipment: see UL specifications and table on Page 4
- Voltage type: Alternating current (AC)

#### Operating voltage:

120 V... Halogen lamp 35 W/T4A 120 V... Halogen lamp 50 W/T3B 120 V... Halogen lamp 100 W/T3B



Lumistar luminaire USL 08-Ex with mounting parts



Application as combined sight and light glass on a sight-glass fitting acc. to DIN 28120



#### Light bulb socket:

Screw socket E26 or BA15d bayonett, depending on fixture (see Table on Page 4)

 Very easy to install using special bracket (to be ordered separately) for convenience of use:

The luminaire is normally attached to the cover flange of the round sight glass fitting or the visual flow indicator using the mounting parts, or fastened to the slotted nut on screw-type sight glass fittings.

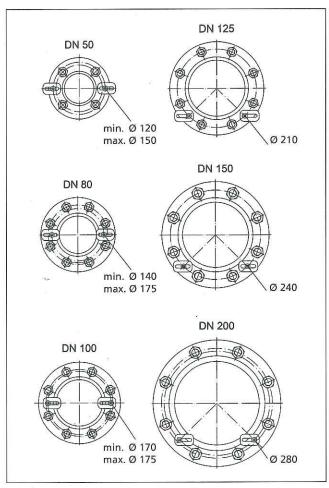
- a) Straight bracket for DN 50 DN 100 (for light glasses only)
- b) Hinged bracket from DN 125 DN 200 (for combined sight and light glasses)

#### • Straightforward electrical termination by way of terminal box

- The luminaire is already internally wired and ready for use!
- The terminal compartment has three openings with 1/2" NPT threading (right, left, top) allowing for cable entry
- The unused openings are closed with two blanking plugs (included in scope of supply)
- No cable gland is provided with the luminaire since termination is usually effected by way of cable ducting
- Optimised screw-in lens opens to provide ideal conditions for changing light bulbs



Lumistar luminaire USL 08-Ex

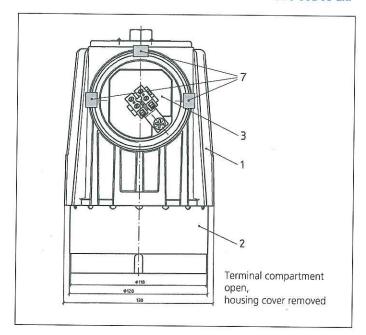


Hole pattern diameters for fastening screws



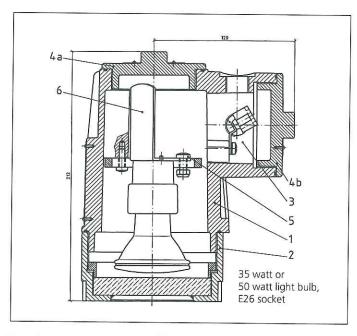


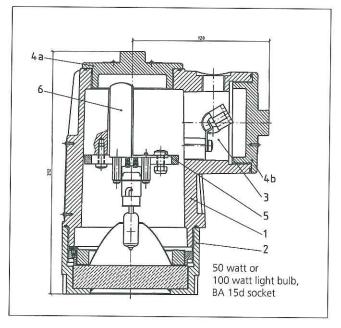
#### Dimensions and electrical data for Lumistar luminaire USL 08-Ex:



#### Pos. Part

- Body of luminaire
- 2 Screw-type lens
- 3 Terminal compartment with terminals
- 4a Housing cover for replacing light bulb
- 4b Housing cover for terminal compartment
- Screw with self-locking nut for light bulb socket
   Mounting bracket for light bulb socket
- Mounting bracket for light bulb socket
   3 openings with NPT ½" thread for cable entry options





#### Terminal compartment open, housing cover removed

- Body of luminaire made of non-corrosive cast aluminium alloy, GK-AlSi10Mg
- Light aperture as unit made of aluminium ring and glass with O-ring seal
- Fastening parts: (see Accessories) G-AISi10Mg
- Weight: 3.2 kg



#### Connecting data and temperature classification:

item	Type USL 08-Ex <sup>1)</sup>	Part No.	Nom. Volt.		Ha	logen light bu	lb	Temp. classification
			AC		Socket	Voltage	Part No.	at max. ambient temp. 40°C
1	(120 V) Sp 35 W	3540.305.00	120 ~	Refl. lamp	E 26	120 V / 35 W	3232.248.00	T4A
2	(120 V) FI 50 W	3540.306.00	120 ~	Refl. lamp	E 26	120 V / 50 W	3232.252.00	ТЗВ
3	(120 V) Sp 50 W	3540.310.00	120 ~	Refl. lamp	BA 15d	120 V / 50 W	3232.275.00	ТЗВ
4	(120 V) Sp 100 W	3540.308.00	120 ~	Refl. lamp	BA 15d	120 V/100 W	3232.272.00	ТЗВ

<sup>&</sup>lt;sup>1)</sup> Sp = Spot; Fl = Flood

#### Accessories:

Item	Part No.
Luminaire mounting bracket, straight: for DN 50 to DN 100	0354.005.00
Luminaire mounting bracket, angled: for DN 125 to DN 200	0354.006.00
Special assembly spanner for screw-in lens	6805.002.00

#### • Order data: e. g.

- Lumistar luminaire USL 08-Ex, 120 V/Sp 100 W, BA 15d Part No. 3540.308.00
- Mounting bracket for luminaire, straight, Part No. 0354.005.00
- Special assembly spanner for screw-in lens, Part No. 6805.002.00





### II 2G Ex d IIC T6 Gb

### II 2D Ex tb IIIC T80°C Db

For mounting on sight glass fittings:

This Ex-type sight glass luminaire is designed for universal applications and is ideal for use in combined sight and light ports (singleflange version) or with two separate ports (2-flange version).

- The special advantages of Lumiglas LED technology:
- vibration-proof
- long service life and operational reliability
- continuous LED operation up to around 50,000 hours
- optimal for fittings that are difficult to access
- no heat radiation in the light aperture (cold light)
- no unwanted additional heat in chemical and/or biological processes
- extremely high-contrast illumination

· Compact design, powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851 and for sight glass fittings on flow indicators.

- · Application: For illuminating visual flow indicators, pipelines, laboratory mixers, bio-reactors as well as the interior of tanks, hoppers, silos, agitators and other, normally closed, vessels and reactors in potentially explosive environments. Gas: Zones 1 and 2, Dust: Zones 21 and 22.
- Protection class: IP 65 and IP 67 acc. to DIN EN 60529
- Operating conditions: Independent of the internal pressure/ vacuum in the vessel. On no account should a sight glass luminaire be used as a substitute for the cover flange or instead of the complete sight glass flange assembly or on its own to close a vessel port.
- Lumistar luminaires of this type are approved for use in ambient temperatures of between -20°C and +40°C.
- Optional with 10° or 25° light aperture reflector
- Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for a) Gas

EN 60079-0: 2009 **General Requirements** EN 60079-1: 2007 Flame-proof Enclosures, d' Explosion group: IIC (includes IIA and IIB) Temperature class: T6

b) Dust

EN 60079-0: 2009 General Requirements EN 60079-31: 2009 Protection by Enclosures ,t' Explosion group: IIIC (includes IIIA and IIIB)

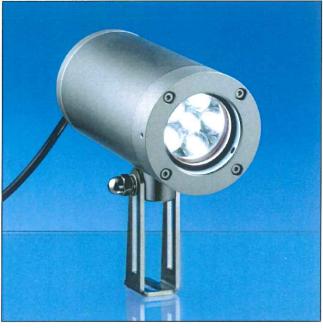
Temperature class: T80°C

• EC-Type Examination Certificate: BVS 09 ATEX E 170 II 2G Ex d IIC T6 Gb

Operating voltage:

24 V AC/DC LED 11 W/15 W 120-230 V AC/DC LED 11 W/15 W Protected by 1A miniature fuse. Equipped with 3 or 6 high-power LEDs.

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Lumistar luminaire ASL 55-LED-Ex

- Voltage: AC/DC
- · Simple electrical connection via integrated cable or via Ex d cable gland.
- · Electrical connection options:
- a) Works-fitted connection cable (2 m standard length), resin-cast in screwed cable gland for pressure-tight cable entry, temperature-resistant up to 110°C. Other lengths available on request: 5 m, 10 m, 20 m
- b) By way of screwed cable gland acc. to EN 60079-14
- c) Other types of cable glands and cables are shown in the table overleaf.

Fastening options:

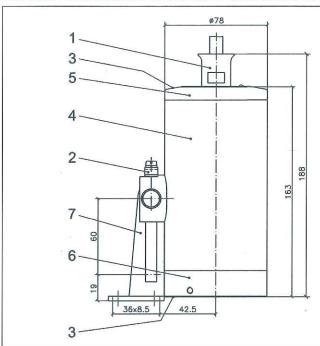
Luminaires for sight glasses on circular fittings and visual flow indicators are mounted on the cover flange by means of the hinged bracket. With screw-type sight glass fittings, the luminaire is attached to the slotted cover nut.

The Lumistar luminaire ASL 55-LED-Ex fits the following nominal sizes:

- a) Circular sight glass fitting acc. to DIN 28120: DN 40
- b) Circular sight glass fitting acc. to DIN 38121: DN 40
- c) Sight glasses in flow indicators: DN 50
- d) Screw-type sight glass fittings similar to DIN 11851:
  - From DN 50 up, the unit is mounted by way of a separate flange attachment.
  - From DN 80 up, the unit is secured using the hinged bracket.



#### • Dimensions and electrical data for Lumistar luminaire ASL 55-LED-Ex:



Pos. 1 Ex d cable gland M20x1.5

- 2 External protective conductor terminal
- 3 Locking screws M4 A2-70
- 4 Luminaire body
- 5 End cover
- 6 Light port lens
- 7 Mounting attachment (hinged bracket)

#### Components and materials:

- Luminaire body (4) and end cover (5): Aluminium alloy AlMgSi 0.5, paint finish RAL 9007
- Light port lens (6): Unit consisting of ring flange (aluminium alloy AlMgSi 0.5, paint finish RAL 9007) and borosilicate glass
- Hinged mounting bracket (7): Stainless steel 1.4301 (see accessories)
- Cable gland (1): M20x1.5
- Weight (with 2 m connecting cable): 1.5 kg

#### • Connecting data: Temperature classification and electrical parameters (see also: EC Type-Examination Certificate)

No.	ASL 55-LED-Ex Variant	Part No.	<b>Voltage</b> Volt	Illuminant		perature range T <sub>a</sub> ≤ +40°C
1	(24 V) 11 W	3541.652.00	24 ≃	3 LEDs	2G T6	2D T80°C
2	(120-230 V) 11 W	3541.653.00	120-230 ≃	3 LEDs	2G T6	2D T80°C
3	(24 V) 15 W	3541.655.00	24 ≃	6 LEDs	2G T6	2D T80°C
4	(120-230 V) 15 W	3541.656.00	120-230 ≃	6 LEDs	2G T6	2D T80°C

Only combinations of the following cable entry	glands and cables should be used:			
Cable gland types	Cable types			
HSK-M-Ex-d, Part No. 9103.123.00	EVA flexible sheathed cable, Sinotherm 110, Part No. 3403.017.00, 3x1.5 mm², Ø 8.5 mr			
M20x1.5, nickel-plated brass (by Hummel)	Ölflex Heat 180, Part No. 3403.045.00, 3x1.5 mm², Ø 8.9 mm			
KU1BPM20-Ex-d-Alpha X Part No. 9103.130.00	Ölflex Heat 180, Silflex UR-AWG18, Part No. 3403.044.00, 5x1.0 mm², Ø 10.3 mm			
M20x1.5, nickel-plated brass (by RST)	Ölfley Classic 110 black Part No. 3403 051 00, 3x1 5 mm <sup>2</sup> Ø 10.1 mm			

#### Accessories:

No.	Component	Part No.
1	Luminaire mounting bracket (hinged)	0354.025.00
2	Luminaire mounting attachment, flanged adapter collar MV65	1356.039.00
3	Ex-timer switch	On request
4	Connecting cable	On request
5	Luminaire with Ex 'd' cable gland	On regust

#### · Order data:

e.g. Lumistar luminaire ASL 55-LED-Ex (24V) 11 W, Ex d IIC T6 with 2 m connecting cable, part no. 3541.652.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 10.15





### Lumistar Luminaire ESL 25-Ex, Stainless Steel C€ 0158 II 2G Ex d IIC T4/T6 Gb

### II 2G EX G IIC 1-7.130°C Db

· For mounting on sight glass fittings

Designed for universal applications, this Ex-type sight glass luminaire has been developed for use in potentially explosive environments. It is ideal for combined sight glass and light assemblies, either as a single-flange version or with two separate flanged ports.

Compact yet powerful:

Dazzle-free illumination, for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screwed sight glass units in compliance with DIN 11851, and in visual flow indicators.

- · Large light aperture and convenient lamp replacement thanks to optimised screw-in lens design.
- · Application: For illuminating visual flow indicators, pipelines, laboratory mixers, bioreactors as well as the interior of pressure vessels, tanks, agitators and other - normally closed - processing vessels in potentially explosive environments. Gas: Zones 1 and 2: Dust: Zones 21 and 22.
- · Particularly suitable for use in sterile environments.
- Protection: IP 65 und IP 67 nach DIN EN 60529
- Operating conditions: Independent of the internal pressure/ vacuum in vessel. Under no circumstances should a sight glass luminaire be used to replace the cover flange or the sight glass/ luminaire assembly or on its own to close a vessel port.
- Lumistar luminaires of this type are approved for use in ambient temperatures of up to 60°C, depending on the lamp bulb fitted.
- Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for a) Gas

EN 60079-0: 2009 EN 60079-1: 2007

**General Requirements** Flame-proof Enclosure 'd' IIC (includes II A and II B)

Explosion group:

Temperature class: up to T6 (depending on wattage)

b) Dust

EN 00079-0: 2009 General Requirements Protection by Enclosures 't' EN 60079-31: 2009 IIIC (includes III A and III B) Explosion group:

Temperature class: T80/T130°C (depending on wattage)

• EC type-examination certificate: BVS 08 ATEX E 137 II 2G Ex d IIC T4/T6 Gb II 2D Ex tb IIIC T80/T130°C Db

· Voltage type: AC/DC, depending on lamp

· Operating voltage:

without integrated transformer:

5 W, 10 W, 20 W 12 V... Halogen lamp 20 W

24 V... Halogen lamp

with integrated transformer:

12 V/5 W/10 W 120 V... Halogen lamp 230 V... Halogen lamp 12 V/5 W/10 W 5 W = PTC protection, 10 W = thermal fuse

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Lumistar luminaire ESL 25-Ex, stainless steel

- · Straightforward electrical connection via integrated cable tail or Ex d cable entry gland.
- Electrical connection

Connecting cable options:

- a) Works-fitted cable tail (2 m standard length), resin cast into trumpet cable entry gland, heat-resistant up
  - 5 m, 10 m and 20 m lengths are also available.
- b) Without works-fitted cable: connecting cable to fit the cable entry gland (M20 x 1.5) to be provided by operating company.

If ambient temperatures are greater than 40°C, heatresistant cable, e. g. Sinotherm 110 H05GG-F 3G 1.5 mm<sup>2</sup> should be used.

Mounting options:

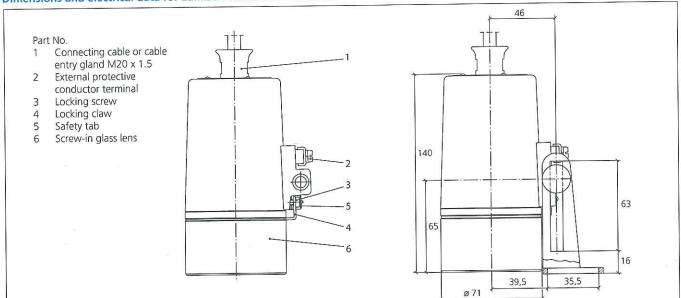
With circular sight glass fittings and flow indicators the luminaire is secured to the cover flange by means of the hinged bracket. With screw-type sight glass units the luminaire is mounted on the slotted cover nut.

The Lumistar luminaire ESL 25-Ex fits the following nominal sizes:

- a) Circular sight glass fittings to DIN 28120: from DN 50
- b) Circular sight glass fittings to DIN 28121: from DN 40
- c) Flow indicators: from DN 50
- d) Screwed sight glass units in line with DIN 11851:
  - With DN 65, mounting is by way of separate flange adapter collar
  - From DN 80 up, the hinged bracket is used
- · For sterile applications, a version of this Lumistar luminaire is available with a sleeve that fits over a raised lip on the cover flange.



#### Dimensions and electrical data for Lumistar luminaire ESL 25-Ex:



- Components and materials:
  - Body of luminaire: Stainless steel 1.4404, polished
  - Fastening components: Stainless steel 1.4301 (see 'Accessories')
  - Cable entry gland: M20 x 1.5

- · Weight (without connecting cable):
  - without integrated transformer: 1.8 kg
  - with integrated transformer: 2.2 kg
- Connecting data: Temperature classification and electrical parameters (see also EC Type-Examination Certificate)

No.	Type ESL 25-Ex	Part No. ESL 25-Ex with	Part No. ESL 25-Ex/1	Voltage	Integr. trans-	Halo	gen lamp	Ambient temperature range			nge
	Version	connecting cable		Volt	former	Socket	Voltage	-20°C	≤ T <sub>a</sub> ≤ +40°C	-20°C ≤	T <sub>a</sub> ≤ +60°C
1	(12 V) 5 W	3540.902.00	3540,922.00	12 ≃	without	G4	12 V/5 W	2G T6	2D T80°C		-
2	(120 V/12 V) 5 W	3540.904.00	-	120 ~	with	G4	12 V/5 W	2G T6	2D T80°C	-	
3	(230 V/12 V) 5 W	3540.906.00	В	230 ~	with	G4	12 V/5 W	2G T6	2D T80°C	-	-
4	(12 V) 10 W	3540.907.00	3540.927.00	12 ≃	without	G4	12 V/10 W	2G T4	2D T130°C	2G T4	2D T130°C
5	(120 V/12 V) 10 W	3540.908.00	=	120 ~	with	G4	12 V/10 W	2G T4	2D T130°C	2G T4	2D T130°C
6	(230 V/12 V) 10 W	3540.910.00	=	230 ~	with	G4	12 V/10 W	2G T4	2D T130°C	2G T4	2D T130°C
7	Cold-light (12 V) 20 W	3540.912.00	3540.932.00	12 =	without	GU4	12 V/20 W	2G T4	2D T130°C		
8	(12 V) 20 W	3540.914.00	3540.934.00	12 =	without	G4	12 V/20 W	2G T4	2D T130°C	-	-
9	(24 V) 20 W	3540,916.00	3540.936.00	24 ~	without	G4	24 V/20 W	2G T4	2D T130°C	=	

#### Accessories:

No.	Component	Part No.
1	Hinged bracket mounting for luminaire	0354.019.00
2	Flanged adapter collar mounting for luminaire	1356.010.00
3	Mounting for sterile applications for luminaire without integrated reflector	1774.050.00
4	Mounting for sterile applications for luminaire with integrated reflector	1774.051.00
5	Peg spanner for screw-in lens	6816.001.00
6	Timer module, ex version	on request
7	Connecting cable	on request

- · Order data: e. g.
- Lumistar luminaire ESL 25-Ex (230 V/12 V) 5 W, Ex d IIC T6 with 2 m connecting cable, part no. 3540.906.00
- Lumistar luminaire ESL 25-Ex/1 (24 V) 20 W, Ex d IIC T4 without connecting cable, part no. 3540.936.00









### Lumistar Luminaire ESL 26-Ex, Stainless Steel C€ 0158 II 2G Ex de IIC T3/T4 Gb II 2D Ex tb IIIC T130/T195°C Db

#### · For mounting on sight glass fittings

This Ex-type sight glass luminaire is designed for universal applications in potentially explosive environments. It is ideal for use in combined sight and light-glass arrangements, either as a single flange version or with two separate flanged ports.

#### Compact yet powerful:

Dazzle-free illumination; for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in visual flow indicators.

· Optimum screw-in lens design ensures maximum light efficiency

#### Application:

For illuminating the interior of tanks, hoppers, silos, agitators and other - normally closed - vessels as well as visual flow indicators in potentially explosive environments. Gas: Zones 1 and 2; Dust: Zones 21 and 22. Suitable for use in food processing industries.

- Protection: IP 65 and IP 67 to DIN EN 60529
- Operating conditions: Independent of the internal pressure/ vacuum in vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or to replace the cover flange or the sight glass/luminaire assembly.
- Lumistar luminaires of this series are approved for use in ambient temperatures of up to 60°C, depending on the lamp bulb fitted.

#### Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for a) Gas

EN 60079-0: 2012 General Requirements Flame-proof Enclosure 'd' EN 60079-1: 2007

EN 60079-7: 2007 Increased Safety (relates to terminal box)

Explosion group: IIC (including IIA and IIB)

Temperature class: T1 to T4 (depending on wattage)

b) Dust

EN 60079-0: 2012 General Requirements EN 60079-31: 2009 Protection by Enclosures 't' Explosion group: IIIC (includes III A and III B)

Temperature class: T130°/T195°C (depending on wattage)

EC type-examination certificate: BVS 08 ATEX E 138

II 2G Ex de IIC T3/T4 Gb II 2D Ex th IIIC T130/T195°C Db

• Voltage type: Alternating/direct current, depending on lamp

#### Operating voltage:

without integrated transformer:

12 V... Halogen lamp 20 W, 35 W or 50 W 20 W or 50 W 24 V... Halogen lamp

230 V... Halogen lamp 50 W with integrated transformer; PTC-protected 120 V... Halogen lamp 12 V/20 W 230 V... Halogen lamp 12 V/20 W 240 V... Halogen lamp 12 V/20 W

Straightforward electrical connection via integrated terminal box. Simple lamp replacement thanks to optimal screw ring design.

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Lumistar luminaire ESL 26-Ex, stainless steel



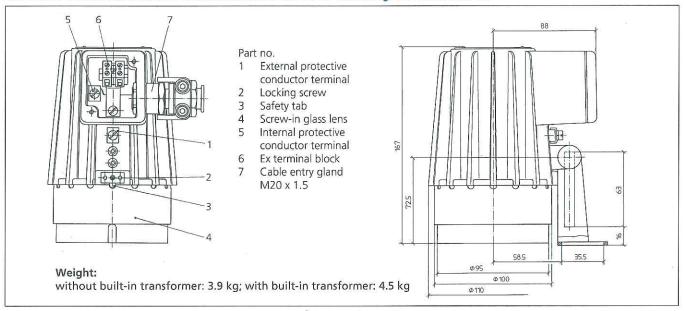
Application as combined sight and light port on a sight glass fitting acc. to DIN 28120; mounted by way of a hinged bracket

#### Lumistar luminaire ESL 26-Ex fits the following nominal sizes:

- a) circular sight glass fittings to DIN 28120, DIN 28121 and visual flow indicators; mounting on the cover flange: from DN 50 up
- b) screw-type sight glass fittings similar to DIN 11851; mounting on or below the nut:
  - DN 65, 80, 100: on flanged adapter collar
  - DN 80, 100, 125: on hinged bracket
  - DN 80 und 100: either on flanged adapter collar or hinged bracket



#### • Dimensions and electrical data for Lumistar luminaire ESL 26-Ex with integrated terminal box:



#### Components and materials:

- Body of luminaire: Stainless steel 1.4404 (316LF), polished
- Fastening components: Stainless steel

#### • Connecting data: Temperature classification and electrical parameters (see also EC Type-Examination Certificate)

No.	Type ESL 26-Ex	Part No.	Voltage	Built-in	Halogen lamp*		Ambient temperature range			
				transf.	Voltage	Socket	-20°C	$\leq T_a \leq +40^{\circ}C$	-20°C ≤	$T_a \le +60$ °C
1	(12 V) 20 W	3540.801.00	12 ≃	without	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
2	(24 V) 20 W	3540.803.00	24 ≃	without	24 V/20 W	G4	2G T4	2D T130°C	2G T4	2D T130°C
3	(120 V/12 V) 20 W	3540.808.00	120 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
4	(230 V/12 V) 20 W	3540.810.00	230 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
5	(240 V/12 V) 20 W	3540.811.00	240 ~	with	12 V/20 W	GY6.35	2G T4	2D T130°C	2G T4	2D T130°C
6	(12 V) 35 W	3540.816.00	12 ≃	without	12 V/35 W	GY6.35	2G T4	2D T130°C	-	
7	(12 V) 50 W	3540.826.00	12 ≃	without	12 V/50 W	GY6.35	2G T3	2D T195°C	<del>-</del>	= 1
8	(24 V) 50 W	3540.831.00	24 ≃	without	24 V/50 W	GY6.35	2G T3	2D T195°C	-	-
9	(230 V) 50 W	3540.834.00	230 ≃	without	230 V/50 W Hi-Spot	GZ10	2G T4	2D T130°C	<u> </u>	-

#### Order data (\*please specify if flood reflector is preferred):

e. g. Lumistar luminaire ESL 26-Ex 230 V/12 V 20 W, part no. 3540.810.00; with accessory: hinged bracket, part no. 0354.016.00

#### Accessories:

No.	Component	Part No.
1	Stainless steel mounting (hinged bracket) for luminaire	0354.016.00
2	Stainless steel mounting (flanged adapter collar) for luminaire	1356.015.00
3	Lumiglas timer module, integrated, for time-related illumination, 5 min.	on request
4	Lumiglas timer module, Ex-timer switch, external, for time-related illumination	on request
5	Claw spanner for screw-in lens, for opening the lamp	6805.001.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15





#### (Ex) II 2G Ex d IIC T3/T4/T6 Gb II 2D Ex tb IIIC T80/T130/T195°C Db

#### · For mounting on sight glass fittings:

This Ex-type sight glass luminaire is designed for universal applications in potentially explosive environments. It is ideal for use in combined sight and light glass units, either as a single flange version or with two separate flanged ports.

#### Compact yet powerful:

Dazzle-free illumination; suitable for use with circular sight glass fittings to DIN 28120/DIN 28121 or similar, with screw-type sight glass fittings in compliance with DIN 11851, and in visual flow indicators.

- Optimum screw-in lens design ensures maximum light efficiency and convenient access when replacing lamps.
- · Application: For illuminating visual flow indicators, pipelines, laboratory mixers, and bioreactors as well as the interior of tanks, hoppers, silos, agitators and other - normally closed - vessels in potentially explosive environments - Gas: Zones 1 and 2; Dust: Zones 21 and 22.
- · Ideal for applications in sterile areas.
- Protection: IP 65 and IP 67 to DIN EN 60529
- Operating conditions: Independent of the internal pressure/ vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or to replace the cover flange or the sight glass / luminaire flange assembly.
- · Lumistar luminaires of this series are approved for use in ambient temperatures of up to 40°C.

#### Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for

a) Gas

EN 60079-0: 2009 General requirements EN 60079-1: 2007 Flame-proof Enclosure 'd' Explosion group: IIC (including IIA and IIB)

Temperature class:

up to T6 (depending on wattage)

b) Dust

EN 60079-0: 2009 General Requirements EN 60079-31: 2009 Protection by Enclosures 't' Explosion group: IIIC (including IIIA and IIIB)

Temperature class:

up to T80°C (depending on wattage)

• EC type-examination certificate: BVS 08 ATEX E 139 II 2G Ex d IIC T3/T4/T6 Gb

II 2D Ex tb IIIC T80/T130/T195°C Db

Voltage type: AC/DC, depending on lamp

· Operating voltage:

Without integrated transformer:

12 V... Halogen lamp 50 W

24 V... Halogen lamp 20 W or 50 W

With integrated transformer:

120 V... Halogen lamp 12 V/50 W

230 V... Halogen lamp 12 V/20 W, 35 W or 50 W 240 V... Halogen lamp 12 V/35 W or 50 W

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Lumistar luminaire ESL 27-Ex 50 W, T4, with hinged bracket mounting attachment

· Straightforward electrical installation via integrated connecting cable.

#### Electrical connection:

Works-fitted connecting cable with side or top entry (please specify in order). Cable is pressure-tight resin-cast into trumpet entry gland. Cable length: 2 m (alternative length: 10 m).

Cable intended for use in temperature categories T3/T4 (35 W, 50 W) should be resistant to at least 110°C, e. g. Sinotherm 110 H05GG-F 3G 1.5 mm<sup>2</sup>.

· Simple mounting thanks to special bracket ensuring convenience of use!

#### Fastening options:

Luminaires for sight glasses on circular fittings and visual flow indicators are mounted on the cover flange by means of the hinged bracket. With screw-type sight glass fittings, the luminaire is attached to the slotted cover nut.

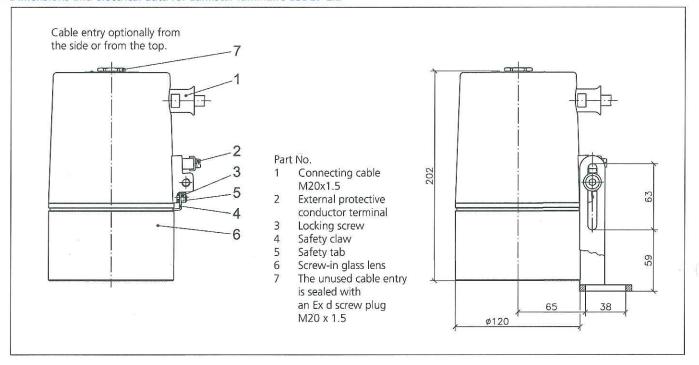
The Lumistar luminaire ESL 27-Ex fits the following nominal sizes:

- a) Circular sight glass fittings to DIN 28120: DN 50
- b) Circular sight glass fittings to DIN 28121: DN 50
- c) Sight flow indicators: DN 50
- d) Screw-type sight glass fittings similar to DIN 11851: DN 100
- · When used in sterile environments, this Lumistar luminaire is fitted over the adapter collar of the cover flange.





#### • Dimensions and electrical data for Lumistar luminaire ESL 27-Ex:



#### Components, design and materials:

- Body of luminaire: Stainless steel 1.4404, polished
- Fastening components: Stainless steel 1.4301 (see accessories)
- Cable entry gland: M20 x 1.5

#### Weight (with 2 m connecting cable):

- Without built-in transformer: 7.2 kg
- With built-in transformer: 8.2 kg

#### • Connecting data: Temperature classification and electrical parameters (see also EC Type-Examination Certificate)

No.	ESL 27-Ex	Part No.	Voltage	Built-in transformer			Ambient ter	nperature range
	Variant				Socket	Voltage	-20°C ≤	T <sub>a</sub> ≤ +40°C
1	(230 V/12 V) 20 W	3541.201.00	230 ~	with	GY6.35	12 V/20 W	2G T6	2D T80°C
2	(24 V) 20 W	3541.203.00	24 ≃	without	G4	24 V/20 W	2G T6	2D T80°C
3	(230 V/12 V) 35 W	3541.206.00	230 ~	with	GY6.35	12 V/35 W	2G T4	2D T130°C
4	(240 V/12 V) 35 W	3541.211.00	240 ~	with	GY6.35	12 V/35 W	2G T4	2D T130°C
5	(12 V) 50 W	3541.216.00	12 ≃	without	GY6.35	12 V/50 W	2G T4	2D T130°C
6	(24 V) 50 W	3541.221.00	24 ≃	without	GY6.35	24 V/50 W	2G T4	2D T130°C
7	(120 V/12 V) 50 W	3541.226.00	120 ~	with	GY6.35	12 V/50 W	2G T3	2D T195°C
8	(230 V/12 V) 50 W	3541.233.00	230 ~	with	GY6.35	12 V/50 W	2G T4	2D T130°C
9	(240 V/12 V) 50 W	3541.236.00	240 ~	with	GY6.35	12 V/50 W	2G T3	2D T195°C

#### Accessories:

No.	Component	Part No.
1	Mounting attachment for luminaire (hinged bracket)	0354.021.00
2	Installation tool – face spanner	6816.002.00
3	Timer module, ex-approved	On request
4	Connecting cable	On request

#### • Order data:

e. g. Lumistar luminaire ESL 27-Ex (230 V/12 V) 50 W, Ex d IIC T4, with 2 m connecting cable, side cable entry, part no. 3541.233.00

• Please also see appropriate Installation and Operating Instructions.

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 04.16





# Lumistar Luminaire ESL 55-LED-Ex, Stainless Steel II 2G Ex d IIC Gb II 2D Ex tb IIIC T80°C Db

· For mounting on sight glass fittings:

This Ex-type sight glass luminaire is designed for universal applications and is ideal for use in combined sight and light ports (single-flange version) or with two separate ports (2-flange version).

- The special advantages of Lumiglas LED technology:
  - vibration-proof
- long service life and operational reliability
- continuous LED operation up to around 50,000 hours
- optimal for fittings that are difficult to access
- no heat radiation in the light aperture (cold light)
- no unwanted additional heat in chemical and/or biological processes
- extremely high-contrast illumination

· Compact design, powerful light output:

Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851 and for sight glass fittings on flow indicators.

- Application: For illuminating visual flow indicators, pipelines, laboratory mixers, bio-reactors as well as the interior of tanks, hoppers, silos, agitators and other, normally closed, vessels and reactors in potentially explosive environments.
   Gas: Zones 1 and 2. Dust: Zones 21 and 22.
- · Ideal for applications in sterile areas
- Protection class: IP 65 and IP 67 acc. to DIN EN 60529
- Operating conditions: Independent of the internal pressure/ vacuum in the vessel. On no account should a sight glass luminaire be used as a substitute for the cover flange or instead of the complete sight glass flange assembly or on its own to close a vessel port.
- Lumistar luminaires of this type are approved for use in ambient temperatures of between -20°C and +40°C.
- Optional with 10° or 25° light aperture reflector
- Technical data Ex protection:

This luminaire meets the essential safety and health requirements by complying with the regulations for a) Gas

EN 60079-0: 2009 General Requirements EN 60079-1: 2007 Flame-proof Enclosures ,d' Explosion group: IIC (includes IIA and IIB)

Temperature class: T6

b) Dust

EN 60079-0: 2009 General Requirements
EN 60079-31: 2009 Protection by Enclosures ,t'
Explosion group: IIIC (includes IIIA and IIIB)

Temperature class: T80°C

• EC-Type Examination Certificate: BVS 09 ATEX E 169

II 2G Ex d IIC T6 Gb

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Lumistar luminaire ESL 55-LED-Ex

Operating voltage:

24 V AC/DC LED 11 W/15 W 120-230 V AC/DC LED 11 W/15 W Protected by 1A miniature fuse. Equipped with 3 or 6 high-power LEDs.

- Voltage: AC/DC
- Simple electrical connection via integrated cable or via Ex d cable gland.
- Electrical connection options:
  - a) Works-fitted connection cable (2 m standard length), resin-cast in screwed cable gland for pressure-tight cable entry, temperature-resistant up to 110°C.
     Other length available on request: 10 m
  - b) By way of screwed cable gland acc. to EN 60079-14
- c) Other types of cable glands and cables are shown in the table overleaf.

Fastening options:

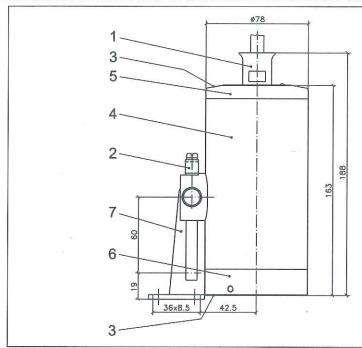
Luminaires for sight glasses on circular fittings and visual flow indicators are mounted on the cover flange by means of the hinged bracket. With screw-type sight glass fittings, the luminaire is attached to the slotted cover nut.

The Lumistar luminaire ESL 55-LED-Ex fits the following nominal sizes:

- a) Circular sight glass fitting acc. to DIN 28120: DN 40
- b) Circular sight glass fitting acc. to DIN 38121: DN 40
- c) Sight glasses in flow indicators: DN 50
- d) Screw-type sight glass fittings similar to DIN 11851:
  - From DN 50 up, the unit is mounted by way of a separate flange attachment.
  - From DN 80 up, the unit is secured using the hinged bracket.
- In sterile environments, this Lumistar luminaire is fitted over the raised edge of the cover flange.



#### • Dimensions and electrical data for Lumistar luminaire ESL 55-LED-Ex:



Pos. 1 Ex d cable gland M20x1.5

- 2 External protective conductor terminal
- 3 Locking screws M4 A2-70
- 4 Luminaire body
- 5 End cover
- 6 Light port lens
- 7 Mounting attachment (hinged bracket)

#### Components and materials:

- Luminaire body (4) and end cover (5): Stainless steel 1.4404, polished
- Light port lens (6): Unit consisting of ring flange (stainless steel 1.4404, polished) and borosilicate glass
- Hinged mounting bracket (7): Stainless steel 1.4301 (see accessories)
- Cable gland (1): M20x1.5
- Weight (with 2 m connecting cable): 3.8 kg

#### • Connecting data: Temperature classification and electrical parameters (see also: EC Type-Examination Certificate)

No.	ESL 55-LED-Ex Variant	Part No.	<b>Voltage</b> Volt	Illuminant		perature range Γ <sub>a</sub> ≤ +40°C
1	(24 V) 11 W	3541.552.00	24 ≃	3 LEDs	2G T6	2D T80°C
2	(120-230 V) 11 W	3541.553.00	120-230 ≃	3 LEDs	2G T6	2D T80°C
3	(24 V) 15 W	3541.555.00	24 ≃	6 LEDs	2G T6	2D T80°C
4	(120-230 V) 15 W	3541.556.00	120-230 ≃	6 LEDs	2G T6	2D T80°C

#### • Only combinations of the following cable entry glands and cables should be used:

Cable gland types	Cable types			
HSK-M-Ex-d, Part No. 9103.124.00	EVA flexible sheathed cable, Sinotherm 110, Part No. 3403.017.00, 3x1.5 mm², Ø 8.5 mr			
M20x1.5,1.4404 (by Hummel)	Ölflex Heat 180, Part No. 3403.045.00, 3x1.5 mm², Ø 8.9 mm			
KU1BPM20-Ex-d-Alpha X Part No. 9103.131.00	Ölflex Heat 180, Silflex UR-AWG18, Part No. 3403.044.00, 5x1.0 mm², Ø 10.3 mm			
M20x1.5, stainless steel (by RST)	Ölflex Classic 110 black, Part No. 3403.051.00, 3x1.5 mm², Ø 10.1 mm			

#### Accessories:

No.	Component	Part No.	
1	Luminaire mounting bracket (hinged)	0354.025.00	
2	Luminaire mounting attachment, flanged adapter collar MV65	1356.039.00	
3	Ex-timer switch	On request	
4	Connecting cable	On request	

#### • Order data:

e.g. Lumistar luminaire ESL 55-LED-Ex, (24 V) 11 W, Ex d IIC T6, with 2 m connecting cable, part no. 3541.552.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 10.15





## Lumistar Luminaire ASL57LED-Ex, Aluminium II 2G Ex d(e) IIC T6 Gb II 2D Ex tb IIIC T80°C Db

• For mounting on sight glass fittings

This Ex-type sight glass luminaire is designed for universal applications and is ideal for use in combined sight and light ports (single-flange version) or with two separate ports (2-flange version).

- The specific advantages of Lumiglas LED technology:
- vibration-resistant
- long service life and operational reliability
- LED functions up to around 50,000 hours in continuous operations
- optimal for fittings that are difficult to access
- no heat radiation in the light aperture (cold light)
- no unwanted additional heat in chemical and/or biological processes
- extremely high-contrast illumination
- Compact design, powerful light output: Glare-free illumination; suitable for circular sight glass fittings to DIN 28120/DIN 28121 or similar, for screw-type sight glass fittings in compliance with DIN 11851, and for sight glass fittings on flow indicators.
- Application: For illuminating visual flow indicators, pipelines, laboratory mixers, bio-reactors as well as the interior of tanks, hoppers, silos, agitators and other, normally closed, vessels and reactors in potentially explosive environments.
- Protection class: IP 65
- Operating conditions: Independent of vacuum/pressure in the vessel. Under no circumstances should a sight glass luminaire be used as a substitute for the cover flange or instead of the complete sight glass flange assembly, or on its own to close a vessel port.
- Lumistar luminaires of this type are approved for use in ambient temperatures of between -20°C and +40°C.
- EC type examination certificate: BVS 14 ATEX E 122 X

  | II 2G Ex d(e) IIC T6 Gb
  | II 2D Ex tb IIIC T80°C Db
- · Approved in accordance with EN 60079-ff
- Ignition protection category: Ex d(e)
- Explosion groups: IIC (includes IIA and IIB)
  IIIC (includes IIIA and IIIB)
- Operating voltage: 24 V AC/DC 35 W; 120-230 V AC 35 W Equipped with one high-power LED
- Voltage type: AC/DC
- Simple electrical connection using integrated cable or Ex 'e' terminal box.
- Electrical connection options:

Variant I: with works-fitted connection cable (standard length 2 m), temperature-resistant up to 110°C. Other cable lengths available on request: 5 m, 10 m, 20 m, or with different cable glands and cable types (see table on reverse).

Variant II: using an integrated terminal box, type Ex 'e'

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Lumistar luminaire ASL57LED-Ex, variant I



Lumistar luminaire ASL57LED-Ex, variant II

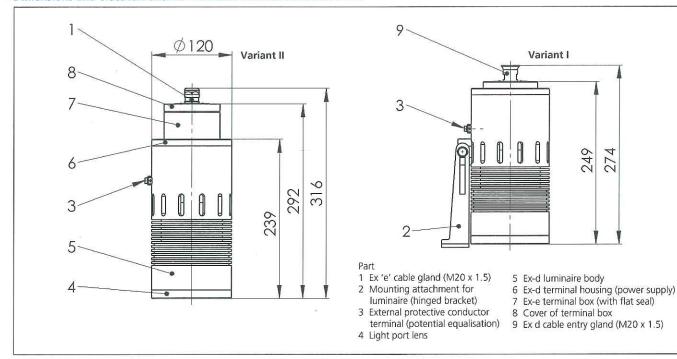
• Fastening options: Luminaires for sight glasses on circular fittings and visual flow indicators are mounted on the cover flange by means of the hinged bracket. With screw-type sight glass fittings, the luminaire is attached to the slotted cover nut.

#### ASL57LED-Ex fits the following nominal sizes:

- a) Circular sight glass fitting acc. to DIN 28120: DN 100
- b) Circular sight glass fitting acc. to DIN 28121: DN 125
- c) Sight glasses in flow indicators: DN 50
- d) Screw-type sight glass fittings similar to DIN 11851: the luminaire is fastened with a flange collar or direct on the slotted nut.



#### • Dimensions and electrical data for Lumistar luminaire ASL57LED-Ex:



#### • Components, design and materials:

- Luminaire body (5) and cover of terminal box (8): Aluminium alloy EN AW-2007, paint finish RAL 9007
- Light port lens (4): Unit consisting of ring flange (aluminium alloy EN AW-2007, paint finish RAL 9007), and borosilicate glass
- Hinged mounting bracket (2): Stainless steel 1.4301 (see accessories)
- Cable gland (9): M20 x 1.5
- Weight (with 2 m connecting cable): 4.6 kg

#### • Connecting data: Temperature classification and electrical parameters (see also: EC Type Examination Certificate)

Item	ASL57LED-Ex	Part No.	Voltage V	Illuminant	Ambient temperature range $-20^{\circ}\text{C} \le \text{T}_{a} \le +40^{\circ}\text{C}$		
Variant I (with connecting cable 2 m)							
1	(24 V) 35 W	3541.484.00	24 ≃	1 high-power LED	2G T6	2D T80°C	
2	(120-230 V) 35 W	3541.482.00	120-230 ~	1 high-power LED	2G T6	2D T80°C	
Variant II	(with integrated terminal	box)	***************************************			1000 No. 2	
3	(24 V) 35 W	3541.483.00	24 ≃	1 high-power LED	2G T6	2D T80°C	
4	(120-230 V) 35 W	3541.481.00	120-230 ~	1 high-power LED	2G T6	2D T80°C	

#### • For variant I: only combinations of the following cable entry glands and cables should be used:

Cable gland types	Cable types		
HSK-M-Ex-d, part no. 9103.123.00	EVA flexible sheathed cable, Sinotherm 110, p. no. 3403.017.00, 3x1.5 mm², ø 8.5 mm		
M20x1.5, nickel-plated brass (by Hummel)	Ölflex Heat 180, part no. 3403.045.00, 3x1.5 mm², ø 8.9 mm		
KU1BPM20-Ex-d-Alpha X part no. 9103.130.00	Ölflex Heat 180, Silflex UR-AWG18, part no. 3403.044.00, 5x1.0 mm², ø 10.3 mm		
M20x1.5, nickel-plated brass (by RST)	Ölflex Classic 110 black, part no. 3403.051.00, 3x1.5 mm², ø 10.1 mm		

#### Accessories:

Item	Component	Part No.	
1	Luminaire mounting – hinged bracket	0354.029.00	
2	Luminaire mounting – flanged adapter collar for welding on	MV65 = 1356.063.00; MV80 = 1356.062.00; MV100 = 1356.023.00	
3	Luminaire mounting – flanged adapter for putting under	MV125 = 1356.021.00; MV150 = 1356.059.00	

• Order data: e.g. Lumiglas luminaire ASL57LED-Ex (24 V) 35 W, Ex d IIC T6 with 2 m connecting cable, part no. 3541.484.00

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 02.16



### Lumistar Luminaire 'Lumiflex' USL 07 ALF-Ex II 2G Ex de IIC T6/T4 Gb II 2D Ex tb IIIC T80°C/T130°C Db

- For mounting on sight glass fittings; particularly for the selective illumination of processes on machines and reactors with liwithed space, especially in potentially explosive operating areas.
- This Lumistar luminaire has been specifically developed for light guide applications:
- Economical power consumption
- Low maintenance: lamp service life of up to 6,000 hours
- Flexible light guide made of stainless steel
- Easy to clean

#### Application:

For illuminating individual processes and/or the interior of reactors, containers, apparatuses, etc. in potentially explosive environments in Zones 1 and 2 as well as Zones 21 and 22.

- Protection: IP 65 and IP 67 acc. to DIN EN 60 529
- Operating conditions:

Independent of internal pressure/vacuum in the vessel. On no account should a sight glass luminaire be used on its own to close a vessel port or as a substitute for the cover flange or the sight glass/flange assembly.

- Lumistar luminaires of this type are approved for applications in ambient temperatures of between -20°C and +60°C.
- Technical data on Ex protection:

This luminaire satisfies the general health and safety regulations by complying with the specifications for

a) Gas

EN 60079-0: 2009 **General Requirements** EN 60079-1: 2007 Flameproof enclosure 'd' EN 60079-7: 2007 Increased safety 'e' IIC (incorporating IIA and IIB) Group:

Temperature class: T6 at ambient temperature 40°C T4 at ambient temperature 60°C

b) Dust

EN 60079-0: 2009 **General Requirements** EN 60079-31: 2009 Protection by enclosure 't' Group: IIIC (incorporating IIIA and IIIB) Temperature class: T80°C at ambient temperature 40°C T130°C at ambient temperature 60°C

EC type examination certificate: BVS 10 ATEX E 100 X

(X = OEM replacement parts must be used!)

II 2G Ex de IIC T6/T4 Gb II 2D Ex tb IIIC T80°C/T130°C Db

· Operating voltage with built-in transformer:

24 V AC halogen lamp 12 V/20 W, 10 V/39 W 120 V AC halogen lamp 12 V/20 W, 10 V/39 W 230 V AC halogen lamp 12 V/20 W, 10 V/39 W 240 V AC halogen lamp 12 V/20 W, 10 V/39 W

- Convenient electrical connection via integrated terminal box; cable entry gland M20x1.5
- Transformers:

Transformers for 24 V secondary voltage can be supplied on request.

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Lumistar luminaire 'Lumiflex' USL 07 ALF-Ex

