Ex-protected hand and machine lamps HL/ML

(Zone 1, 2, 21, 22)

Mains powered and still flexible

These powerful explosion-protected hand lamps with LEDs were developed especially for use during inspection and maintenance work in hazardous areas. Typical applications are found, for example in the chemical industry, offshore, in the automotive sector, in the aircraft industry or in shipyards. Due to their small size and high light output, these rugged lights are especially suited for lighting in tight spaces, the interior of machinery, silos, etc. wherever a reliable portable light source is required. With the appropriate accessories (optional) the machine lights can also be used, for example, for lighting sampling ports or as tube gauge lights or they can easily be mounted on railing pipes.

Light technology

All hand and machine lamps feature a protective polycarbonate tube with a reflector. They are available in high efficient LED technology. The outstanding features of the white LED technology are the insensitivity to shock and vibration, as well as the enormous longevity that makes a lamp change over the lifetime of the LED hand lamp superfluous.

Application

Because they are small in size and, at the same time, have a high light output and a high degree of protection IP 68, these rugged lights are particularly suitable for sewage treatment plants where flooding is possible, and wherever a reliable, robust and portable light source is required. The hand and machine lamps are used in engineering, printing machines, in the petrochemical and process industries as well as in the food industry (dusts). They are also suitable for temporary installations where maintenance, alteration and maintenance work are carried out in facilities in the oil and gas industry, for plant construction, in shipyards, or during the cleaning of tanks. Thanks to the special accessories, the lamps can be mounted by clamps on pipes (railing in the chemical and oil rigs) or with magnets directly to the machine housing or tank walls. At petrol stations, machine lamps can be installed in the illuminated ram protection around fuel pumps. Explosion-protected hand and machine lamps contribute to the operational safety during the construction of airplanes as well as during maintenance work in shipyards work. Here various people are at work in confined spaces in the cargo hold or in the cabin, cleaning parts with solvents, painting or preserving surfaces. During maintenance, the area surrounding the aircraft hull is normally declared as Zone 2, while empty and vented tanks are normally declared as Zone 1.

Features

- With LED-technique from 6 W to 36 W
- Lumen output from 200 lm up to 4780 lm, with directional (180°) or all round lighting (360°)
- Wide voltage range 85 V - 264 V AC/DC for general applications 12 V - 24 V AC/DC for confined spaces (e. g. metal tanks)
- Robust protective tube made of polycarbonate
- Suited for use in explosive gas and dust atmospheres, acc. ATEX & IECEx
- High degree of protection IP68

Safe handling

The hand lamp has a ribbed neoprene rubber handle with a trumpet-shaped cable gland made of metal and a neoprene rubber end cap with attachment hook for hanging up the light in the workplace. The end caps of the machine lamps are also made of durable neoprene rubber. The machine lamps are mounted directly on the machine using suitable clamps. Optionally, all hand and machine lamps can also be fitted with an eXLink connector for the quick and easy disconnection of the power cord at the lamp.

Ordering Details / Dimension Drawing

HL43d LED / TL60d LED / LEDM100de

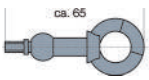
Ordering details machine lamps

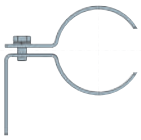
Type	Lamp power	Voltage	Luminous flux	Dimensions A	Ø B	Ø C	Weight	Order No.
HL43d LED6 460	6W LED	85-265V AC;120-370V DC	315 lm	640 mm	66 mm	43 mm	1,5 kg	**1 1700 000 107**

Ordering details machine lamps

Type	Lamp power	Voltage	Luminous flux	Dimensions A	Ø B	Ø C	Weight	Order No.
TL60d LED25 1480	25W LED	24V AC/DC	2,200 lm	1,601 mm	66 mm	43 mm	4.0 kg	**1 1700 000 017**
TL60d LED36 1780	36W LED	24V AC/DC	3,200 lm	1,901 mm	66 mm	43 mm	4.4 kg	**1 1700 000 018**
LEDM100de36940	2 x 18W LED	24-50V AC/DC	3,520 lm	985 mm	100 mm	100 mm	3.0 kg	**1 1700 100 002**
LEDM100de441245	2 x 22W LED	24-50V AC/DC	4,310 lm	1,290 mm	100 mm	100 mm	3.7 kg	**1 1700 100 003**
LEDM100de441245	2 x 22W LED	85-265V AC; 120-370V DC	4,310 lm	1,290 mm	100 mm	100 mm	3.7 kg	**1 1700 100 010**
LEDM100de501550	2 x 25W LED	24-50V AC/DC	5,100 lm	1,610 mm	100 mm	100 mm	4.1 kg	**1 1700 100 005**
LEDM100de721850	2 x 36W LED	24-50V AC/DC	7,400 lm	1,895 mm	100 mm	100 mm	4.5 kg	**1 1700 100 007**
LEDM100de54940	3 x 18W LED	85-265V AC	3,840 lm	985 mm	100 mm	100 mm	3.0 kg	**1 1700 100 008**
LEDM100de501550	2 x 25W LED	85-265V AC	5,100 lm	1,595 mm	100 mm	100 mm	4.1 kg	**1 1700 100 012**
LEDM100de721850	2 x 36W LED	85-265V AC	7,400 lm	1,895 mm	100 mm	100 mm	4.5 kg	**1 1700 100 014**

Accessories





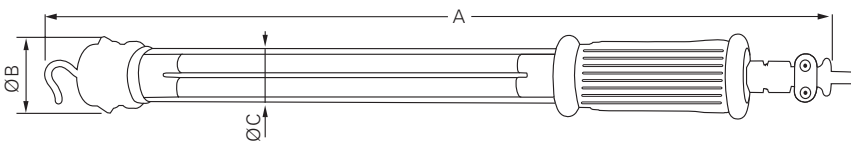
Type	Scope of delivery	Height A in mm	Weight kg	Diameter mm	Order unit	Order No.
Luminaire key 30-50 mm	SCH 2				1	**1 1700 000 940**
Eye bolt with ball joint M5 stainless steel	RS 4	58	0.034		1	**1 1700 000 950**
Plastic pipe clamp	CLIC 63	115		Ø 63-71	1	**1 1700 000 960**
Plastic pipe clamp	CLIC 71	124		Ø 71-80	1	**1 1700 000 961**
Plastic pipe clamp	CLIC 80	136		Ø 80-90	1	**1 1700 000 962**
Plastic pipe clamp	CLIC 90	136		Ø 90-101	1	**1 1700 000 963**
Fixing clip	BS 70		0.012	Ø 70	1	**1 1700 000 951**

Other accessories/sizes on request

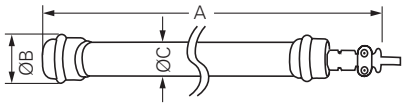
Dimension Drawing

HL43d LED / TL60d LED / LEDM100de / Accessories

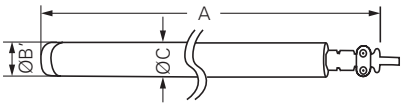
HL



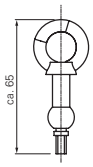
TL



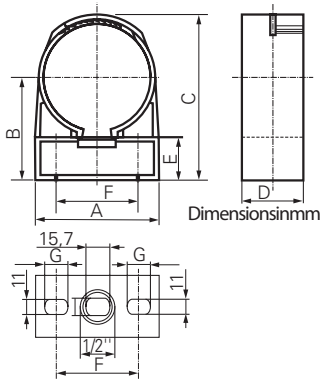
LEDM



RS4



CLIC

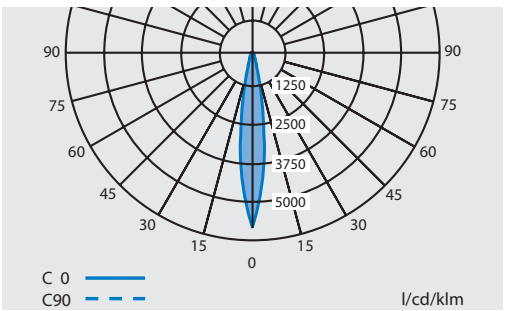
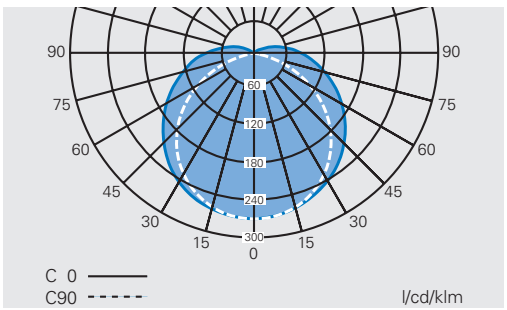


Technical data

	HL 43 d LED	TL 60 LED	ML LED M 100 de...
EC-Type Examination Certificate	BVS 14 ATEX E 106 X	BVS 14 ATEX E 106 X	BVS 15 ATEX E 003 X
IECEx Certificate of Conformity	IECEx BVS 14.0068X	IECEx BVS 14.0068X	IECEx BVS 15.0014X
Marking accd. to 2014/34/EU	Ⓔx II 2 G Ex d IICT5 Gb Ⓔx II 2 D Ex tb IIICT95 °C Db	Ⓔx II 2 G Ex d IICT5 Gb Ⓔx II 2 D Ex tb IIICT95 °C Db	Ⓔx II 2 G Ex db e IIBT5 Gb / Ⓔx II 2 D Ex tb IIIBT95 °C Db
Marking accd. to IECEx	Ex d IICT5 Gb Ex t IIICT95°C Db	Ex d IICT5 Gb Ex t IIIC IP68T95°C Db	
Permissible ambient temperature	-20 °C up to +40 °C (PL-lamps) -20 °C up to +60 °C	-20 °C up to +60 °C	-20 °C up to +60 °C
Rated voltage	[2]	[2]	[2]
Power	max. 6 W [2]	max. 36 W [2]	max. 72 W [2]
Power factor cos φ	> 0.95	> 0.95	> 0.95
Circuit	EVG integrated		
Protection class	I bzw. III	I	I
Standard cable length	5 m cable 3 x 1 mm² without plug[1]		5 m cable 3 x 1.5 mm² without plug[1]
Lamp / Illuminant	LED[2]	LED[2]	LED[2]
Rated luminous flux	[2]	[2]	[2]
Lamp cap	G5	–	-
Dimensions	[2]	[2]	[2]
Degree of protection accd. to EN 60529	IP68[3]	IP68[3]	IP68[3]
Protection tube	Polycarbonate	Polycarbonate	Polycarbonate

[1] Ex-protected plugs see catalogue 2 part 1 electrical connectivity
[2] see ordering details
[3] 2.5 m for 24 h

Polar curve HL43d ... LED



Polar curve TL60d ... LED