

CATALOG

LED LIGHTS



IPF *ELECTRONIC*

SAFETY WARNINGS

Before initial operation, please make sure to follow all safety instructions that may be provided in the product information!

Never use these devices in applications where the safety of a person depends on their functionality.

LED lighting systems can generate intensive UV radiation, which can damage your eyes in case of improper use. The manufacturer cannot be held responsible for damages that result from improper use or connection.



GLOSSARY

ANGLE OF EMITTED BEAM

The angle of emitted beam specifies how the light of an LED-lamp is emitted. A small angle of emitted beam (e.g. 30°) means a selective illumination of a small surface. A large angle of emitted beam (e.g. 120°) results in an extensive illumination.

ILLUMINANCE

The illuminance is a measure for the visible light that hits a surface. Its unit is Lux (lx). It decreases with the distance of the light source from the surface. With twice the distance, the illuminance is reduced to a quarter (Photometric Distance Law).

COLOR TEMPERATURE / LIGHT COLOR

Light colors are divided into three groups:

- / warm-white (less than 3.000 Kelvin) yellow-white light, which is experienced as homely and comfortable
- / neutral white (3.000 – 5.000 Kelvin) white light, which creates a formal atmosphere and has a nature of artificial lighting
- / cold white (more than 5.000 Kelvin) light that is similar to natural daylight, has a technical appearance and matches with incident daylight

RISK GROUPS

- / Risk group 1: Low risk
- / Risk group 2: Medium risk
- / Risk group 3: High risk

MACHINE LIGHTS TUBULAR

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000272	420mm / Ø33mm	Aluminum	IP67	80°	22V ... 28V DC	Cold white	10
AO000294	278mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	10
AO000303	160mm / Ø45mm	Aluminum	IP67	70°	22V ... 28V DC	Neutral white	10
AO000304	420mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Neutral white	10
AO000305	600mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Neutral white	11
AO000317	420mm / Ø45mm	Aluminum	IP67	70°	22V ... 28V DC	Cold white	11
AO000369	210mm / Ø45mm	Aluminum	IP67	70°	22V ... 28V DC	Cold white	11
AO000396	800mm / Ø45mm	Aluminum	IP67	70°	22V ... 28V DC	Cold white	11
AO000431	1100mm / Ø70mm	Aluminum	IP67	100°	220V ... 240V AC	Cold white	12
AO000434	1580mm / Ø70mm	Aluminum	IP67	100°	220V ... 240V AC	Cold white	12
AO000441	210mm / Ø45mm	Aluminum	IP67	120°	22V ... 28V DC	Neutral white	12
AO000442	420mm / Ø45mm	Aluminum	IP67	120°	22V ... 28V DC	Neutral white	12
AO000443	600mm / Ø45mm	Aluminum	IP67	120°	22V ... 28V DC	Neutral white	13
AO000444	800mm / Ø45mm	Aluminum	IP67	120°	22V ... 28V DC	Neutral white	13
AO000467	562mm / Ø70mm	Aluminum	IP67	100°	220V ... 240V AC	Cold white	13
AO000470	278mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	13
AO000471	538mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	14
AO000472	1038mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	14
AO000513	300mm / Ø70mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	14
AO000514	560mm / Ø70mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	14
AO000515	1092mm / Ø70mm	Aluminum	IP67	100°	24V ... 26.4V DC	Cold white	15
AO000536	300mm / Ø70mm	Aluminum	IP67	100°	220V ... 240V AC	Cold white	15
EM410120	190mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	15
EM410121	280mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	15
EM410122	365mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	16
EM410123	540mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	16
EM410124	715mm / Ø40mm	Aluminum	IP67	100°	21.6V ... 26.4V DC	Cold white	16
EM410125	1040mm / Ø40mm	Aluminium	IP67	100°	21.6V ... 26.4V DC	Cold white	16
EM500120	305mm / Ø50mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	17
EM500121	565mm / Ø50mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	17
EM500122	1065mm / Ø50mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	17

MACHINE LIGHTS CUBOID

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000193	44 x 44 x 61mm	Aluminium	IP67	120°	18V ... 30V DC	Cold white	20
AO000276	120 x 25 x 16mm	Aluminium	IP67	80°	16V ... 30V DC	Cold white	20
AO000401	435.5 x 45.5 x 27mm	Aluminium	IP67	120°	16.8V ... 31.2V DC	Cold white	20
AO000430	143 x 37 x 32mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	20
AO000493	100 x 44 x 15mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	21
AO000494	167 x 44 x 15mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	21
AO000495	233 x 44 x 15mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	21
AO000520	280 x 96 x 30mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	21
AO000521	540 x 96 x 30mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	22
AO000534	790 x 96 x 30mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	22
AO000535	1040 x 96 x 30mm	Aluminium	IP67	120°	21.6V ... 26.4V DC	Cold white	22
EM900170	90 x 32 x 14mm	Aluminium	IP67	120°	22V ... 28V DC	Neutral white	22
EM900171	155 x 32 x 14mm	Aluminium	IP67	120°	22V ... 28V DC	Neutral white	23

MACHINE LIGHTS CUBOID

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
EM98E169	330 x 150 x 55mm	Aluminum	IP65	-	46V ... 46V DC	Cold white	23

MACHINE LIGHTS ROUND

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000281	57mm / Ø160mm	Aluminum	IP67	38°	16.8V ... 31.2V DC	Cold white	26
AO000301	57mm / Ø160mm	Aluminum	IP67	12°	16.8V ... 31.2V DC	Cold white	26
AO000302	57mm / Ø160mm	Aluminum	IP67	40°	16.8V ... 31.2V DC	Cold white	26
AO000334	127mm / Ø65mm	Aluminum	IP65	30°	12V ... 28V DC	Cold white	26
AO000491	50mm / Ø72mm	Aluminum	IP67	40°	21.6V ... 26.4V DC	Cold white	27

MACHINE LIGHTS ROUND WITH THREAD

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000188	M18x1	Stainless steel 1.4301	IP65	22°	10V ... 30V DC	Cold white	30
AO000189	M18x1	Stainless steel 1.4571	IP65	120°	10V ... 30V DC	Cold white	30
AO000280	M8x1	Stainless steel 1.4571	IP67	75°	10V ... 30V DC	Cold white	30
AO000291	M18x1	Stainless steel 1.4571	IP65	120°	15V ... 30V DC	Cold white	30
AO000487	M12x1	Stainless steel 1.4305	IP67	140°	10V ... 30V DC	Cold white	31
AO000492	M18x1	Stainless steel 1.4305	IP67	120°	15V ... 30V DC	Cold white	31
AO000527	M12x1	Stainless steel 1.4305	IP65	8°	10V ... 30V DC	Cold white	31

WORKPLACE LIGHTS TUBULAR

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000307	300 x 28 x 23mm	Aluminum	IP40	120°	22V ... 30V DC	Cold white	34
AO000308	600 x 28 x 23mm	Aluminum	IP40	120°	22V ... 30V DC	Cold white	34

WORKPLACE LIGHTS CUBOID

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000261	504 x 64 x 80mm	Aluminum	IP50	100°	90V ... 264V AC	Neutral white	37
AO000274	254 x 64 x 80mm	Aluminum	IP50	100°	90V ... 264V AC	Neutral white	37
AO000275	754 x 64 x 80mm	Aluminum	IP50	100°	90V ... 264V AC	Neutral white	37
AO000292	1520 x 28 x 39mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	37
AO000358	584 x 85 x 35mm	Aluminum	IP50	110°	21.6V ... 26.4V DC	Cold white	38
AO000372	1020 x 28 x 39mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	38
AO000400	260 x 28 x 39mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	38
AO000404	1004 x 64 x 80mm	Aluminum	IP50	100°	90V ... 264V AC	Neutral white	38
AO000440	520 / Ø28mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	39

WORKPLACE LIGHTS CUBOID

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000482	295 x 85 x 35mm	Aluminum	IP50	100°	21.6V ... 26.4V DC	Cold white	39
AO000483	545 x 85 x 35mm	Aluminum	IP50	100°	21.6V ... 26.4V DC	Cold white	39
AO000484	1045 x 85 x 35mm	Aluminum	IP50	100°	21.6V ... 26.4V DC	Cold white	39
AO000485	1545 x 85 x 35mm	Aluminum	IP50	100°	21.6V ... 26.4V DC	Cold white	40
AO000489	520 / Ø28mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	40
AO000511	545 x 85 x 35mm	Aluminum	IP40	100°	24V ... 24V DC	Cold white	40

WORKPLACE LIGHTS IN PROFILE HOUSING

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000290	2000 x 16 x 12mm	Aluminum	IP40	110°	22V ... 30V DC	Neutral white	43
AO000336	250 x 16 x 12mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	43
AO000337	500 x 16 x 12mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	43
AO000338	750 x 16 x 12mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	43
AO000339	1000 x 16 x 12mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	44
AO000340	250 x 19 x 19mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	44
AO000341	500 x 19 x 19mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	44
AO000342	750 x 19 x 19mm	Aluminum	IP40	110°	16.8V ... 31.2V DC	Cold white	44
AO000343	1000 x 19 x 19mm	Aluminum	IP40	110°	22V ... 30V DC	Cold white	45
AO000381	500 x 16 x 12mm	Aluminum	IP40	110°	22V ... 30V DC	Neutral white	45

FLOODLIGHTS

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000518	212 x 180 x 45mm	Aluminum	IP65	120°	220V ... 240V AC	Cold white	48
AO000519	298 x 256 x 62mm	Aluminum	IP65	120°	220V ... 240V AC	Cold white	48

GOOSENECK LIGHTS

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000289	720mm / Ø171mm	Aluminum	IP50	120°	21.6V ... 26.4V DC	Cold white	51
AO000318	400mm / Ø65mm	Aluminum	IP64	30°	12V ... 28V DC	Cold white	51
AO000345	250mm / Ø70mm	Plastic	IP64	25°	21.6V ... 26.4V DC	Cold white	51
AO000346	250mm / Ø70mm	Plastic	IP64	25°	21.6V ... 26.4V DC	Cold white	51
AO000347	500mm / Ø70mm	Plastic	IP64	25°	21.6V ... 26.4V DC	Cold white	52
AO000348	500mm / Ø70mm	Plastic	IP64	25°	21.6V ... 26.4V DC	Cold white	52
AO000362	500mm / Ø28mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	52
AO000397	600mm / Ø65mm	Aluminum	IP64	30°	12V ... 28V AC/DC	Cold white	52
EB280120	500mm / Ø28mm	Aluminum	IP54	120°	21.6V ... 26.4V DC	Cold white	53

SIGNAL LIGHTS

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000458	283 x 30 x 25mm	Aluminum	IP54	120°	24V ... 24V DC	Multi-colored LED	56
AO000459	547 x 30 x 25mm	Aluminum	IP54	120°	24V ... 24V DC	Multi-colored LED	56

SIGNAL LIGHTS

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000461	M12x1 / 76mm	Stainless steel 1.4305	IP67	150°	10V ... 30V DC	Multi-colored LED	56
AO000486	M12x1 / 47mm	Stainless steel 1.4305	IP67	170°	10V ... 30V DC	Multi-colored LED	56

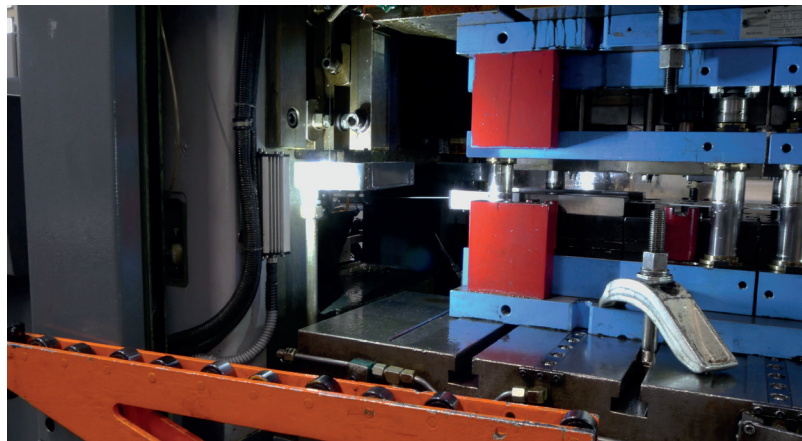
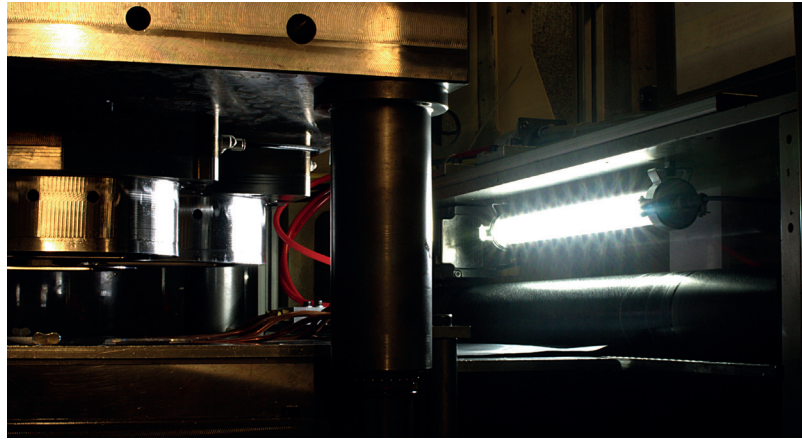
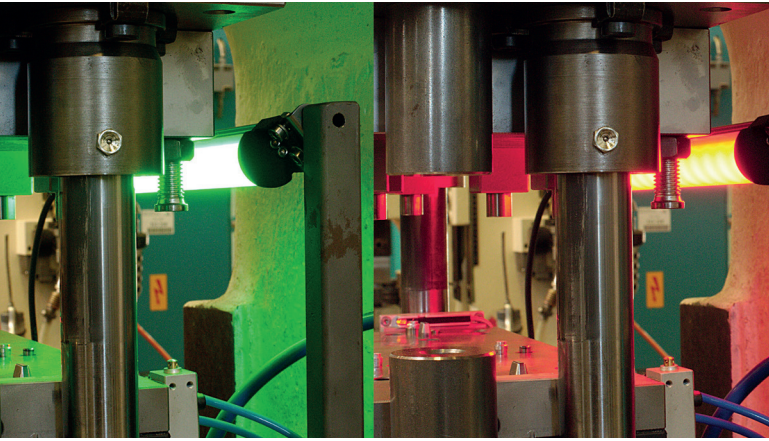
COMBINED MACHINE AND SIGNAL LIGHTS

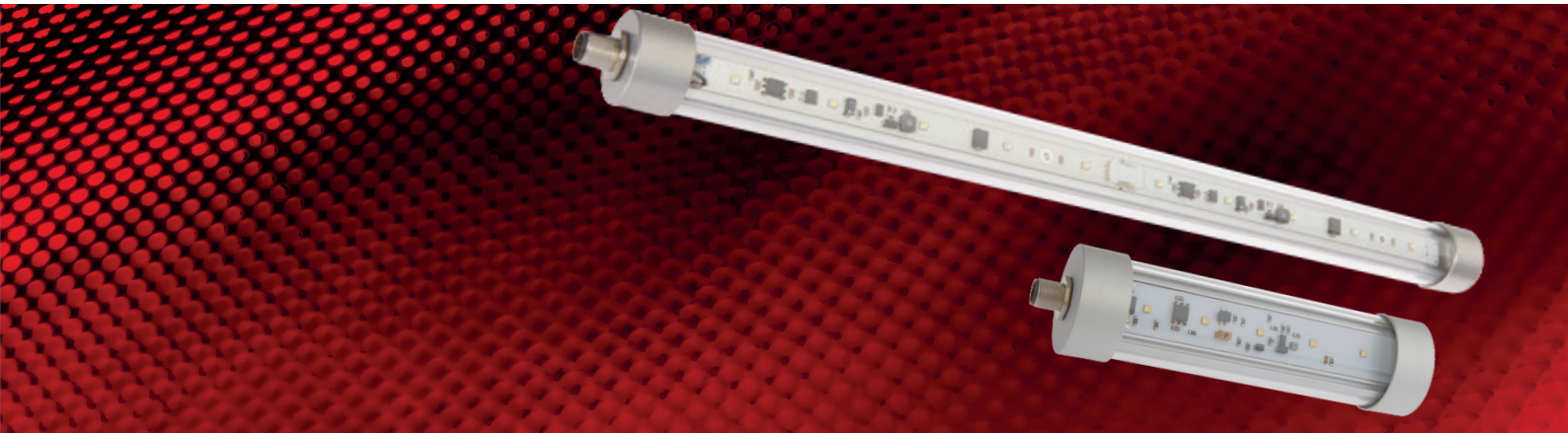
Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000517	280 x 96 x 30mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	59
AO000529	540 x 96 x 30mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	59
AO000532	790 x 96 x 30mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	59
AO000533	1040 x 96 x 30mm	Aluminum	IP67	120°	21.6V ... 26.4V DC	Cold white	59
EM450520	210mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Cold white & RGB	60
EM450521	420mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Cold white & RGB	60
EM450522	600mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Cold white & RGB	60
EM450523	800mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Cold white & RGB	60
EM450524	1000mm / Ø45mm	Aluminum	IP67	80°	22V ... 28V DC	Cold white & RGB	61

HIGH-BAY LIGHTS

Article No.	Dimensions	Housing material	Degree of protection (IP)	Radiation angle	Supply voltage	Light source	Page
AO000531	211mm / Ø282mm	Aluminum	IP65	110°	220V ... 240V AC	Cold white	64

APPLICATION EXAMPLES





- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / High degree of protection

LED LIGHTS

MACHINE LIGHTS TUBULAR

Tubular LED machine lights are characterized by their robust and space-saving design. For different requirements, lights with covers made of different materials are available.

- / Can be used, for example, in machining centers, on grinding machines, on deburring presses or on drilling centers
- / Suitable for original equipment and retrofitting in machines and plants

Article No.	AO000272	AO000294	AO000303	AO000304
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	420mm × Ø 33mm	278mm × Ø 40mm	160mm × Ø 45mm	420mm × Ø 45mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Borosilicate glass	Hard glass	Borosilicate glass	Borosilicate glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-20°C ... 40°C	-30°C ... 40°C	-20°C ... 40°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	12W	12W	6W	14W
Nominal supply voltage	22V ... 28V DC	21.6V ... 26.4V DC	22V ... 28V DC	22V ... 28V DC
Number of pins	4	4	4	4
Protection class	–	–	–	–
Max. current consumption	500mA	500mA	250mA	590mA
Reverse polarity protection	Yes	–	Yes	Yes

Other features

Risk groups	1	0	1	1
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Optical features

Radiation angle	80°	100°	70°	80°
Illuminance at 500mm distance	2337lx	1800lx	1400lx	2900lx
Color temperature	5000K	5500K	4000K	4000K
Light source	Cold white	Cold white	Neutral white	Neutral white

References

Connections	Page 65, No. 4	Page 65, No. 7	Page 65, No. 4	Page 65, No. 4
Dimensional drawing	Page 67, No. 5	Page 68, No. 15	Page 68, No. 18	Page 68, No. 19

Article No.

AO000305

AO000317

AO000369

AO000396

Product image


TECHNICAL DATA

Mechanical features

Dimensions	600mm × Ø 45mm	420mm × Ø 45mm	210mm × Ø 45mm	800mm × Ø 45mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Borosilicate glass	Plastic clear	Borosilicate glass	Borosilicate glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-20°C ... 40°C	-20°C ... 40°C	-20°C ... 40°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	20W	14W	8W	27W
Nominal supply voltage	22V ... 28V DC	22V ... 28V DC	22V ... 28V DC	22V ... 28V DC
Number of pins	4	4	4	4
Protection class	–	–	–	–
Max. current consumption	840mA	600mA	330mA	1125mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

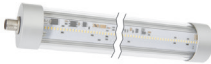
Risk groups	1	1	1	1
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Optical features

Radiation angle	80°	70°	70°	70°
Illuminance at 500mm distance	4300lx	4363lx	–	4674lx
Color temperature	4000K	5000K	5000K	5000K
Light source	Neutral white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 4	Page 65, No. 4	Page 65, No. 6	Page 65, No. 4
Dimensional drawing	Page 68, No. 20	Page 69, No. 23	Page 70, No. 40	Page 71, No. 43

Article No.	AO000431	AO000434	AO000441	AO000442
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	1100mm × Ø 70mm	1580mm × Ø 70mm	210mm × Ø 45mm	420mm × Ø 45mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Borosilicate glass	Borosilicate glass	Borosilicate glass	Borosilicate glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	–	40°C	-20°C ... 40°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	M12-S-connector	M12-S-connector	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	62W	93W	8W	14W
Nominal supply voltage	220V ... 240V AC	220V ... 240V AC	22V ... 28V DC	22V ... 28V DC
Number of pins	–	–	4	4
Protection class	–	–	–	–
Max. current consumption	440mA	330mA	333mA	583mA
Reverse polarity protection	–	–	Yes	Yes

Other features

Risk groups	0	0	1	1
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Optical features

Radiation angle	100°	100°	120°	120°
Illuminance at 500mm distance	4800lx	–	600lx	1500lx
Color temperature	5500K	5500K	4000K	4000K
Light source	Cold white	Cold white	Neutral white	Neutral white

References

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Dimensional drawing	Page 71, No. 49	Page 71, No. 50	Page 72, No. 52	Page 72, No. 53

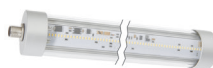
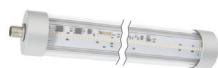
Article No.

AO000443

AO000444

AO000467

AO000470

Product image


TECHNICAL DATA

Mechanical features

Dimensions	600mm × Ø 45mm	800mm × Ø 45mm	562mm × Ø 70mm	278mm × Ø 40mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Borosilicate glass	Borosilicate glass	Hard glass	Plastic diffuse
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-20°C ... 40°C	-20°C ... 40°C	-30°C ... 60°C	-30°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	M12-S-connector	Connector M12
On/Off switch	–	–	–	–
Lamp power	18W	27W	25W	12W
Nominal supply voltage	22V ... 28V DC	22V ... 28V DC	220V ... 240V AC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	–	–	–	–
Max. current consumption	750mA	1125mA	120mA	500mA
Reverse polarity protection	Yes	Yes	–	–

Other features

Risk groups	1	1	0	0
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Optical features

Radiation angle	120°	120°	100°	100°
Illuminance at 500mm distance	1800lx	2200lx	4000lx	1200lx
Color temperature	4000K	4000K	5500K	5500K
Light source	Neutral white	Neutral white	Cold white	Cold white

References

Connections	Page 65, No. 4	Page 65, No. 4	Page 66, No. 10	Page 65, No. 7
Dimensional drawing	Page 72, No. 54	Page 72, No. 55	Page 72, No. 59	Page 72, No. 60

Article No.	AO000471	AO000472	AO000513	AO000514
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	538mm × Ø 40mm	1038mm × Ø 40mm	300mm × Ø 70mm	560mm × Ø 70mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Plastic diffuse	Plastic diffuse	Hard glass	Hard glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-30°C ... 40°C	-30°C ... 40°C	-30°C ... 60°C	-30°C ... 60°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	24W	48W	15W	27W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	–	–	–	–
Max. current consumption	1000mA	2000mA	625mA	1100mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	100°	100°	100°	100°
Illuminance at 500mm distance	2000lx	2200lx	3200lx	5200lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 73, No. 61	Page 73, No. 62	Page 74, No. 76	Page 74, No. 77

Article No.	AO000515	AO000536	EM410120	EM410121
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	1092mm × Ø 70mm	300mm × Ø 70mm	190mm × Ø 40mm	280mm × Ø 40mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Hard glass	Hard glass	Safety glass	Safety glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-30°C ... 60°C	-10°C ... 50°C	-30°C ... 40°C	-30°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	M12-S-connector	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	54W	17W	8W	12W
Nominal supply voltage	24V ... 26.4V DC	220V ... 240V AC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	–	–	III	III
Max. current consumption	2200mA	773mA	333mA	500mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	100°	100°	100°	100°
Illuminance at 500mm distance	6400lx	–	1160lx	1740lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 66, No. 10	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 74, No. 78	Page 76, No. 91	Page 76, No. 93	Page 76, No. 94

Article No.	EM410122	EM410123	EM410124	EM410125
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	365mm × Ø 40mm	540mm × Ø 40mm	715mm × Ø 40mm	1040mm × Ø 40mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Safety glass	Safety glass	Safety glass	Safety glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-30°C ... 40°C	-30°C ... 40°C	-30°C ... 40°C	-30°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	16W	24W	32W	48W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	III	III	III	III
Max. current consumption	667mA	1000mA	1334mA	2000mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	100°	100°	100°	100°
Illuminance at 500mm distance	2280lx	3400lx	4400lx	6200lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 76, No. 95	Page 76, No. 96	Page 76, No. 97	Page 76, No. 98

Article No.
EM500120
EM500121
EM500122
Product image


TECHNICAL DATA

Mechanical features

Dimensions	305mm × Ø 50mm	565mm × Ø 50mm	1065mm × Ø 50mm
Housing design	Pipe	Pipe	Pipe
Front screen material	Polycarbonate	Polycarbonate	Polycarbonate
Degree of protection (IP)	IP67	IP67	IP67
Ambient temperature	-30°C ... 30°C	-30°C ... 30°C	-30°C ... 30°C
Housing material	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–
Lamp power	12W	24W	48W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4
Protection class	III	III	III
Max. current consumption	500mA	1000mA	2000mA
Reverse polarity protection	–	–	–

Other features

Risk groups	0	0	0
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Optical features

Radiation angle	120°	120°	120°
Illuminance at 500mm distance	1350lx	2650lx	5000lx
Color temperature	5200K	5200K	5200K
Light source	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 77, No. 104	Page 77, No. 105	Page 77, No. 106

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / High degree of protection

LED LIGHTS

MACHINE LIGHTS CUBOID

Cuboid LED machine lights are characterized by their robust and space-saving design. For different requirements, lights with covers made of different materials are available.

- / Can be used, for example, in machining centers, on grinding machines, on deburring presses or on drilling centers
- / Suitable for original equipment and retrofitting in machines and plants

Article No.

AO000193

AO000276

AO000401

AO000430

Product image



TECHNICAL DATA

Mechanical features

Dimensions	44 × 44 × 61mm	120 × 25 × 16mm	435.5 × 45.5 × 27mm	143 × 37 × 32mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	Safety glass	Safety glass	Safety glass	Hard glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-40°C ... 50°C	-40°C ... 50°C	-20°C ... 50°C	-10°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Cable connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	4W	4W	16W	10W
Nominal supply voltage	18V ... 30V DC	16V ... 30V DC	16.8V ... 31.2V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	–	–	–	–
Max. current consumption	150mA	160mA	620mA	350mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	1	2	1	0
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Optical features

Radiation angle	120°	80°	120°	120°
Illuminance at 500mm distance	424lx	300lx	1262lx	950lx
Color temperature	6300K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 4	Page 65, No. 4	Page 65, No. 4	Page 65, No. 7
Dimensional drawing	Page 67, No. 3	Page 67, No. 8	Page 71, No. 46	Page 71, No. 48

Article No.

AO000493

AO000494

AO000495

AO000520

Product image



TECHNICAL DATA

Mechanical features

Dimensions	100 × 44 × 15mm	167 × 44 × 15mm	233 × 44 × 15mm	280 × 96 × 30mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	PUR compound, clouded	PUR compound, clouded	PUR compound, clouded	Safety glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-10°C ... 40°C	-10°C ... 40°C	-10°C ... 40°C	-30°C ... 55°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Cable connector M12	Cable connector M12	Cable connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	4W	8W	12W	20W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	III	III	III	III
Max. current consumption	167mA	330mA	500mA	833mA
Reverse polarity protection	Yes	Yes	Yes	–

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	120°	120°	120°	120°
Illuminance at 500mm distance	290lx	600lx	920lx	2800lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 74, No. 72	Page 74, No. 73	Page 74, No. 74	Page 75, No. 82

Article No.

AO000521

AO000534

AO000535

EM900170

Product image



TECHNICAL DATA

Mechanical features

Dimensions	540 × 96 × 30mm	790 × 96 × 30mm	1040 × 96 × 30mm	90 × 32 × 14mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	Safety glass	Safety glass	Safety glass	Acrylic glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-30°C ... 55°C	-30°C ... 55°C	-30°C ... 55°C	-10°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	M8-connector
On/Off switch	–	–	–	–
Lamp power	36W	56W	72W	5W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	22V ... 28V DC
Number of pins	4	4	4	3
Protection class	III	III	III	III
Max. current consumption	1500mA	2335mA	3000mA	167mA
Reverse polarity protection	–	–	–	Yes

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	120°	120°	120°	120°
Illuminance at 500mm distance	4400lx	6800lx	8400lx	560lx
Color temperature	5500K	5500K	5500K	5000K
Light source	Cold white	Cold white	Cold white	Neutral white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7	Page 66, No. 12
Dimensional drawing	Page 75, No. 83	Page 75, No. 89	Page 75, No. 90	Page 77, No. 107

Article No.
EM900171
EM98E169
Product image


TECHNICAL DATA

Mechanical features

Dimensions	155 × 32 × 14mm	330 × 150 × 55mm
Housing design	Cuboid	Cuboid
Front screen material	Acrylic glass	Plastic clear
Degree of protection (IP)	IP67	IP65
Ambient temperature	-20°C ... 40°C	-20°C ... 70°C
Housing material	Aluminium	Aluminium
Type of lamp stand	–	–

Electrical features

Type of electrical connection	M8-connector	Cable
On/Off switch	–	–
Lamp power	8W	32W
Nominal supply voltage	22V ... 28V DC	46V ... 46V DC
Number of pins	3	2
Protection class	III	III
Max. current consumption	334mA	700mA
Reverse polarity protection	Yes	–

Other features

Risk groups	0	1
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Optical features

Radiation angle	120°	–
Illuminance at 500mm distance	560lx	–
Color temperature	5000K	5000K
Light source	Neutral white	Cold white

References

Connections	Page 66, No. 12	Page 65, No. 0
Dimensional drawing	Page 77, No. 108	Page 77, No. 109

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independant of switching cycles
- / No UV- and infrared-proportion
- / High degree of protection

LED LIGHTS

MACHINE LIGHTS ROUND

Round LED machine lights are characterized by their robust and space-saving design.

- / Can be used, for example, in machining centers, on grinding machines, on deburring presses or on drilling centers
- / Suitable for original equipment and retrofitting in machines and plants

Article No.

AO000281

AO000301

AO000302

AO000334

Product image



TECHNICAL DATA

Mechanical features

Dimensions	57mm × Ø 160mm	57mm × Ø 160mm	57mm × Ø 160mm	127mm × Ø 65mm
Housing design	Round	Round	Round	Special construction
Front screen material	Safety glass	Safety glass	Safety glass	Borosilicate glass
Degree of protection (IP)	IP67	IP67	IP67	IP65
Ambient temperature	-40°C ... 50°C	-40°C ... 50°C	-40°C ... 50°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Cable	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	Yes
Lamp power	24W	24W	24W	5W
Nominal supply voltage	16.8V ... 31.2V DC	16.8V ... 31.2V DC	16.8V ... 31.2V DC	12V ... 28V DC
Number of pins	–	4	4	4
Protection class	–	–	–	–
Max. current consumption	1000mA	1000mA	1000mA	210mA
Reverse polarity protection	–	–	–	Yes

Other features

Risk groups	2	2	2	1
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Optical features

Radiation angle	38°	12°	40°	30°
Illuminance at 500mm distance	6028lx	140000lx	18000lx	4000lx
Color temperature	5500K	4000K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 0	Page 65, No. 4	Page 65, No. 4	Page 65, No. 4
Dimensional drawing	Page 67, No. 10	Page 68, No. 16	Page 68, No. 17	Page 69, No. 25

Article No.

AO000491

Product image



TECHNICAL DATA

Mechanical features

Dimensions	50mm × Ø 72mm
Housing design	Round
Front screen material	PUR compound, clear
Degree of protection (IP)	IP67
Ambient temperature	-10°C ... 40°C
Housing material	Aluminium
Type of lamp stand	–

Electrical features

Type of electrical connection	Connector M12
On/Off switch	–
Lamp power	10W
Nominal supply voltage	21.6V ... 26.4V DC
Number of pins	4
Protection class	–
Max. current consumption	420mA
Reverse polarity protection	–

Other features

Risk groups	0
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Optical features

Radiation angle	40°
Illuminance at 500mm distance	6000lx
Color temperature	5500K
Light source	Cold white

References

Connections	Page 65, No. 7
Dimensional drawing	Page 73, No. 70

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / High degree of protection

LED LIGHTS

MACHINE LIGHTS ROUND WITH THREAD

The LED machine lights are characterized by their robust and space-saving design with metric thread.

- / Can be used in almost all machines in places where a high degree of illumination is required at certain points
- / Suitable for original equipment and retrofitting in machines and plants

Article No.	AO000188	AO000189	AO000280	AO000291
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	59mm × M18 × 1mm	59mm × M18 × 1mm	61mm × M8 × 1mm	59mm × M18 × 1mm
Housing design	Cylinder, screw-thread	Cylinder, screw-thread	Cylinder, screw-thread	Cylinder, screw-thread
Front screen material	PMMA clear	PMMA clear	PMMA clear	Safety glass
Degree of protection (IP)	IP65	IP65	IP67	IP65
Ambient temperature	-20°C ... 50°C	-20°C ... 50°C	-20°C ... 70°C	-20°C ... 50°C
Housing material	Stainless steel V2A	Stainless steel V4A	Stainless steel V4A	Stainless steel V4A
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M8	Connector M12
On/Off switch	–	–	–	–
Lamp power	0.7W	0.9W	0.7W	1.95W
Nominal supply voltage	10V ... 30V DC	10V ... 30V DC	10V ... 30V DC	15V ... 30V DC
Number of pins	4	4	3	4
Protection class	–	–	–	–
Max. current consumption	27mA	38mA	3mA	80mA
Reverse polarity protection	–	–	Yes	–

Other features

Risk groups	1	1	1	1
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Optical features

Radiation angle	22°	120°	75°	120°
Illuminance at 500mm distance	320lx	120lx	60lx	380lx
Color temperature	5000K	5000K	5000K	5000K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 66, No. 8	Page 66, No. 8	Page 66, No. 12	Page 66, No. 8
Dimensional drawing	Page 67, No. 1	Page 67, No. 2	Page 67, No. 9	Page 68, No. 13

Article No.

AO000487

AO000492

AO000527

Product image

TECHNICAL DATA
Mechanical features

Dimensions	47mm × M12 × 1mm	59mm × M18 × 1mm	50mm × M12 × 1mm
Housing design	Cylinder, screw-thread	Cylinder, screw-thread	Cylinder, screw-thread
Front screen material	Plastic clear	Acrylic glass	Plastic clear
Degree of protection (IP)	IP67	IP67	IP65
Ambient temperature	-20°C ... 50°C	-20°C ... 50°C	-20°C ... 50°C
Housing material	Stainless steel 1.4305	Stainless steel 1.4305	Stainless steel 1.4305
Type of lamp stand	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Cable axial
On/Off switch	–	–	–
Lamp power	0.9W	2.5W	–
Nominal supply voltage	10V ... 30V DC	15V ... 30V DC	10V ... 30V DC
Number of pins	4	4	–
Protection class	–	–	–
Max. current consumption	36mA	80mA	35mA
Reverse polarity protection	Yes	–	Yes

Other features

Risk groups	1	1	1
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Optical features

Radiation angle	140°	120°	8°
Illuminance at 500mm distance	80lx	300lx	800lx
Color temperature	5000K	5200K	5000K
Light source	Cold white	Cold white	Cold white

References

Connections	Page 66, No. 8	Page 66, No. 8	Page 65, No. 2
Dimensional drawing	Page 73, No. 68	Page 74, No. 71	Page 75, No. 84

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / Shadow-free and glare-free illumination

LED LIGHTS

WORKPLACE LIGHTS TUBULAR

Tubular LED lights are compact surface-mounted lights that illuminate your application area both efficiently and homogeneously as well as flicker- and glare-free.

- / Can be used, among other things, in machines or systems without coolant and chip bombardment
- / Applicable at workplaces such as in industry, in laboratories and in the jewellery and watch industry

Article No.

AO000307

AO000308

Product image



TECHNICAL DATA

Mechanical features

Dimensions	300 × 28 × 23mm	600 × 28 × 23mm
Housing design	Pipe	Pipe
Front screen material	Plastic diffuse	Plastic diffuse
Degree of protection (IP)	IP40	IP40
Ambient temperature	-20°C ... 50°C	-20°C ... 50°C
Housing material	Aluminium	Aluminium
Type of lamp stand	–	–

Electrical features

Type of electrical connection	Cable connector M8	Cable connector M8
On/Off switch	–	–
Lamp power	4.8W	9.6W
Nominal supply voltage	22V ... 30V DC	22V ... 30V DC
Number of pins	3	3
Protection class	–	–
Max. current consumption	200mA	400mA
Reverse polarity protection	–	–

Other features

Risk groups	1	1
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Optical features

Radiation angle	120°	120°
Illuminance at 500mm distance	290lx	590lx
Color temperature	5000K	5000K
Light source	Cold white	Cold white

References

Connections	Page 66, No. 12	Page 66, No. 12
Dimensional drawing	Page 69, No. 21	Page 69, No. 22



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / Shadow-free and glare-free illumination

LED LIGHTS

WORKPLACE LIGHTS CUBOID

Cuboid LED lights are compact surface-mounted luminaires that illuminate your application area both efficiently and homogeneously as well as flicker- and glare-free.

- / Applicable, among other things, in machines or systems without coolant and chip bombardment
- / Can be used at workplaces such as in industry, in laboratories and in the jewellery and watch industry

NOTES

Article No.

AO000261

AO000274

AO000275

AO000292

Product image


TECHNICAL DATA

Mechanical features

Dimensions	504 × 64 × 80mm	254 × 64 × 80mm	754 × 64 × 80mm	1520 × 28 × 39mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	PMMA diffuse	PMMA diffuse	PMMA diffuse	Plastic clear
Degree of protection (IP)	IP50	IP50	IP50	IP54
Ambient temperature	-20°C ... 40°C	-20°C ... 40°C	-20°C ... 40°C	-10°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Earthed plug, angled	Earthed plug, angled	Earthed plug, angled	Connector M12
On/Off switch	Yes	Yes	Yes	–
Lamp power	40W	20W	60W	39W
Nominal supply voltage	90V ... 264V AC	90V ... 264V AC	90V ... 264V AC	21.6V ... 26.4V DC
Number of pins	–	–	–	4
Protection class	–	–	–	–
Max. current consumption	180mA	90mA	270mA	1625mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

Risk groups	1	1	1	0
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Optical features

Radiation angle	100°	100°	100°	120°
Illuminance at 500mm distance	4800lx	2400lx	3600lx	1500lx
Color temperature	4500K	4500K	4500K	5500K
Light source	Neutral white	Neutral white	Neutral white	Cold white

References

Connections	Page 66, No. 14	Page 66, No. 14	Page 66, No. 14	Page 65, No. 7
Dimensional drawing	Page 67, No. 4	Page 67, No. 6	Page 67, No. 7	Page 68, No. 14

Article No.	AO000358	AO000372	AO000400	AO000404
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	584 × 85 × 35mm	1020 × 28 × 39mm	260 × 28 × 39mm	1004 × 64 × 80mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	Plastic diffuse	Plastic diffuse	Plastic diffuse	Borosilicate glass
Degree of protection (IP)	IP50	IP54	IP54	IP50
Ambient temperature	-10°C ... 40°C	-10°C ... 40°C	-10°C ... 40°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Cable with connector
On/Off switch	Yes	–	–	Yes
Lamp power	24W	26W	7W	40W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	90V ... 264V AC
Number of pins	4	4	4	–
Protection class	–	–	–	–
Max. current consumption	1000mA	1083mA	292mA	180mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

Risk groups	0	0	0	1
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Optical features

Radiation angle	110°	120°	120°	100°
Illuminance at 500mm distance	3200lx	1000lx	550lx	2800lx
Color temperature	5500K	5500K	5000K	4500K
Light source	Cold white	Cold white	Cold white	Neutral white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7	Page 66, No. 14
Dimensional drawing	Page 70, No. 38	Page 71, No. 41	Page 71, No. 45	Page 71, No. 47

Article No.	AO000440	AO000482	AO000483	AO000484
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	520mm × Ø 28mm	295 × 85 × 35mm	545 × 85 × 35mm	1045 × 85 × 35mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	Plastic clear	Plastic diffuse	Plastic diffuse	Plastic diffuse
Degree of protection (IP)	IP54	IP50	IP50	IP50
Ambient temperature	-10°C ... 40°C	-10°C ... 40°C	-10°C ... 40°C	-10°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	Yes	Yes	Yes
Lamp power	13W	15W	24W	48W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	–	–	–	–
Max. current consumption	542mA	625mA	1000mA	2000mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	120°	100°	100°	100°
Illuminance at 500mm distance	1500lx	2400lx	4800lx	8400lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 72, No. 51	Page 73, No. 63	Page 73, No. 64	Page 73, No. 65

Article No.

AO000485

AO000489

AO000511

Product image



TECHNICAL DATA

Mechanical features

Dimensions	1545 × 85 × 35mm	520mm × Ø 28mm	545 × 85 × 35mm
Housing design	Cuboid	Cuboid	Cuboid
Front screen material	Plastic diffuse	Plastic diffuse	Plastic diffuse
Degree of protection (IP)	IP50	IP54	IP40
Ambient temperature	-10°C ... 40°C	-10°C ... 40°C	40°C
Housing material	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	Table clamp

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12
On/Off switch	Yes	–	Yes
Lamp power	72W	13W	27W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	24V ... 24V DC
Number of pins	4	4	4
Protection class	–	–	III
Max. current consumption	3000mA	542mA	1125mA
Reverse polarity protection	Yes	Yes	–

Other features

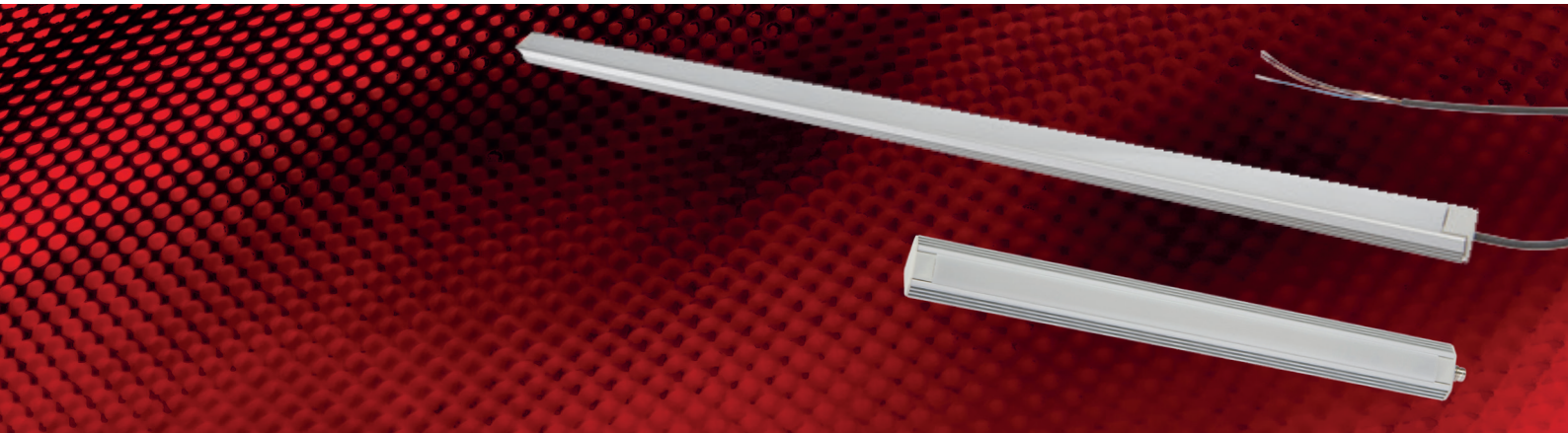
Risk groups	0	0	1
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Optical features

Radiation angle	100°	120°	100°
Illuminance at 500mm distance	10800lx	1000lx	1700lx
Color temperature	5500K	5500K	5200K
Light source	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 7	Page 65, No. 7	Page 65, No. 7
Dimensional drawing	Page 73, No. 66	Page 73, No. 69	Page 74, No. 75



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / Shadow-free and glare-free illumination

LED LIGHTS

WORKPLACE LIGHTS IN PROFILE HOUSINGS

LED workplace lights in profile housings are compact surface-mounted lights that illuminate your application area both efficiently and homogeneously as well as flicker- and glare-free.

- / Applicable, among other things, in machines or systems without coolant and chip bombardment
- / Can be used at workplaces such as in industry, in laboratories and in the jewellery and watch industry

NOTES

Article No.	AO000290	AO000336	AO000337	AO000338
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	2000 × 16 × 12mm	250 × 16 × 12mm	500 × 16 × 12mm	750 × 16 × 12mm
Housing design	Profile	Profile	Profile	Profile
Front screen material	Plastic diffuse	Plastic diffuse	Plastic diffuse	Plastic diffuse
Degree of protection (IP)	IP40	IP40	IP40	IP40
Ambient temperature	-20°C ... 50°C	-20°C ... 50°C	-20°C ... 50°C	-20°C ... 50°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M8	Connector M8	Connector M8	Connector M8
On/Off switch	–	–	–	–
Lamp power	36.5W	4.6W	9.1W	13.7W
Nominal supply voltage	22V ... 30V DC	22V ... 30V DC	22V ... 30V DC	22V ... 30V DC
Number of pins	3	3	3	3
Protection class	–	–	–	–
Max. current consumption	1520mA	190mA	380mA	570mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	1	1	1	1
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Optical features

Radiation angle	110°	110°	110°	110°
Illuminance at 500mm distance	2000lx	240lx	460lx	660lx
Color temperature	4000K	5000K	5000K	5000K
Light source	Neutral white	Cold white	Cold white	Cold white

References

Connections	Page 66, No. 12	Page 66, No. 12	Page 66, No. 12	Page 66, No. 12
Dimensional drawing	Page 68, No. 12	Page 69, No. 26	Page 69, No. 27	Page 69, No. 28

Article No.	AO000339	AO000340	AO000341	AO000342
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	1000 × 16 × 12mm	250 × 19 × 19mm	500 × 19 × 19mm	750 × 19 × 19mm
Housing design	Profile	Profile	Profile	Profile
Front screen material	Plastic diffuse	Plastic diffuse	Plastic diffuse	Plastic diffuse
Degree of protection (IP)	IP40	IP40	IP40	IP40
Ambient temperature	-20°C ... 50°C	-20°C ... 50°C	-20°C ... 50°C	-20°C ... 50°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M8	Connector M8	Connector M8	Connector M8
On/Off switch	–	–	–	–
Lamp power	18.2W	4.6W	9.1W	13.7W
Nominal supply voltage	22V ... 30V DC	22V ... 30V DC	22V ... 30V DC	16.8V ... 31.2V DC
Number of pins	3	3	3	3
Protection class	–	–	–	–
Max. current consumption	760mA	190mA	380mA	570mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	1	1	1	1
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Optical features

Radiation angle	110°	110°	110°	110°
Illuminance at 500mm distance	800lx	288lx	548lx	788lx
Color temperature	5000K	5000K	5000K	5000K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 66, No. 12	Page 66, No. 12	Page 66, No. 12	Page 66, No. 12
Dimensional drawing	Page 69, No. 29	Page 69, No. 30	Page 70, No. 31	Page 70, No. 32

Article No.

AO000343

AO000381

Product image



TECHNICAL DATA

Mechanical features

Dimensions	1000 × 19 × 19mm	500 × 16 × 12mm
Housing design	Profile	Profile
Front screen material	Plastic diffuse	Plastic diffuse
Degree of protection (IP)	IP40	IP40
Ambient temperature	-20°C ... 50°C	-20°C ... 50°C
Housing material	Aluminium	Aluminium
Type of lamp stand	–	–

Electrical features

Type of electrical connection	Connector M8	Cable
On/Off switch	–	–
Lamp power	18.2W	9W
Nominal supply voltage	22V ... 30V DC	22V ... 30V DC
Number of pins	3	–
Protection class	–	–
Max. current consumption	760mA	380mA
Reverse polarity protection	–	–

Other features

Risk groups	1	1
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Optical features

Radiation angle	110°	110°
Illuminance at 500mm distance	976lx	–
Color temperature	5000K	4000K
Light source	Cold white	Neutral white

References

Connections	Page 66, No. 12	Page 65, No. 1
Dimensional drawing	Page 70, No. 33	Page 71, No. 42

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / High degree of protection
- / No warm-up period

LED LIGHTS

FLOODLIGHTS

LED floodlights have an aluminum housing with a clear front screen made of safety glass. The spotlights have protection class IP65 and do not require preheating times so that they can be switched on directly.

- / Applicable, among other things, in machines or systems in which large areas must be illuminated
- / Can be used also as high-bay light

Article No.

AO000518

AO000519

Product image



TECHNICAL DATA

Mechanical features

Dimensions	212 × 180 × 45mm	298 × 256 × 62mm
Housing design	Cuboid	Cuboid
Front screen material	Safety glass	Safety glass
Degree of protection (IP)	IP65	IP65
Ambient temperature	-20°C ... 40°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium
Type of lamp stand	–	–

Electrical features

Type of electrical connection	Clamp	Clamp
On/Off switch	–	–
Lamp power	30W	50W
Nominal supply voltage	220V ... 240V AC	220V ... 240V AC
Number of pins	–	–
Protection class	I	–
Max. current consumption	–	–
Reverse polarity protection	Yes	Yes

Other features

Risk groups	0	0
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Optical features

Radiation angle	120°	120°
Illuminance at 500mm distance	–	–
Color temperature	6000K	6000K
Light source	Cold white	Cold white

References

Connections	Page 66, No. 14	Page 66, No. 14
Dimensional drawing	Page 74, No. 80	Page 75, No. 81



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / Flexibly alignable

LED LIGHTS

GOOSENECK LIGHTS

LED gooseneck lights consist of an aluminum housing, a flexible light arm with a splash-proof light head and a break-proof glass cover.

- / Can be used on systems and machines
- / Can be used also as a table lamp for workbenches, at test stations, as microscope lighting or similar

NOTES

Article No.
AO000289
AO000318
AO000345
AO000346
Product image


TECHNICAL DATA

Mechanical features

Dimensions	720mm × Ø 171mm	400mm × Ø 65mm	250mm × Ø 70mm	250mm × Ø 70mm
Housing design	Gooseneck	Gooseneck	Gooseneck	Gooseneck
Front screen material	Hard glass	Borosilicate glass	Hard glass	Hard glass
Degree of protection (IP)	IP50	IP64	IP64	IP64
Ambient temperature	-10°C ... 40°C	-20°C ... 40°C	-30°C ... 60°C	-30°C ... 60°C
Housing material	Aluminium	Aluminium	Plastic	Plastic
Type of lamp stand	Adhesive magnet	Adhesive magnet	Adhesive magnet	Screw-on plate

Electrical features

Type of electrical connection	Plug-in connection	Connector M12	Connector M12	Connector M12
On/Off switch	Yes	Yes	Yes	Yes
Lamp power	8W	4W	8.5W	8.5W
Nominal supply voltage	21.6V ... 26.4V DC	12V ... 28V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	—	4	4	4
Protection class	—	—	—	—
Max. current consumption	300mA	210mA	355mA	355mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

Risk groups	0	1	0	0
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Optical features

Radiation angle	120°	30°	25°	25°
Illuminance at 500mm distance	1200lx	4000lx	6000lx	6000lx
Color temperature	5500K	6000K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 4	Page 65, No. 4	Page 66, No. 13	Page 66, No. 13
Dimensional drawing	Page 68, No. 11	Page 69, No. 24	Page 70, No. 34	Page 70, No. 35

Article No.

AO000347

AO000348

AO000362

AO000397

Product image



TECHNICAL DATA

Mechanical features

Dimensions	500mm × Ø 70mm	500mm × Ø 70mm	500mm × Ø 28mm	600mm × Ø 65mm
Housing design	Gooseneck	Gooseneck	Gooseneck	Gooseneck
Front screen material	Hard glass	Hard glass	Acrylic glass	Safety glass
Degree of protection (IP)	IP64	IP64	IP54	IP64
Ambient temperature	-30°C ... 60°C	-30°C ... 60°C	-10°C ... 40°C	-20°C ... 40°C
Housing material	Plastic	Plastic	Aluminium	Aluminium
Type of lamp stand	Adhesive magnet	Screw-on plate	Screw-on plate	Adhesive magnet

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	Yes	Yes	Yes	Yes
Lamp power	8.5W	8.5W	12W	5W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	12V ... 28V AC/DC
Number of pins	4	4	4	4
Protection class	—	—	—	—
Max. current consumption	355mA	355mA	500mA	210mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

Risk groups	0	0	0	1
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Optical features

Radiation angle	25°	25°	120°	30°
Illuminance at 500mm distance	6000lx	6000lx	1000lx	4500lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 66, No. 13	Page 66, No. 13	Page 65, No. 7	Page 65, No. 4
Dimensional drawing	Page 70, No. 36	Page 70, No. 37	Page 70, No. 39	Page 71, No. 44

Article No. EB280120

Product image



TECHNICAL DATA

Mechanical features

Dimensions	500mm × Ø 28mm
Housing design	Gooseneck
Front screen material	Acrylic glass
Degree of protection (IP)	IP54
Ambient temperature	-10°C ... 40°C
Housing material	Aluminium
Type of lamp stand	Adhesive magnet

Electrical features

Type of electrical connection	Connector M12
On/Off switch	Yes
Lamp power	13W
Nominal supply voltage	21.6V ... 26.4V DC
Number of pins	4
Protection class	III
Max. current consumption	500mA
Reverse polarity protection	Yes

Other features

Risk groups	0
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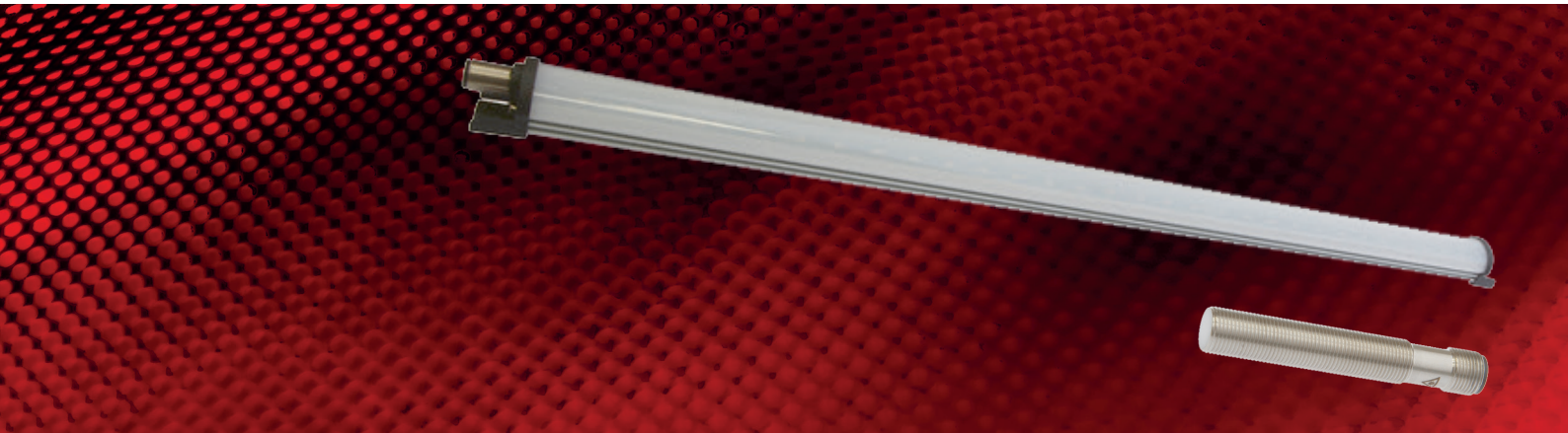
Optical features

Radiation angle	120°
Illuminance at 500mm distance	1000lx
Color temperature	5500K
Light source	Cold white

References

Connections	Page 65, No. 7
Dimensional drawing	Page 76, No. 92

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independant of switching cycles
- / No UV- and infrared-proportion
- / Up to 7 colors

LED LIGHTS

SIGNAL LIGHTS

LED signal lights are used to display plant or machine statuses. In addition to the colors red, green and blue, mixed colors can also be created with the RGB LED light.

- / To indicate e.g. failures red lighting, during normal operation green lighting

Article No.	AO000458	AO000459	AO000461	AO000486
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	283 × 30 × 25mm	547 × 30 × 25mm	76mm × M12 × 1mm	47mm × M12 × 1mm
Housing design	Cuboid	Cuboid	Cylinder, screw-thread	Cylinder, screw-thread
Front screen material	Plastic diffuse	Plastic	PUR compound, clouded	Plastic diffuse
Degree of protection (IP)	IP54	IP54	IP67	IP67
Ambient temperature	-10°C ... 40°C	-10°C ... 40°C	-20°C ... 50°C	-20°C ... 50°C
Housing material	Aluminium	Aluminium	Stainless steel 1.4305	Stainless steel 1.4305
Type of lamp stand	Screw-on plate	Screw-on plate	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	8W	16W	0.9W	0.9W
Nominal supply voltage	24V ... 24V DC	24V ... 24V DC	10V ... 30V DC	10V ... 30V DC
Number of pins	5	5	4	4
Protection class	III	III	–	–
Max. current consumption	330mA	660mA	21mA	16mA
Reverse polarity protection	–	–	–	Yes

Other features

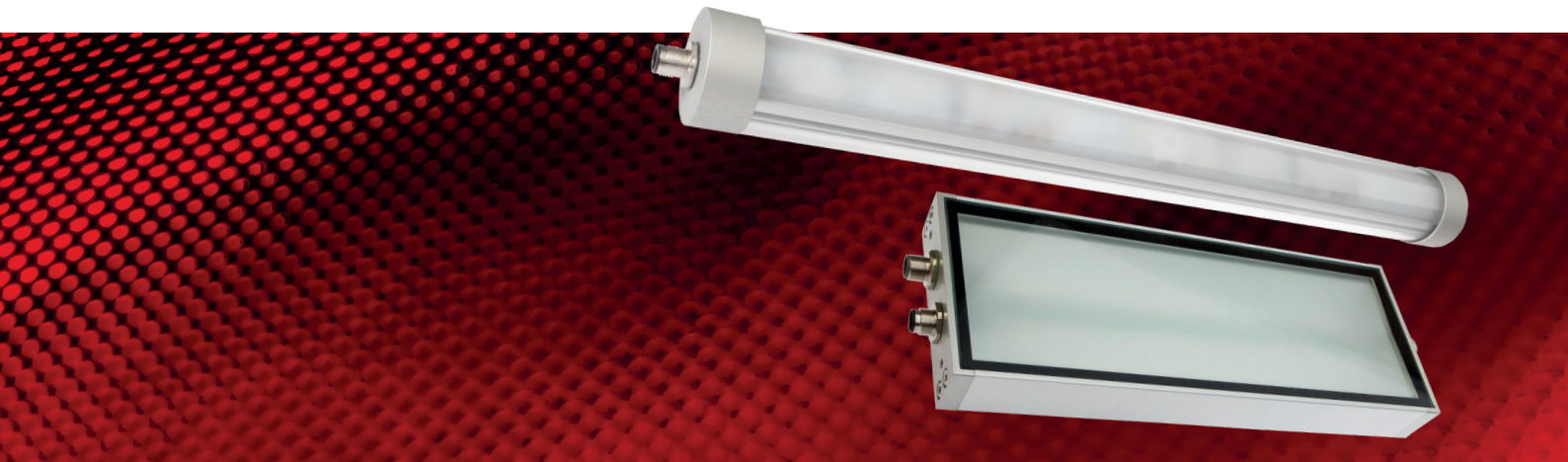
Risk groups	0	0	1	1
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Optical features

Radiation angle	120°	120°	150°	170°
Illuminance at 500mm distance	–	–	4lx	–
Color temperature	–	–	–	–
Light source	Multi-colored LED	Multi-colored LED	Multi-colored LED	Multi-colored LED

References

Connections	Page 66, No. 9	Page 66, No. 9	Page 65, No. 5	Page 65, No. 5
Dimensional drawing	Page 72, No. 56	Page 72, No. 57	Page 72, No. 58	Page 73, No. 67



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independent of switching cycles
- / No UV- and infrared-proportion
- / High degree of protection

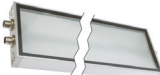
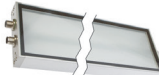
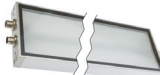
LED LIGHTS

COMBINED MACHINE AND SIGNAL LIGHTS

Combined LED machine and signal lights can in addition to the display of plant and machine conditions also be used as normal machine lights. Apart from the colors red, green and blue, mixed colors can also be created with the RGB LED.

- / To indicate e.g. failures red lighting, during normal operation green lighting
- / Can be used, for example, in machining centers, on grinding machines, on deburring presses or on drilling centers
- / Suitable for original equipment and retrofitting in machines and plants

NOTES

Article No.	AO000517	AO000529	AO000532	AO000533
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	280 × 96 × 30mm	540 × 96 × 30mm	790 × 96 × 30mm	1040 × 96 × 30mm
Housing design	Cuboid	Cuboid	Cuboid	Cuboid
Front screen material	Safety glass	Safety glass	Safety glass	Safety glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-30°C ... 55°C	-30°C ... 55°C	-30°C ... 55°C	-30°C ... 55°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	14W	24W	24W	24W
Nominal supply voltage	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC	21.6V ... 26.4V DC
Number of pins	4	4	4	4
Protection class	III	III	III	III
Max. current consumption	580mA	1000mA	1585mA	2000mA
Reverse polarity protection	–	–	–	–

Other features

Risk groups	0	0	0	0
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Optical features

Radiation angle	120°	120°	120°	120°
Illuminance at 500mm distance	1400lx	2800lx	4000lx	1250lx
Color temperature	5500K	5500K	5500K	5500K
Light source	Cold white	Cold white	Cold white	Cold white

References

Connections	Page 65, No. 3	Page 65, No. 3	Page 65, No. 3	Page 65, No. 3
Dimensional drawing	Page 74, No. 79	Page 75, No. 85	Page 75, No. 87	Page 75, No. 88

Article No.	EM450520	EM450521	EM450522	EM450523
Product image				

TECHNICAL DATA

Mechanical features

Dimensions	210mm × Ø 45mm	420mm × Ø 45mm	600mm × Ø 45mm	800mm × Ø 45mm
Housing design	Pipe	Pipe	Pipe	Pipe
Front screen material	Borosilicate glass	Borosilicate glass	Borosilicate glass	Borosilicate glass
Degree of protection (IP)	IP67	IP67	IP67	IP67
Ambient temperature	-20°C ... 40°C	-20°C ... 40°C	-20°C ... 40°C	-20°C ... 40°C
Housing material	Aluminium	Aluminium	Aluminium	Aluminium
Type of lamp stand	–	–	–	–

Electrical features

Type of electrical connection	Connector M12	Connector M12	Connector M12	Connector M12
On/Off switch	–	–	–	–
Lamp power	6W	12W	18W	24W
Nominal supply voltage	22V ... 28V DC	22V ... 28V DC	22V ... 28V DC	22V ... 28V DC
Number of pins	5	5	5	5
Protection class	–	–	–	–
Max. current consumption	250mA	545mA	820mA	1090mA
Reverse polarity protection	Yes	Yes	Yes	Yes

Other features

Risk groups	1	1	1	1
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Optical features

Radiation angle	80°	80°	80°	80°
Illuminance at 500mm distance	–	–	–	–
Color temperature	5000K	5000K	5000K	5000K
Light source	Cold white & RGB	Cold white & RGB	Cold white & RGB	Cold white & RGB

References

Connections	Page 66, No. 11	Page 66, No. 11	Page 66, No. 11	Page 66, No. 11
Dimensional drawing	Page 76, No. 99	Page 76, No. 100	Page 77, No. 101	Page 77, No. 102

Article No. EM450524

Product image



TECHNICAL DATA

Mechanical features

Dimensions	1000mm × Ø 45mm
Housing design	Pipe
Front screen material	Borosilicate glass
Degree of protection (IP)	IP67
Ambient temperature	-20°C ... 40°C
Housing material	Aluminium
Type of lamp stand	–

Electrical features

Type of electrical connection	Connector M12
On/Off switch	–
Lamp power	30W
Nominal supply voltage	22V ... 28V DC
Number of pins	5
Protection class	–
Max. current consumption	1365mA
Reverse polarity protection	Yes

Other features

Risk groups	1
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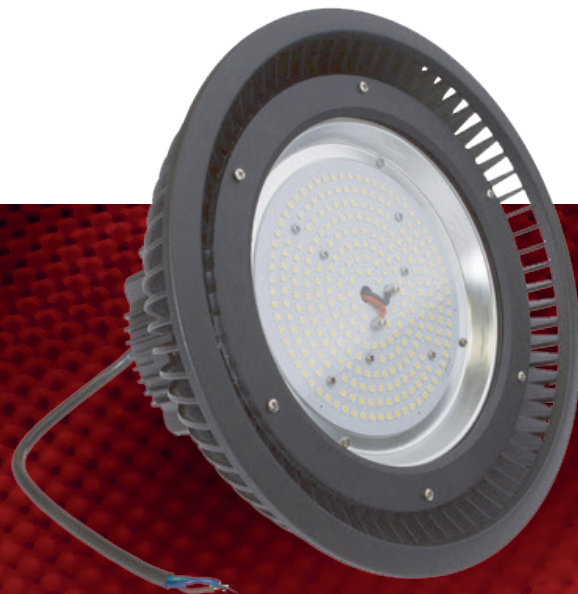
Optical features

Radiation angle	80°
Illuminance at 500mm distance	–
Color temperature	5000K
Light source	Cold white & RGB

References

Connections	Page 66, No. 11
Dimensional drawing	Page 77, No. 103

NOTES



- / Flicker-free light
- / Energy-efficient
- / Long service life
- / Service life independant of switching cycle
- / No UV- and infrared-proportion
- / Shock- and vibration-resistant

LED LIGHTS

HIGH-BAY LIGHTS

LED high-bay lights produce homogeneous light without UV or IR radiation. They are energy-efficient, maintenance-free and impact and vibration resistant.

- / For lighting halls and large storage rooms
- / Suitable on machines or systems where large areas have to be properly illuminated

Article No.

AO000531

Product image

**TECHNICAL DATA****Mechanical features**

Dimensions	211mm × Ø 282mm
Housing design	Round
Front screen material	Safety glass
Degree of protection (IP)	IP65
Ambient temperature	-20°C ... 40°C
Housing material	Aluminium
Type of lamp stand	–

Electrical features

Type of electrical connection	Clamp
On/Off switch	–
Lamp power	150W
Nominal supply voltage	220V ... 240V AC
Number of pins	–
Protection class	–
Max. current consumption	–
Reverse polarity protection	Yes

Other features

Risk groups	0
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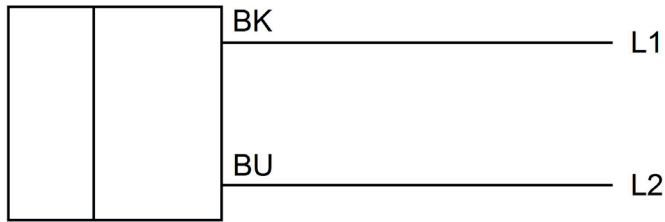
Optical features

Radiation angle	110°
Illuminance at 500mm distance	–
Color temperature	6000K
Light source	Cold white

References

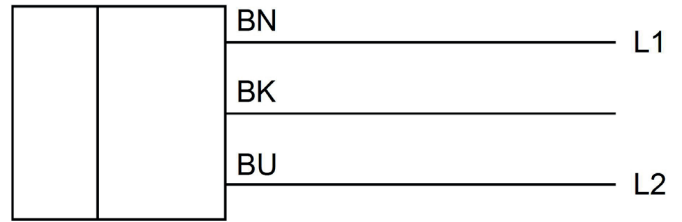
Connections	Page 66, No. 14
Dimensional drawing	Page 75, No. 86

Number: 0



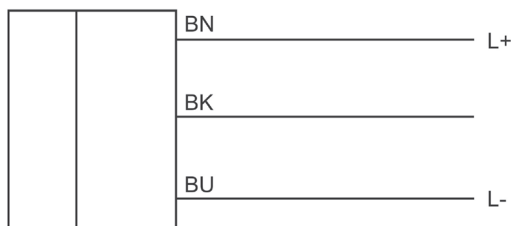
Colors: BK (black), BU (blue)
Functions: BK = L+, BU = L-

Number: 1



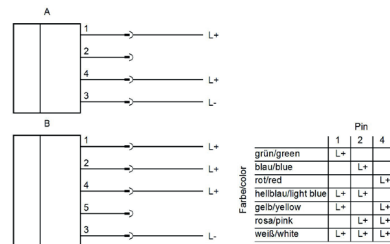
Colors: BN (brown), BU (blue), BK (black)
Functions: BN = L+, BU = L-, BK = n. c.

Number: 2



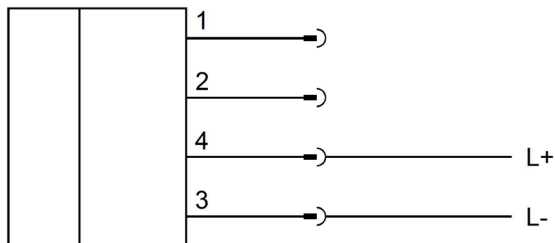
Colors: 1 = BN (brown), 2 = BK (black), 3 = BU (blue)
Functions: BN = L+, BU = L-, BK = n. c.

Number: 3



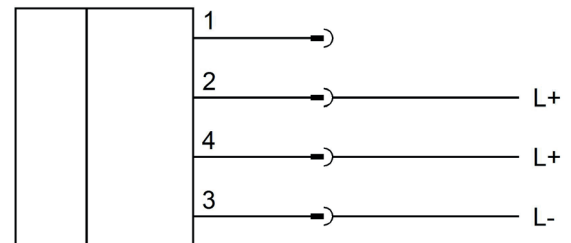
Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)
Functions: 1 = L+, 2 = n. c., 3 = L-, 4 = L+

Number: 4



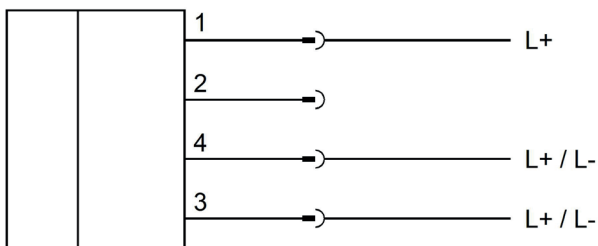
Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)
Functions: 1 = n. c., 2 = n. c., 3 = L-, 4 = L+

Number: 5



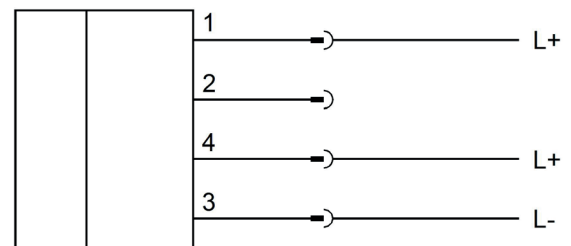
Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)
Functions: 1 = n. c., 2 = L+, 3 = L-, 4 = L+

Number: 6



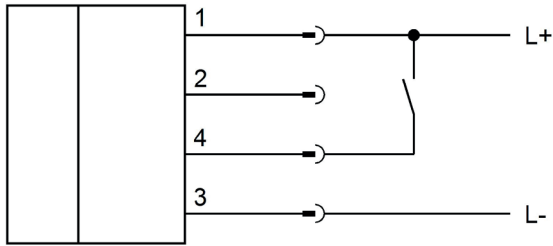
Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)
Functions: 1 = L+, 2 = n. c., 3 = L+/L-, 4 = L+/L-

Number: 7



Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)
Functions: 1 = L+, 2 = n. c., 3 = L-, 4 = L+

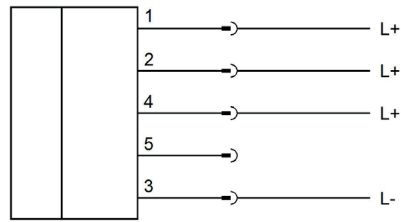
Number: 8



Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)

Functions: 1 = L+, 2 = n. c., 3 = L-, 4 = L+ LED off

Number: 9

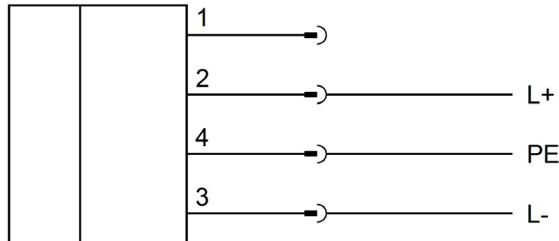


Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black), 5 = GY (gray)

Functions: 1 = L+, 2 = L+, 3 = L-, 4 = L+, 5 = n. c.

Farbe/color	Pin			
	1	2	4	
grün	L+			
blau		L+		
rot			L+	
hellblau	L+	L+		
gelb		L+		L+
pink		L+	L+	
weiß	L+	L+	L+	

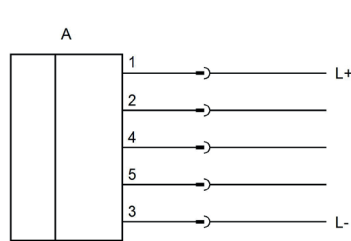
Number: 10



Colors: 1 = n.c., 2 = BN (brown), 3 = BU (blue), 4 = GN/YE (green/yellow)

Functions: 1 = n. c., 2 = L+, 3 = L-, 4 = PE

Number: 11



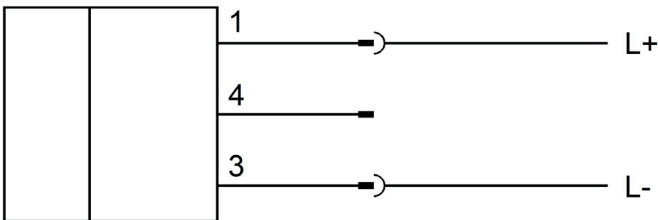
Colors: A: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)

Functions: A: 1 = L+, 2 = Control 1, 3 = L-, 4 = Control 2, 5 = Control 3

B: LO = light off, RD = red, GN = green, BU = blue, OR = orange, LBU = light blue, PK = pink, WH = white

PIN	B			
	2	4	5	
LO	L-	L-	L-	
RD	L+	L-	L-	
GN	L-	L+	L-	
BU	L-	L-	L+	
OR	L+	L+	L-	
LBU	L-	L+	L+	
PK	L+	L-	L+	
WH	L+	L+	L+	

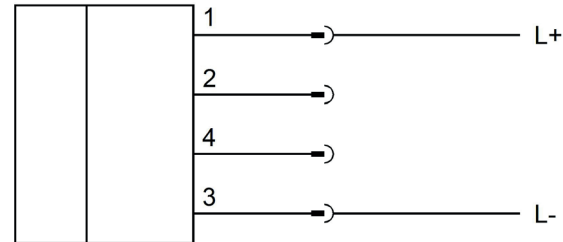
Number: 12



Colors: 1 = BN (brown), 3 = BU (blue), 4 = BK (black)

Functions: 1 = L+, 3 = L-, 4 = n. c.

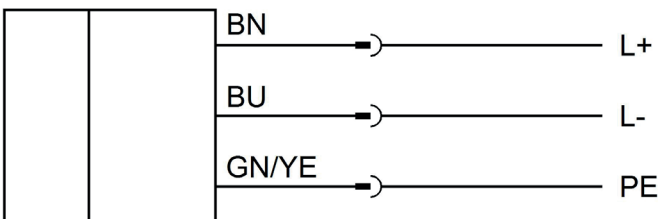
Number: 13



Colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)

Functions: 1 = L+, 2 = n. c., 3 = L-, 4 = n. c.

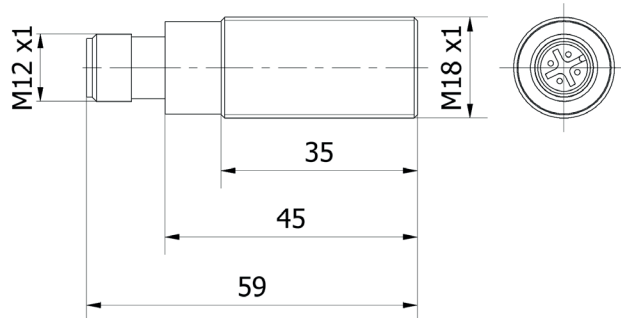
Number: 14



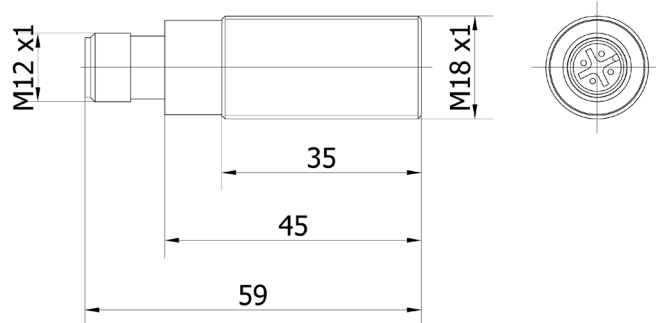
Colors: BN (brown), BU (blue), GN/YE (green/yellow)

Functions: BN = L+, BU = L-, GN/YE = PE

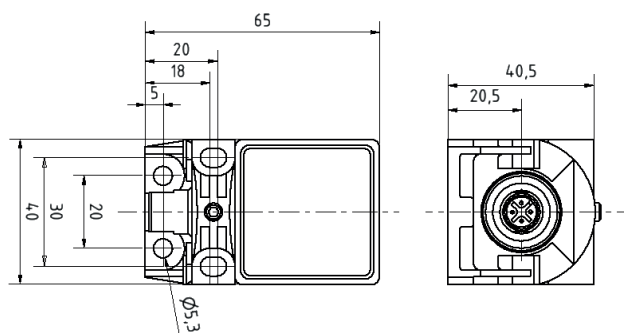
Number: 1



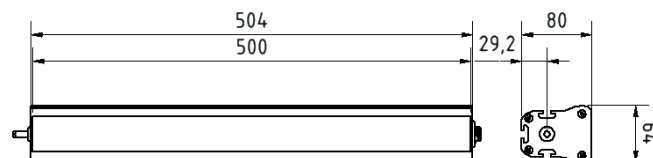
Number: 2



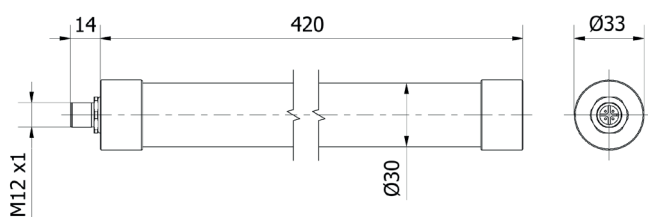
Number: 3



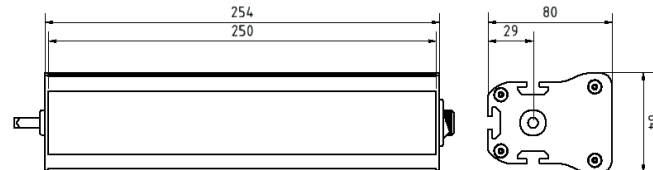
Number: 4



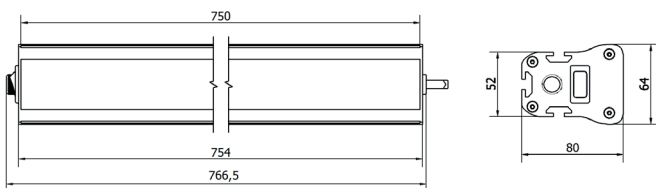
Number: 5



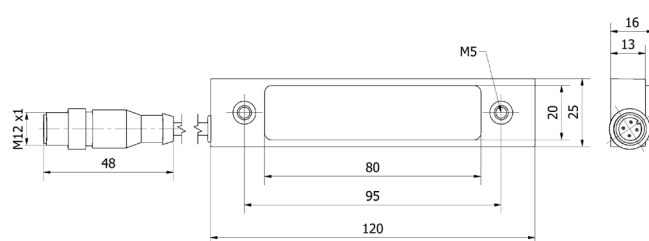
Number: 6



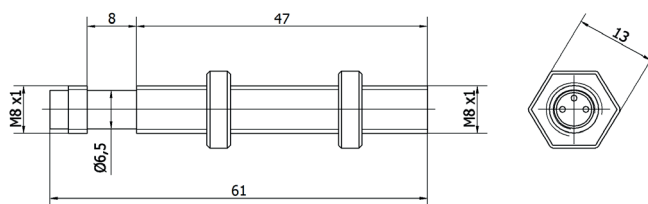
Number: 7



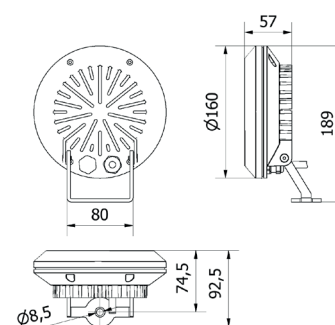
Number: 8



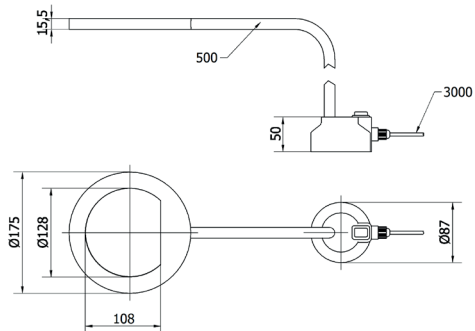
Number: 9



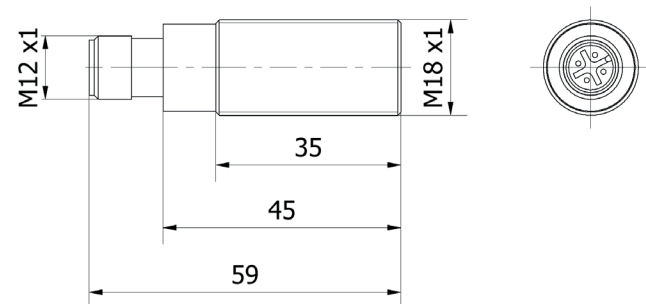
Number: 10



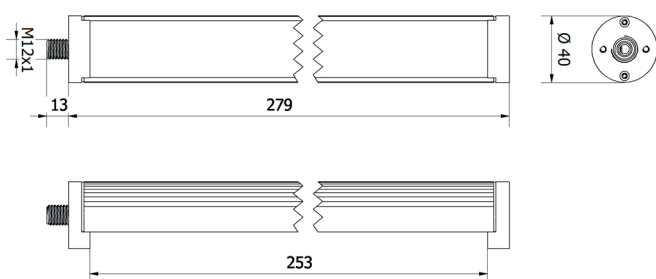
Number: 11



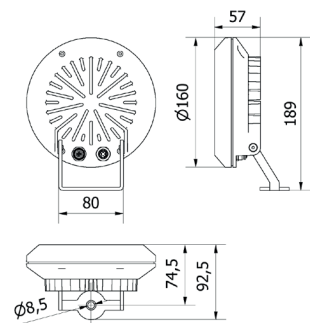
Number: 13



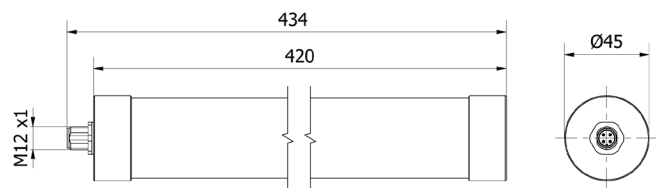
Number: 15



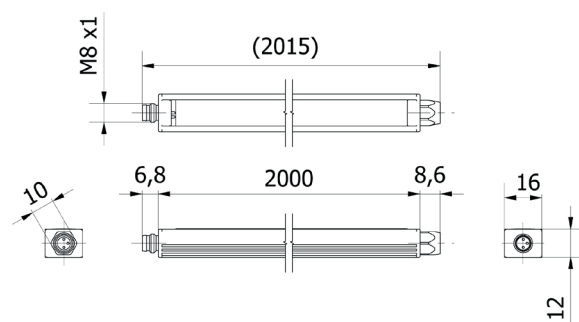
Number: 17



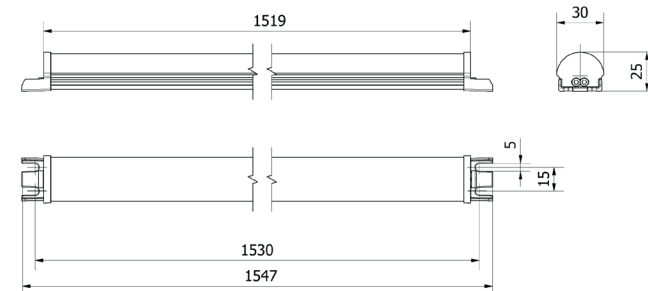
Number: 19



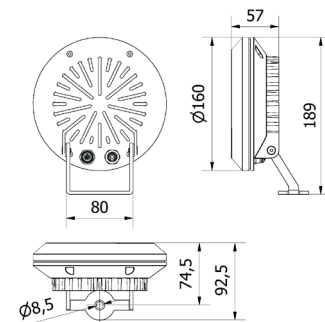
Number: 12



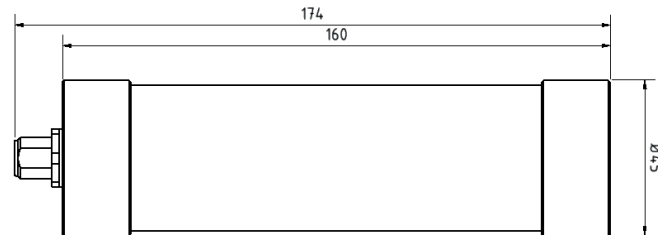
Number: 14



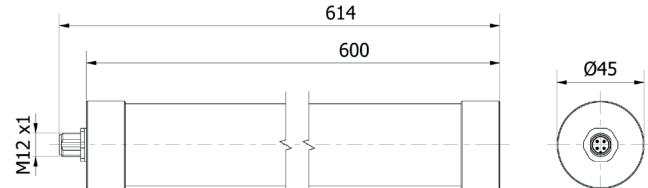
Number: 16



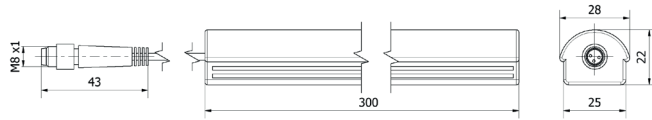
Number: 18



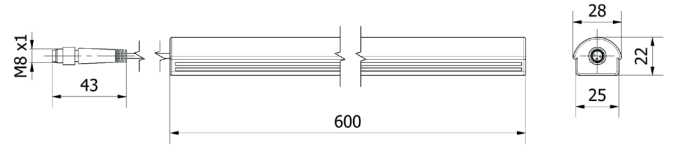
Number: 20



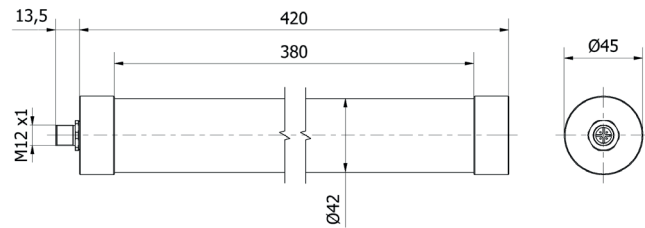
Number: 21



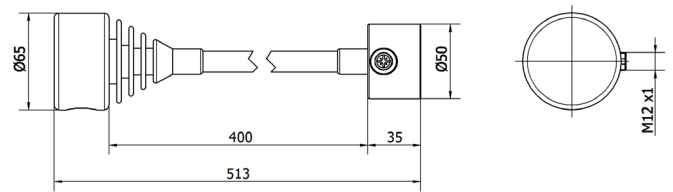
Number: 22



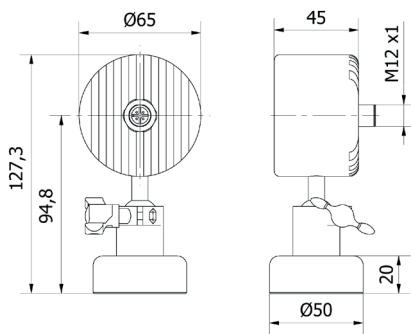
Number: 23



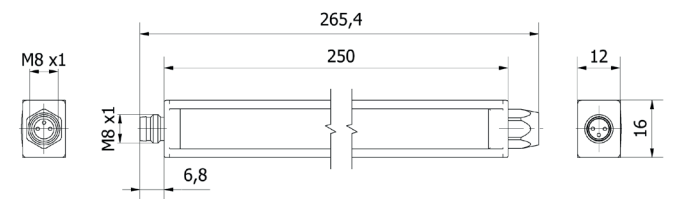
Number: 24



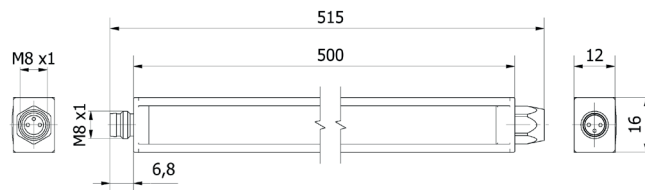
Number: 25



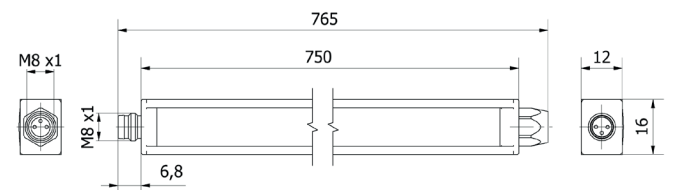
Number: 26



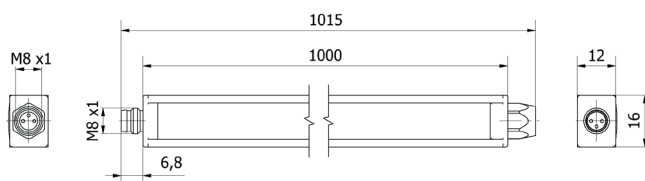
Number: 27



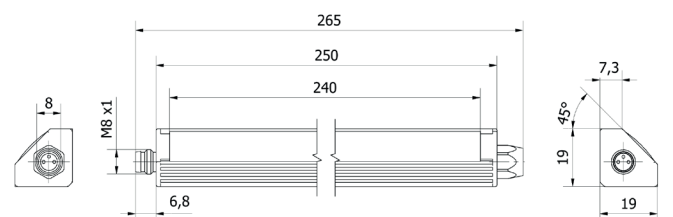
Number: 28



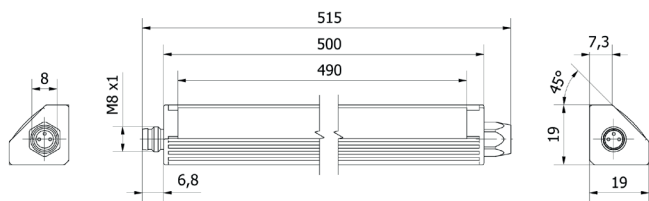
Number: 29



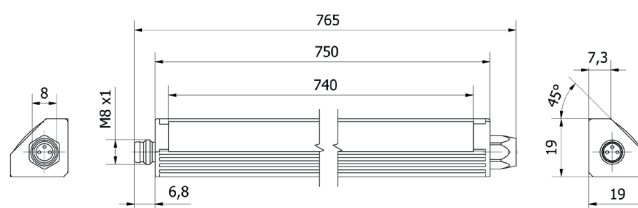
Number: 30



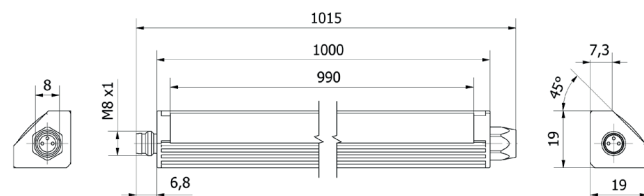
Number: 31



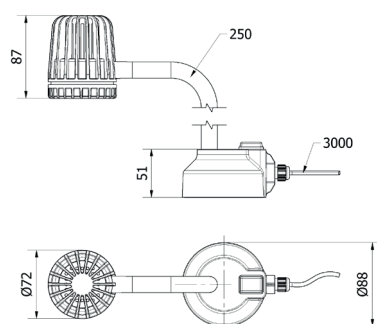
Number: 32



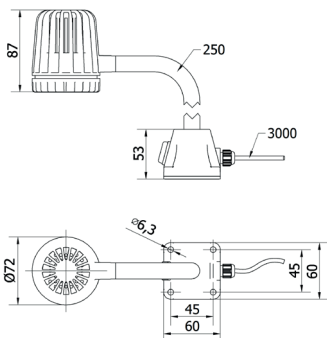
Number: 33



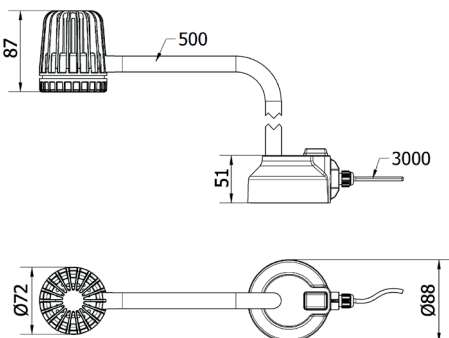
Number: 34



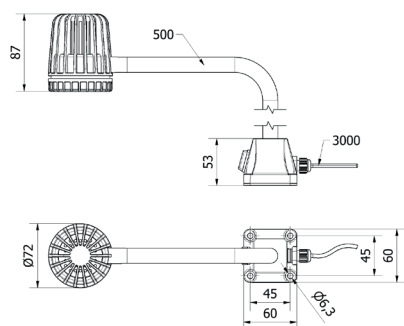
Number: 35



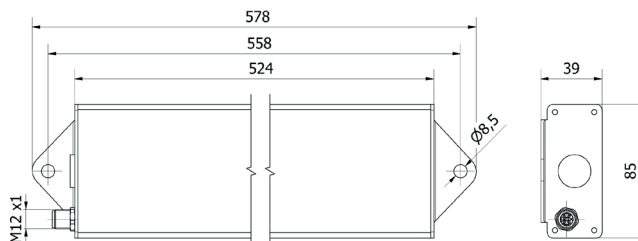
Number: 36



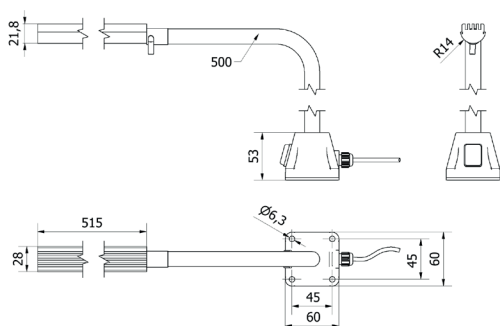
Number: 37



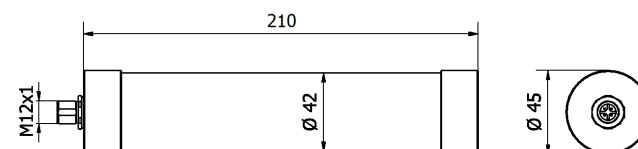
Number: 38



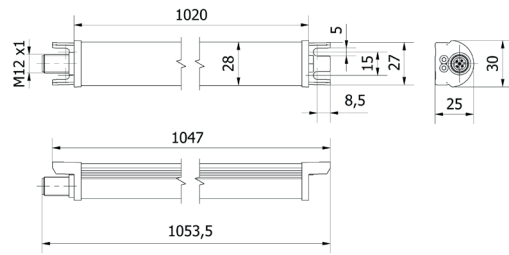
Number: 39



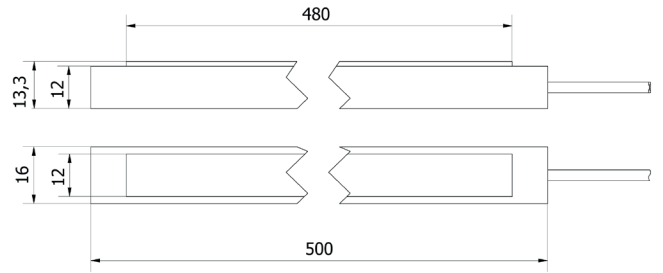
Number: 40



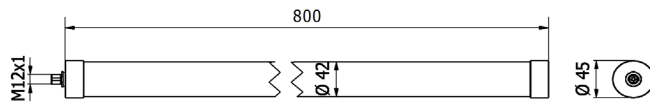
Number: 41



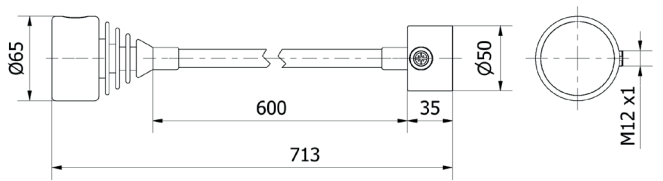
Number: 42



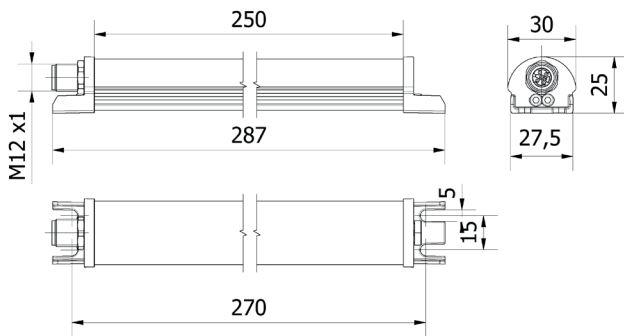
Number: 43



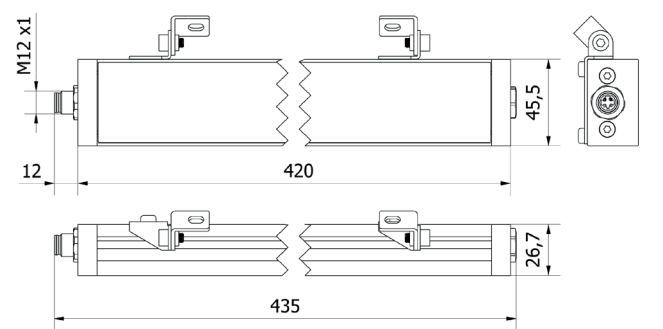
Number: 44



Number: 45



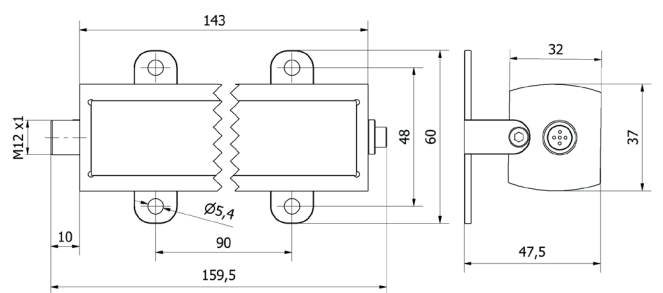
Number: 46



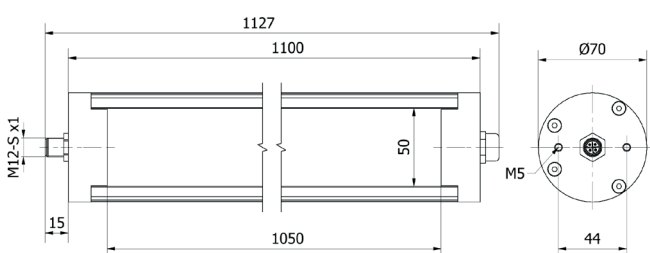
Number: 47



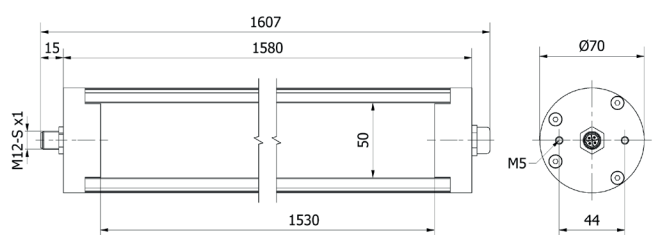
Number: 48



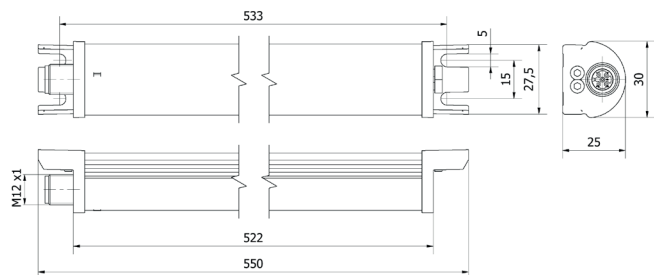
Number: 49



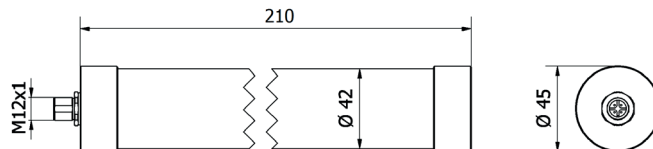
Number: 50



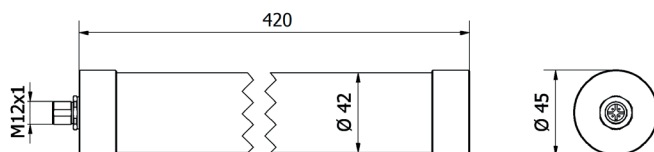
Number: 51



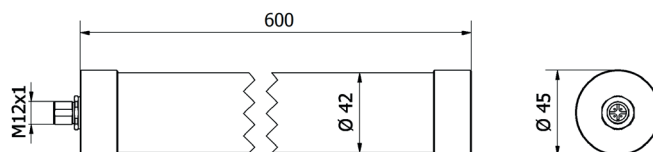
Number: 52



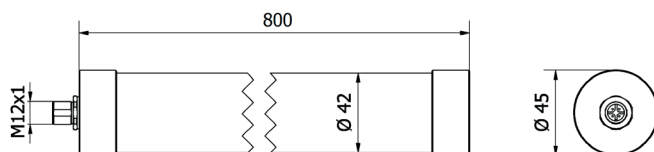
Number: 53



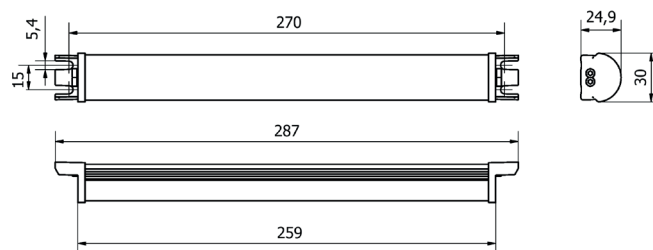
Number: 54



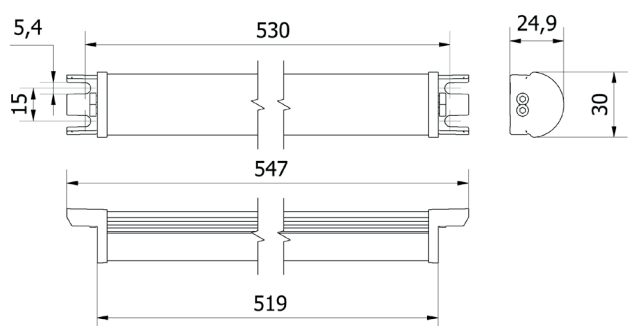
Number: 55



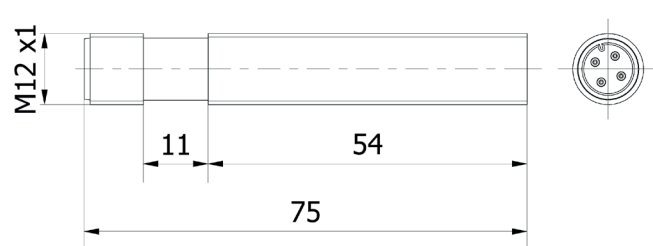
Number: 56



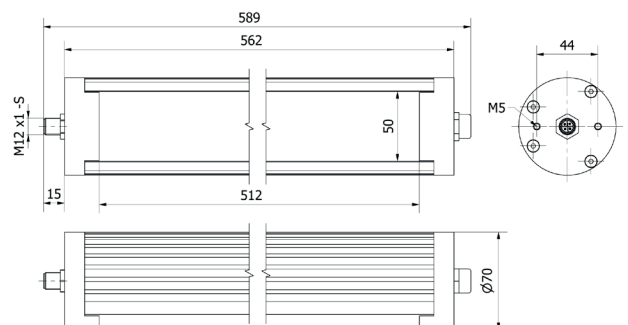
Number: 57



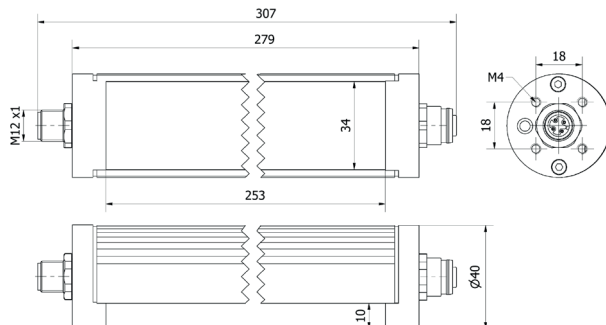
Number: 58



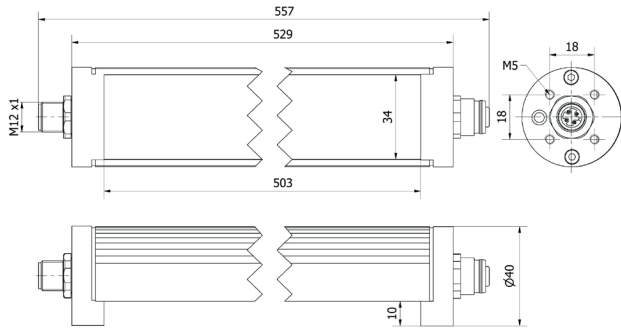
Number: 59



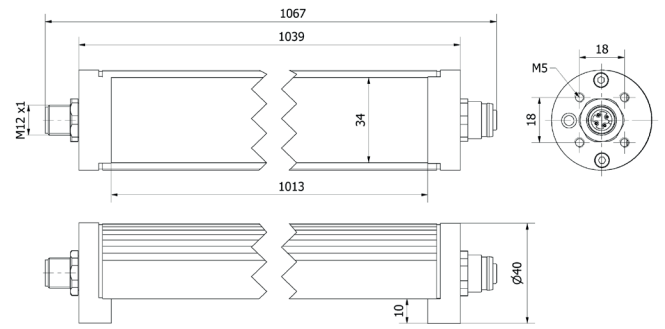
Number: 60



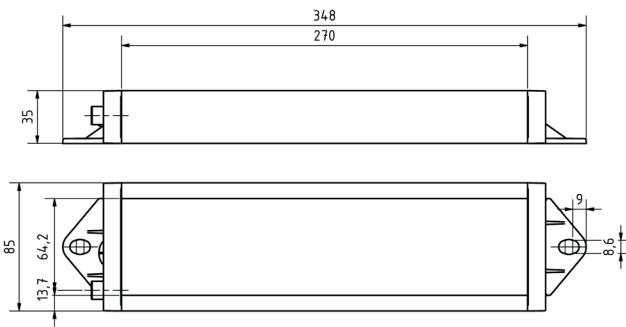
Number: 61



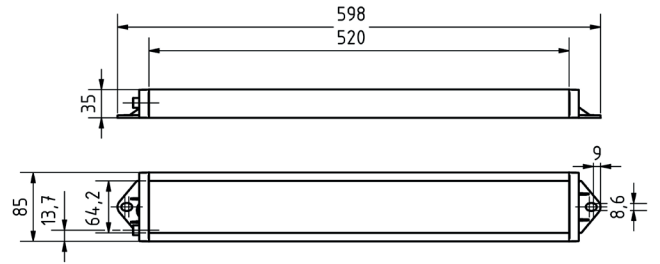
Number: 62



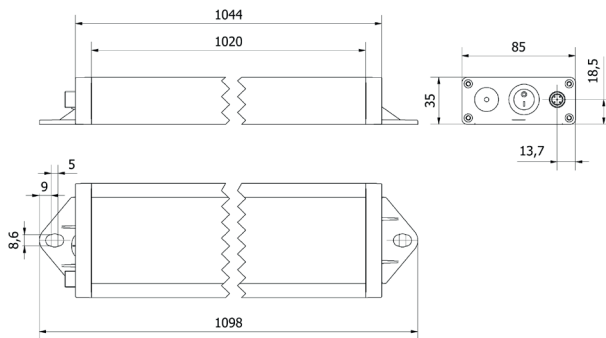
Number: 63



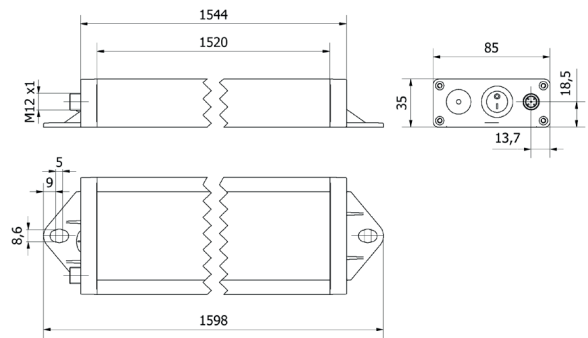
Number: 64



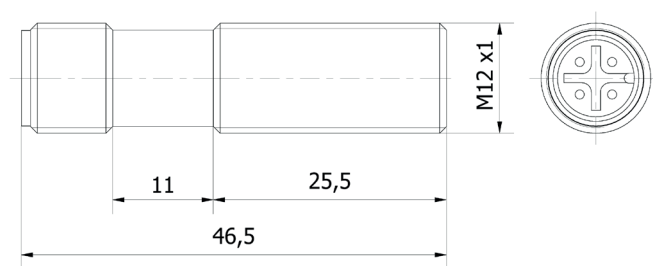
Number: 65



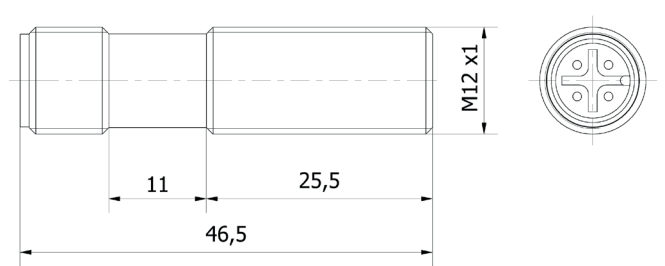
Number: 66



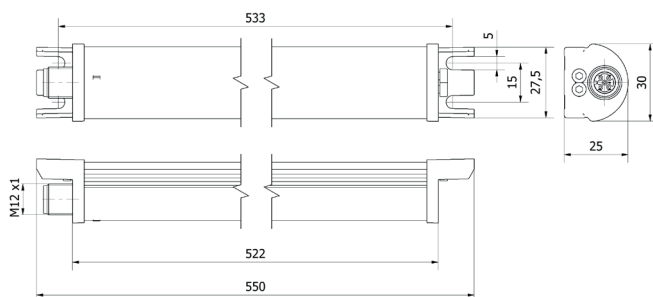
Number: 67



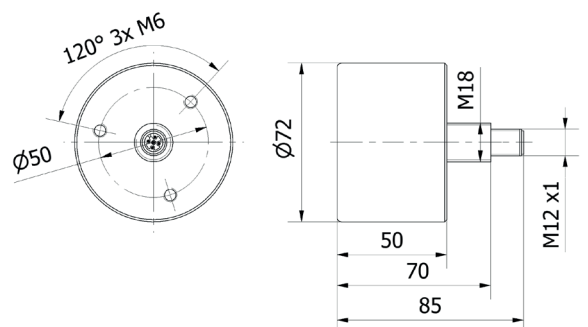
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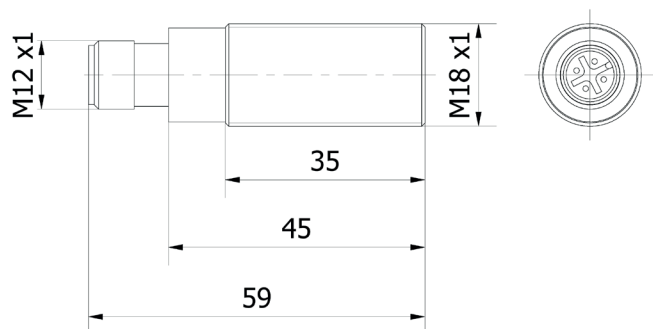
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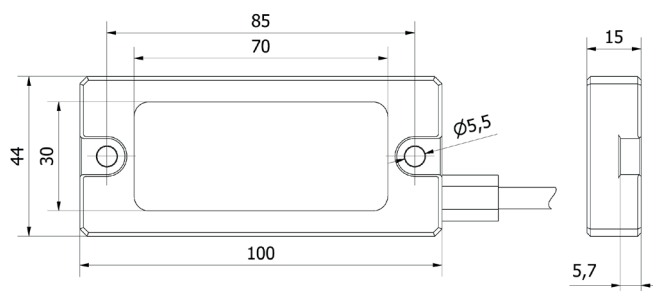
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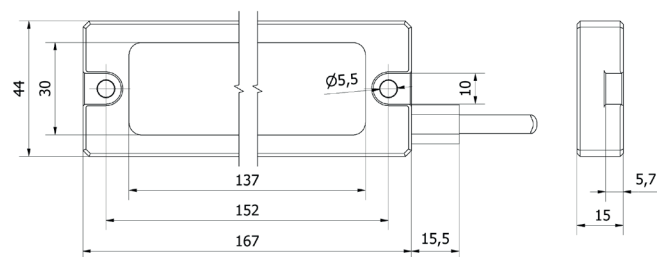
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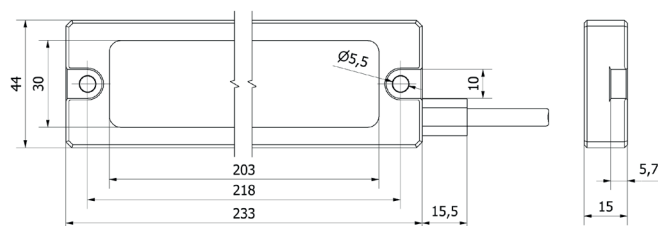
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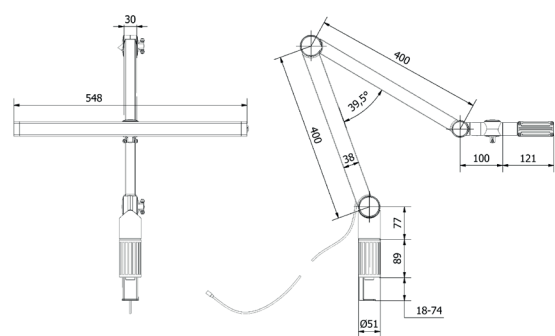
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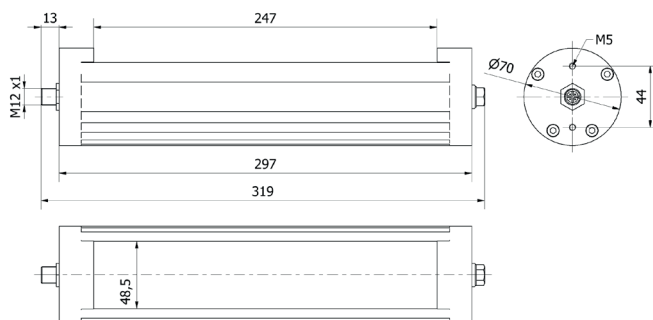
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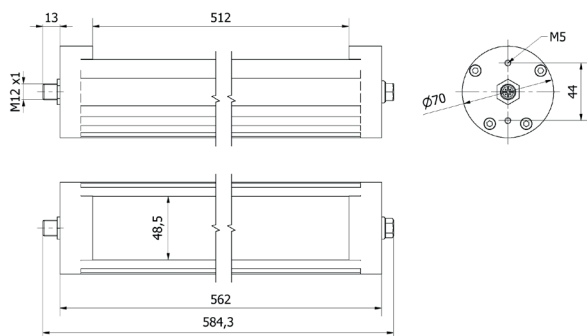
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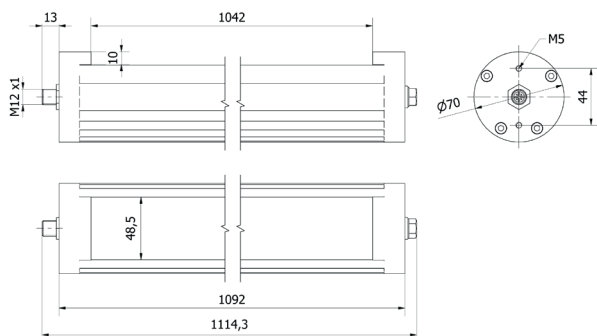
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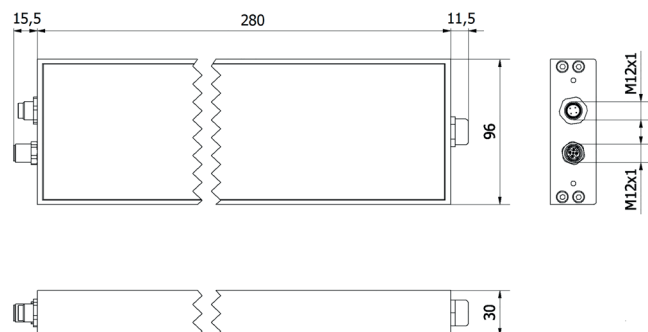
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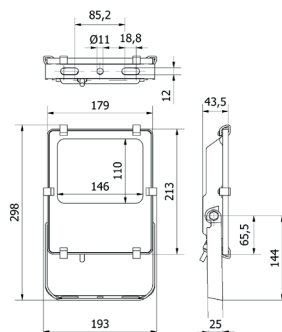
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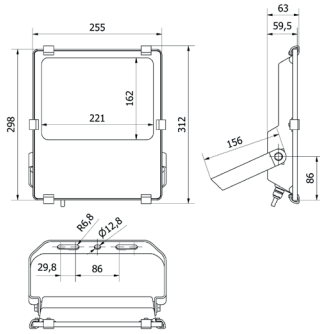
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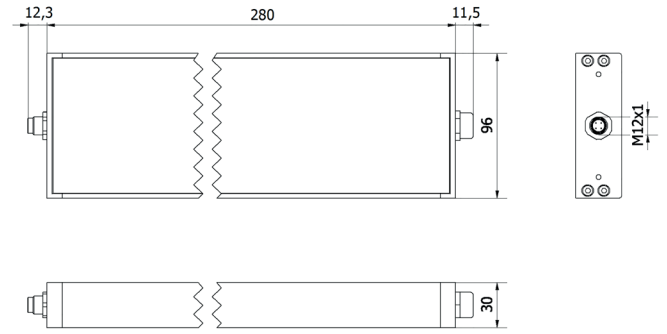
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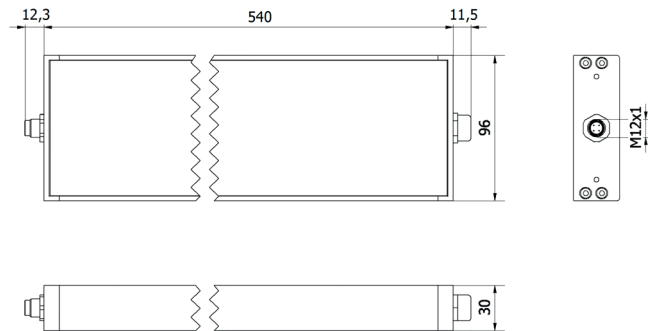
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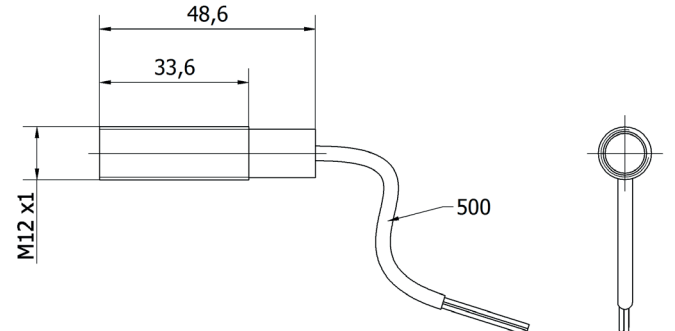
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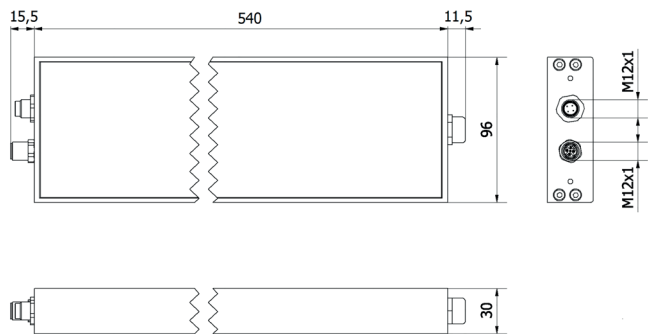
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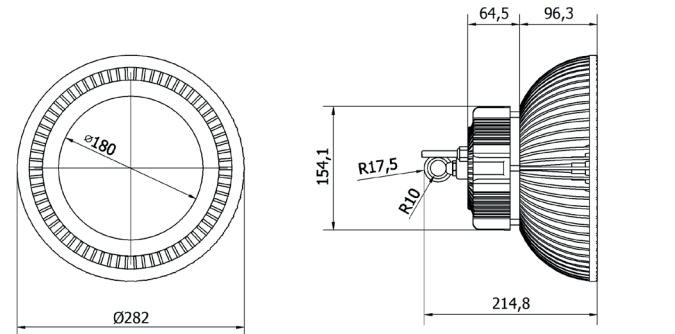
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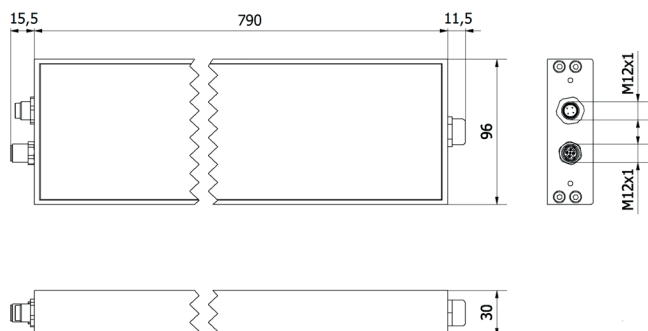
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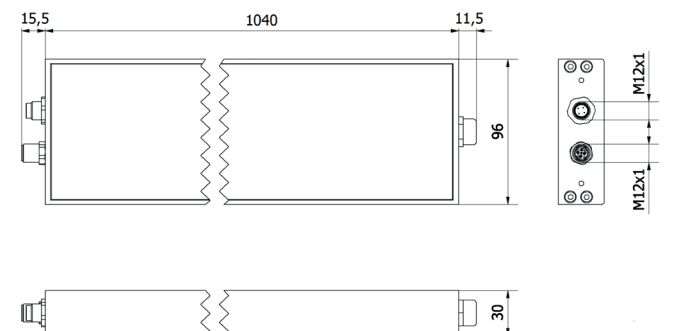
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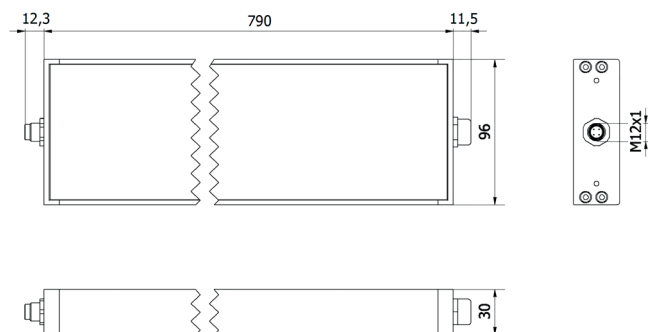
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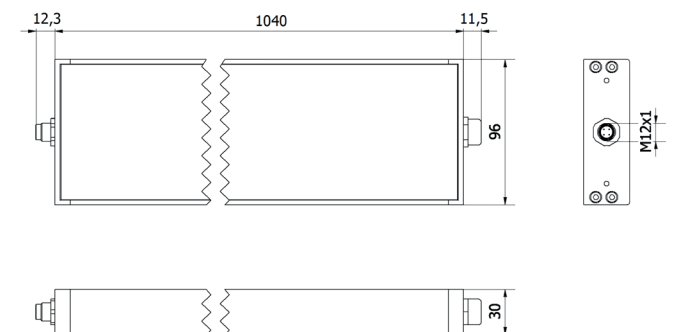
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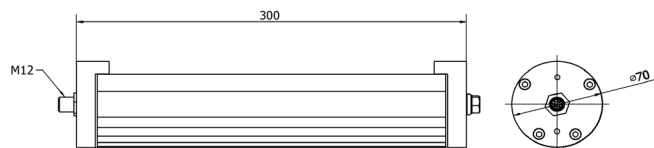
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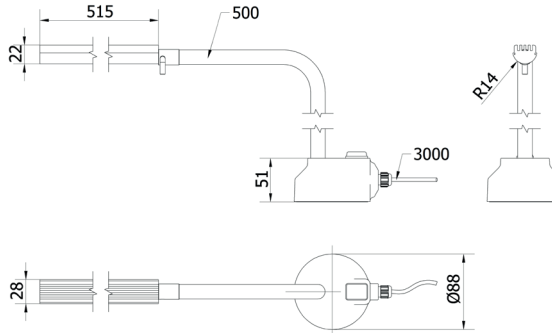
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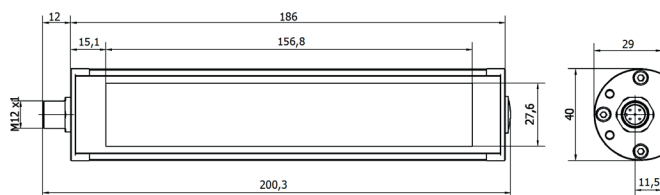
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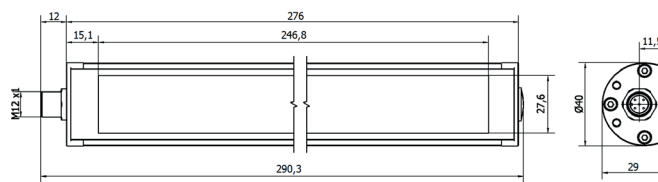
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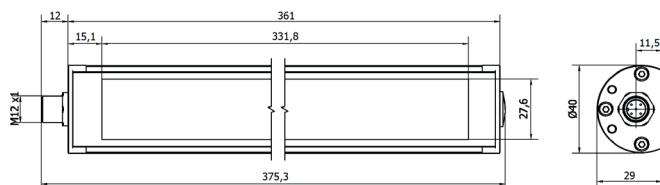
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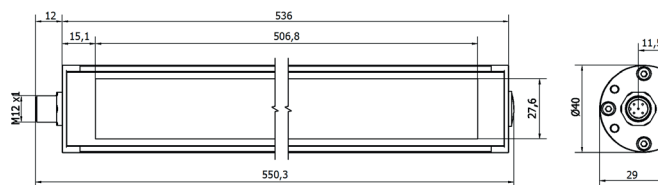
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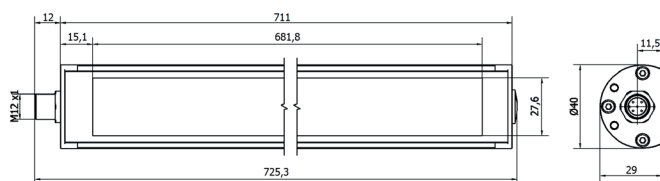
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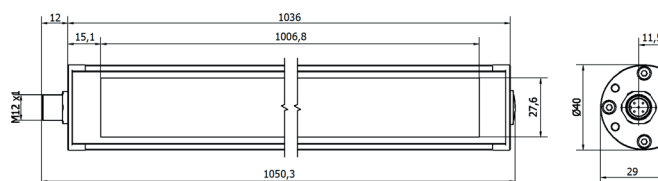
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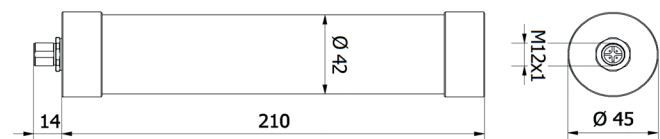
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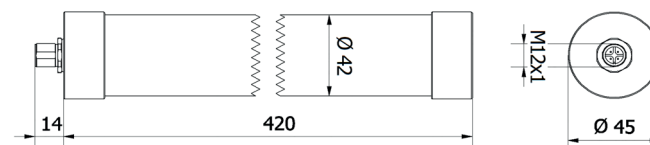
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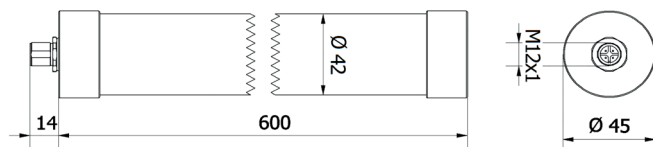
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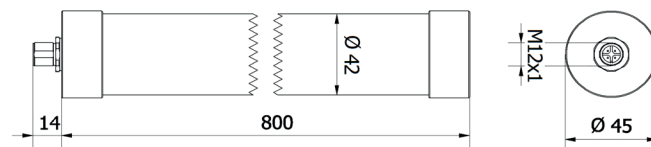
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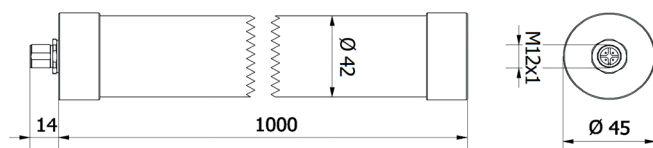
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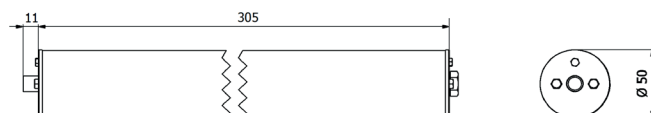
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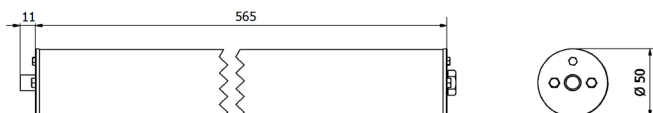
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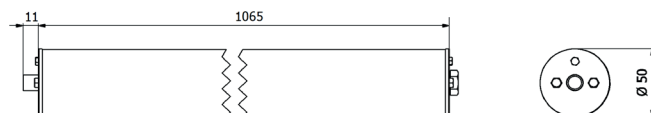
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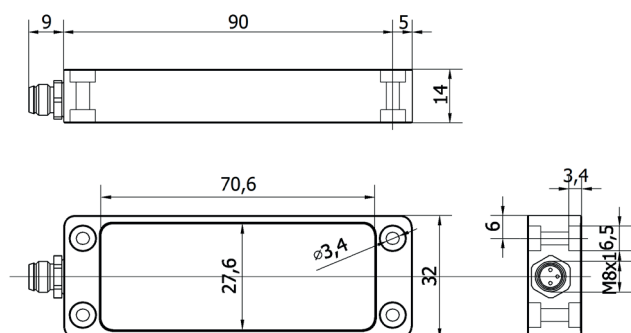
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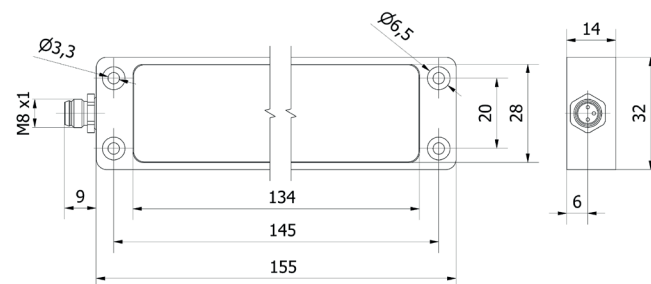
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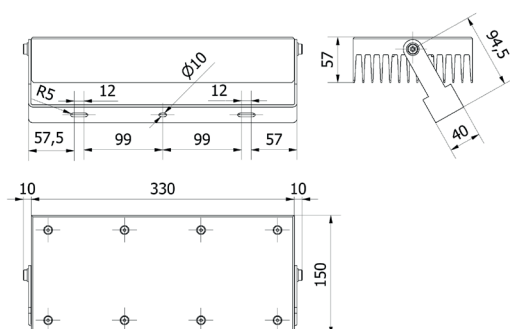
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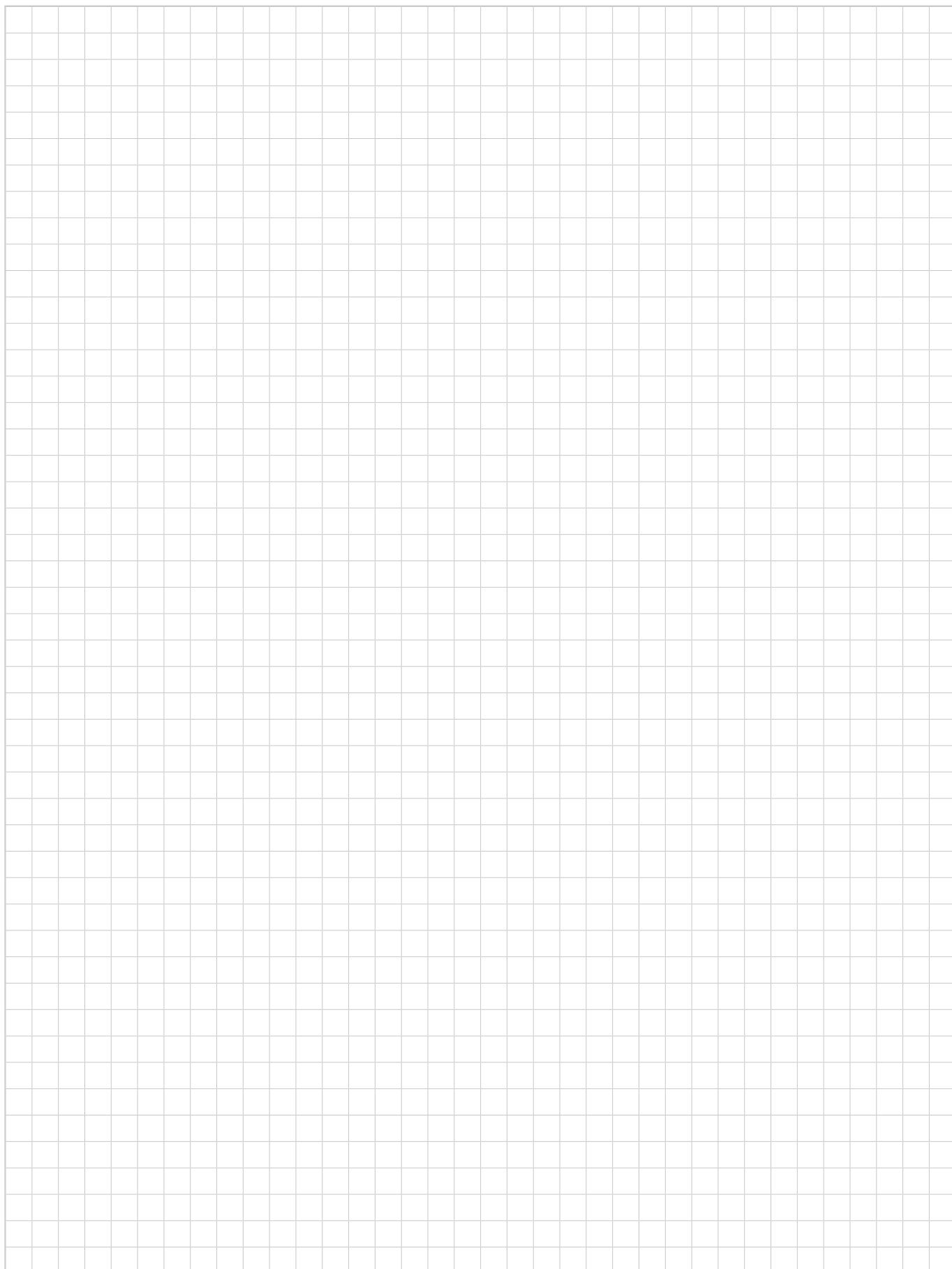
Number: 108



Number: 109



NOTES



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