LATAB

Industrial LED Lighting

LED Lighting for Machine Vision

Catalog 2011

LAT elektronik AB • Member of the Polytec Organization Polytec

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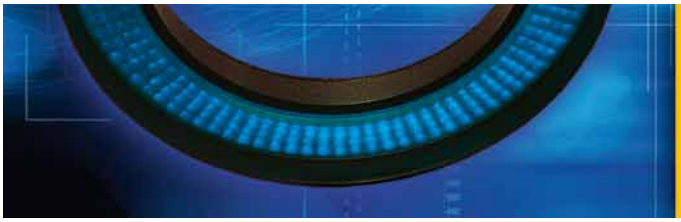

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LED lighting for machine vision

About LATAB

LAT elektronik AB (**L**ED **A**rray **T**echnology) was founded in 1988 in Stockholm, Sweden. Starting as a consultancy for image processing technology, the company soon became a specialist for customer-specific lighting solutions in the area of machine vision. As part of the German Polytec Organization (www.polytec.com), LATAB today offers an outstanding variety of standard products and is known for its high degree of flexibility and short delivery times, even for customer-specific developments.

Why choose LATAB products?

- All products are "Made in Sweden" and satisfy the highest quality demands
- Individual requirements are largely met by the modularity of the standard program
- All lights are available in continuous and strobe modes
- Lights and controllers are easy and user-friendly to operate
- Very flexible solutions
- Very short delivery times
- Application-orientated advice and long-term service

Support

Integration into the international Polytec Organization guarantees world-wide support for LATAB products. Experienced engineers from the machine vision industry help customers make the best choice of products and if required provide support in the integration of machine vision systems.

Customer-specific engineering

Customer-specific developments and adaptations are a core part of LATAB's business – at near standard prices of course, and with short project lead times. You name it, we'll make it!

Design skills:

- CAD engineering
- Electronics development
- Optical design
- Thermal management

Evaluation kits

Different environmental conditions for machine vision applications can often make the choice of suitable lighting difficult. That's why in many cases "Try before you buy" is the way to go.

LATAB provides demonstration units of potentially suitable lighting heads and controllers to help the customer decide on the best lighting for his practical situation. Try it out!

Warranty

A warranty period of one year applies to all light heads and controllers under the following operating conditions:

Operating temperature:
+5 °C to +40 °C (41 °F to +104 °F)

Storage temperature:
-40 °C to +90 °C (-40 °F to +194 °F)

Relative humidity:
max. 80%, non-condensing

Geographical height of operating location:
up to 2000 m above sea level

Pollution degree:
2, only non-conductive pollution occurs.
Except that occasionally a temporary conductivity caused by condensation is to be expected.

Definition of a defect light head:
A light head is defect if the brightness decreases to 50% of the original luminosity.

Restriction of Warranty: Operation without LATAB controller causes a loss of warranty!

Changes

We reserve the right to make changes to products without notification.

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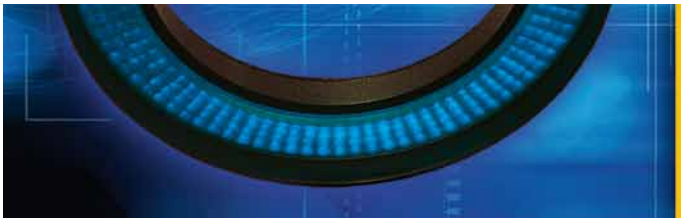

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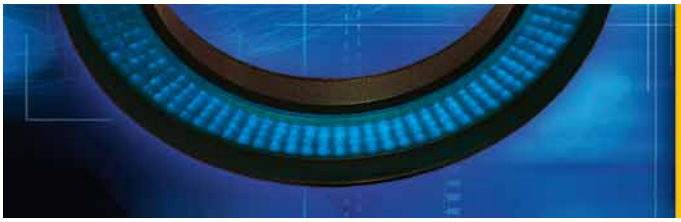

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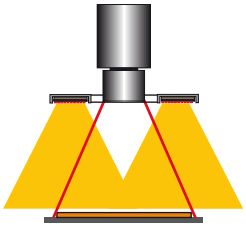
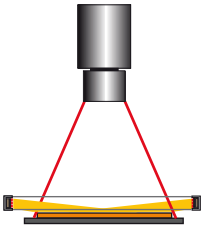
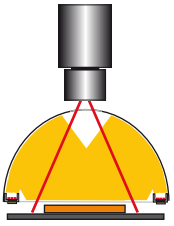
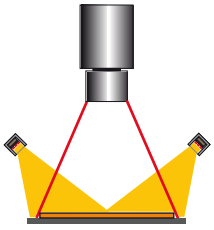
Lighting techniques

Illumination	Application	Figure
Ring light • Illuminate flat, diffused surfaces • Inspection of circular objects • When direct attachment to lens is required • Standard sizes: 44 to 348 mm outer diameter • Optional: diffusers and polarization filters	• Homogeneous / directed lighting • Defects on surfaces • OCR • Print control • Inspection of assembly • Part recognition	
Dark field light • Creates low angle light and enhances contrast of surface features • Standard sizes: 58 to 281 mm outer diameter • Small working distance	• Detection of edges, defects and contours	
Dome light / tunnel light • Diffused (”cloudy day“) and shadow-free lighting • Standard sizes dome: 44 to 348 mm outer diameter • Standard sizes tunnel: 119 to 371 mm length • Small working distance	• Inspection of specular and diffuse objects • OCR • Print control • Label inspection	
Line light • Can also be used as a dark field light to create low angle light • Standard length: 36 to 492 mm • Optional: diffusers • One, two or square lines are available	• Homogeneous / directed lighting • Defects on surfaces • OCR • Print control • Inspection	

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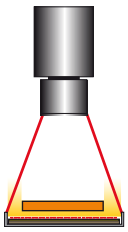
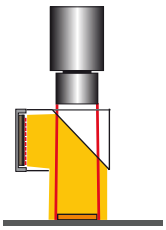
Illumination	Application	Figure
Back light • To highlight the contour of a flat object • For opaque and transparent objects • Ideal for precise measurements • Standard sizes: 51 x 84 to 207 x 516 mm	• Measure outside dimension of objects • Locate parts or mounting holes • Positioned under the object • Homogeneous lighting	
Coaxial light • Diffused and shadow-free lighting • Creates contrast between specular and diffuse surfaces • Small working distance	• For reflecting objects • Print control	

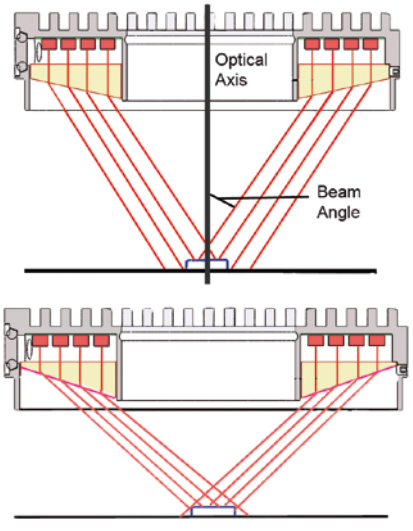
Adjustable light beam angles

The ring lights and dark field lights manufactured by LATAB always have a diffuser in order to make the light beam even and homogeneous.

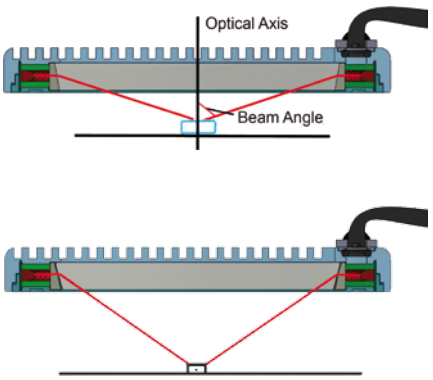
This gives the opportunity to change the light beam angle after the customers needs by adjusting the angle of the diffuser.

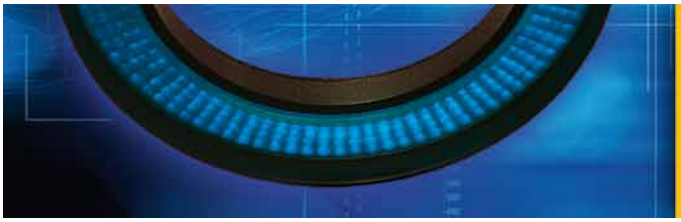
So individual beam angles can be taken into account on request.

Ring lights
The standard angle is 12°. Custom adjustment from 0° to 40° on request.



Dark field lights
The standard angle is 80° (optical axis). Custom adjustment from 70° to 90° on request.





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LED lighting heads

General features

LATAB LED lightings are devices that can be used for a great variety of vision and industrial applications, e.g. inspection, testing and robot control.

The LED lighting heads feature a superior light intensity and smooth lighting combined with long lifetime.

The LATAB product family is highly modular and can be used in various combinations to optimize the illumination.

All modules, light heads and controllers are made for industrial applications. For this reason they are built in solid aluminium housings.

Any type can be used either for continuous or strobe mode.

The lights are robust, small in size and easy to install. Just connect the light head to a controller and the light intensity will be at 100% by default.

A wide product range

The modular design of LATAB LED lighting heads permits a range of more than 3,000 standard products.

Besides the design of the lighting head, the key selection criteria are continuous or strobe mode lighting, different LED colors and innumerable sizes, mounts and cable-configurations. Accessories such as polarizing filters and brackets also form part of the product range.

The standard lighting heads are based upon high intensive LEDs, available in a wide range of types and sizes:

Ring-, dome-, front-, back-, spot-, line-, dark field-, coaxial- and custom designed lighting heads.

They are available in different colors and RGB (red/green/blue).

The standard colors are :

- White
- Red (617 nm)
- IR (880 nm)
- Blue (465 nm)
- Green (520 nm)
- RGB (red/green/blue)
- UV (395 nm)

Lighting head series

Today LATAB applies high intensive SMD type LEDs (surface mounted device). Lighting heads based on these LED type are named S-series (”S“ as first character in the product code).

The well-established H-series lighting heads are based upon the classic hole mounted leds (”P“ as first character in the product code). They were standard before the introduction of SMD type LEDs. The H-series is not listed in the catalog any more. These lighting heads are still available on request. The customer’s investment protection is a key point in the long lasting partnership with LATAB customers.

Guideline for longer lifetime of LED lighting heads

LEDs are long-life components; however the effect of heating will decrease their lifetime. To increase the lifetime, please keep the following in mind when choosing LED lighting:

- Red LEDs feature the longest lifetime
- Adjust light intensity to lowest usable level
- Keep ambient temperature low
- Controller mode for longer lifetime in this order:
  1. Strobe mode (strobe controller)
  2. Long flash mode (continuous mode controller)
  3. Continuous mode (continuous mode controller)

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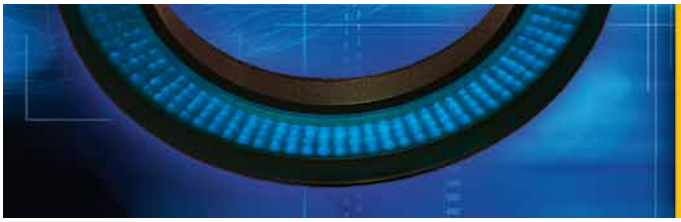

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Ring lights

Ring lights provide a uniform and shadow-free lighting. A diffuser (removable) for homogeneous light is included.

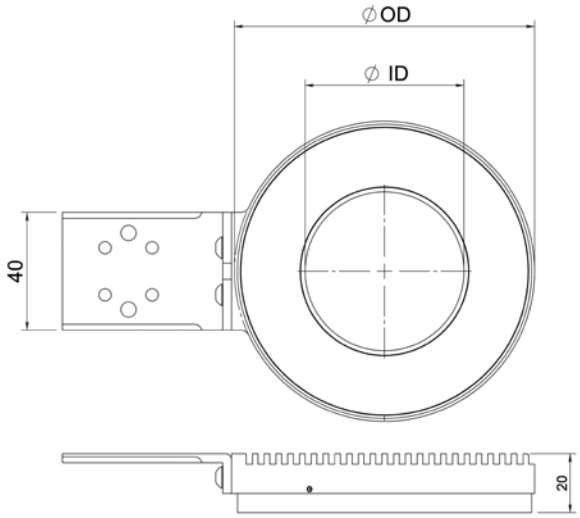
In order to avoid reflection, some ring lights can be used in combination with polarization filters.

Brackets are included (no. SXX3 010213, for details see bracket options).

The standard light beam angle is 12°. Custom adjustment from 0° to 40° on request.

The special RGB lights are built with high-power three-chips LEDs, red, green, and blue, enabling the use of each color separately or in combination. White light can be achieved by setting each channel to the same intensity level.

Mechanical dimensions



Color information

Replace "X" in order number by one character[1)]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[1)] Example for red ring light: SAH3 1078

Order information single color lights

Order number	Sizes (mm)		Working distance (mm)	Controller[2)]	
	outer Ø	inner Ø		steady mode	strobe mode
SAX3 1044	see ring light with lens thread				
SAX3 1078	78	34	50	1 A	8 A
SAX3 1102	102	54	80	1 A	8 A
SAX3 1132	132	84	100	1 A 3 A[3)]	8 A 24 A[3)]
SAX3 1162	162	114	140	1 A 3 A[3)]	8 A 24 A[3)]
SAX3 1202	202	164	180	3 A	24 A
SAX3 1348	348	300	300	3 A	24 A

[2)] See controller selection for details

[3)] For light colors white, blue, green and UV

Order information RGB lights

Order number	Sizes (mm)		Working distance (mm)	Controller[4)]	
	outer Ø	inner Ø		steady mode	strobe mode
RGB3 1078	78	34	50	1 A	8 A
RGB3 1102	102	54	80	1 A	8 A
RGB3 1132	132	84	100	1 A	8 A
RGB3 1162	162	114	140	1 A	8 A
RGB3 1202	202	164	180	1 A	8 A
RGB3 1348	348	300	300	on request	

[4)] For RGB lights 4 channel controllers are required

Options

- Cable length and type see "Order options"
- Polarization options see "Polarization filters"
- Second bracket (SXX3 010213) for SAX3 1162 and bigger for more stability

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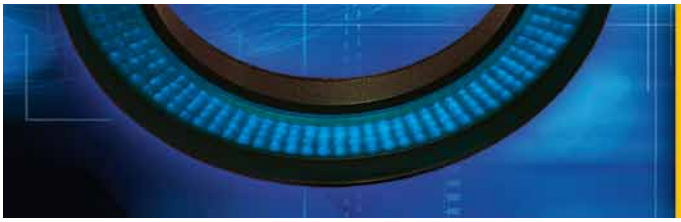

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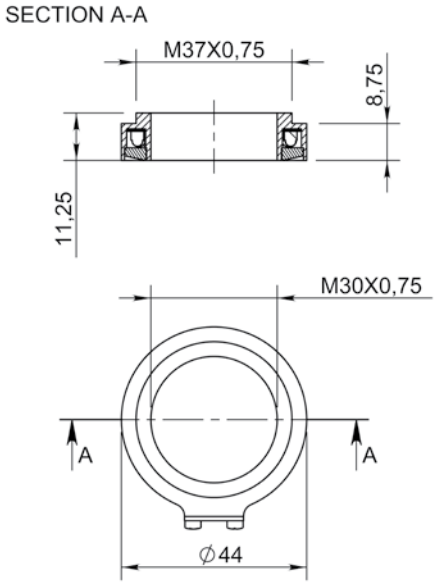
Ring lights with lens thread

This ring light can be easily mounted in two ways:

- By a small bracket (order no. LAD3 7218)
- By a standard lens adapter with a lens thread of 37 x 0.75 mm. 13 lens threads are available to fit different lenses.

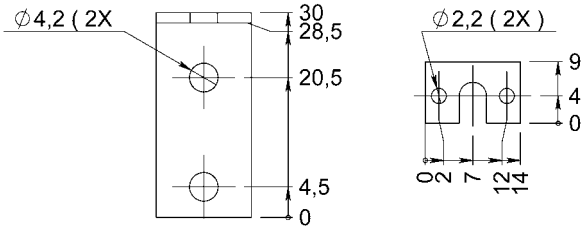
The best evenness of light will be achieved at a working distance of 20 - 25 mm. A diffuser is included.

Mechanical dimensions



Options

- Cable length and type see "Order options"
- Bracket LAD3 7218:



Order information adapter ring light

Order number	Sizes (mm)		Working distance (mm)	Controller[1]	
	outer Ø	inner Ø		steady mode	strobe mode
SAX3 1044	44	29	25	1 A	8 A

[1] See controller selection for details

Color information

Replace "X" in order number by one character[2]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[2] Example for red ring light: PAH3 1044

Order information lens adapters

Order number	Lens thread
ADP350	37.5 x 0.75 mm
ADP351	36.0 x 0.75 mm
ADP751	35.5 x 0.50 mm
ADP352	34.0 x 0.50 mm
ADP353	30.5 x 0.75 mm
ADP3531	30.5 x 0.50 mm
ADP753	30.0 x 0.75 mm
ADP854	28.0 x 0.75 mm
ADP954	28.0 x 0.50 mm
ADP354	27.0 x 0.75 mm
ADP754	25.5 x 0.50 mm
ADP654	25.5 x 0.50 mm
ADP355	24.0 x 0.50 mm

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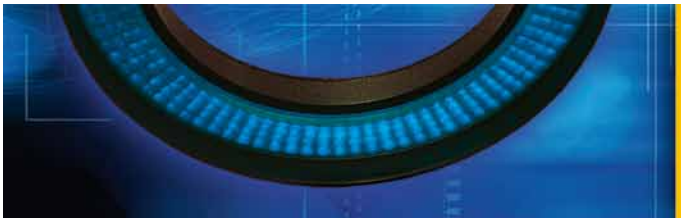

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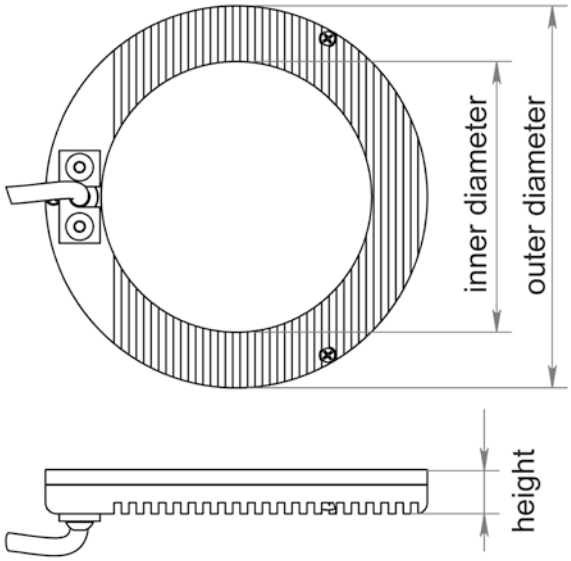
Dark field lights

Dark field lights are ideal for detecting edges and contours.

The standard light beam angle is 80°. Customized adjustment from 70° to 90° is possible.

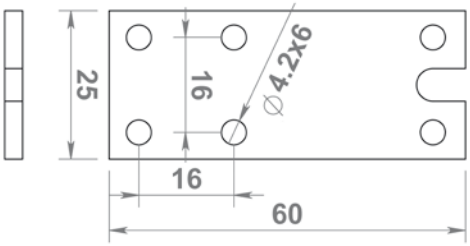
The dark field lights have a diffuser for evenness of illumination.

Mechanical dimensions



Options

- Cable length and type see "Order options"
- Custom beam angle see "Order options"
- Bracket LAD3 4011:



Order information

Order number	Sizes (mm)			Light beam angle	Controller[1]	
	outer Ø	inner Ø	height		steady mode	strobe mode
PAX3 4025	25	15	9.5	5°	1 A	8 A
SAX3 4072	72	42	12	10°	1 A	8 A
SAX3 4103	103	73	12	10°	1 A	8 A
SAX3 4166	166	136	12	10°	1 A	8 A
SAX3 4213	213	183	12	10°	1 A 3 A[2]	8 A 24 A[2]
SAX3 4276	276	246	12	10°	1 A 3 A[2]	8 A 24 A[2]

[1] See controller selection for details
[2] For light colors white, blue, green and UV

Color information

Replace "X" in order number by one character[3]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[3] Example for red dark field light: SAH3 4072

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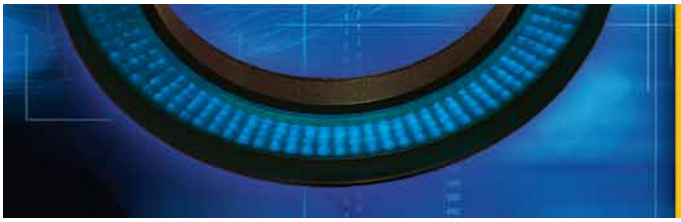

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Dome lights

The dome lights are available in a wide range of sizes.

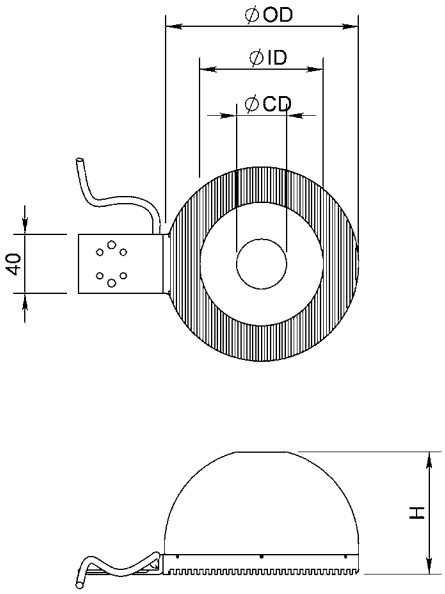
Dome lights provide highly shadow-free lighting in small working distances and avoid reflection from reflective objects more than ring lights.

In order to prevent a "camera hole shadow" it is possible to use a coaxial light together with the dome light.

Brackets are included (no. SXX3 010213, for details see bracket options).

As an option the camera hole can be covered by an adapter to reduce the hole size.

Mechanical dimensions



Color information

Replace "X" in order number by one character[1)]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[1)] Example for red dome light: SAH3 2078

Order information single color lights

Order number	Sizes (mm)				Controller[2)]	
	outer Ø	inner Ø	camera hole Ø	height	steady mode	strobe mode
SAX3 2078	78	34	24	35	1 A	8 A
SAX3 2102	102	54	30	69	1 A	8 A
SAX3 2132	132	84	34	83	1 A 3 A[3)]	8 A 24 A[3)]
SAX3 2162	162	114	50	100	1 A 3 A[3)]	8 A 24 A[3)]
SAX3 2202	202	164	65	124	3 A	24 A
SAX3 2348	348	300	100	190	3 A	24 A

[2)] See controller selection for details

[3)] For light colors white, blue, green and UV

Order information RGB lights

Order number	Sizes (mm)				Controller[4)]	
	outer Ø	inner Ø	camera hole Ø	height	steady mode	strobe mode
RGB3 2078	78	34	24	35	1 A	8 A
RGB3 2102	102	54	30	69	1 A	8 A
RGB3 2132	132	84	34	83	1 A	8 A
RGB3 2162	162	114	50	100	1 A	8 A
RGB3 2202	202	164	65	124	1 A	8 A
RGB3 2348	348	300	100	190	on request	

[4)] For RGB lights 4 channel controllers are required

Options

- Cable length and type see "Order options"
- Camera hole adapter to reduce camera hole size on request
- Second bracket (SXX3 010213) for SAX3 2162 and bigger for more stability

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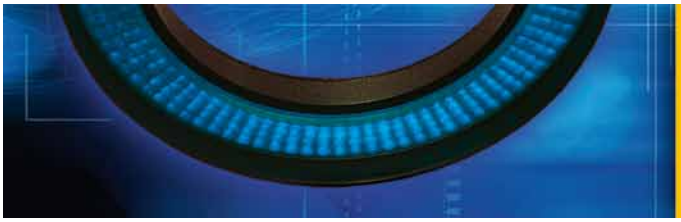

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Tunnel lights

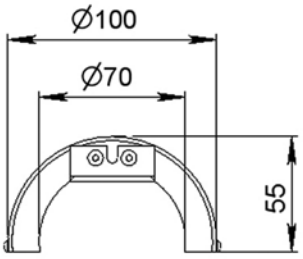
Tunnel lights, like dome lights, provide shadow-free lighting and are better at avoiding reflections from objects than are ring lights.

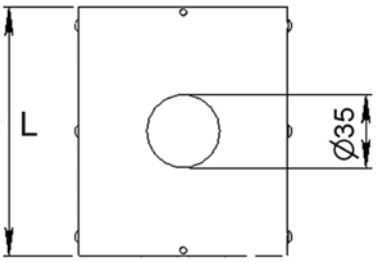
The most even illumination will be achieved by placing the light as close to the object as possible.

In order to prevent a "camera hole shadow" it is possible to use a coaxial light together with the tunnel light.

Optional brackets can be mounted at either end of the tunnel.

Mechanical dimensions





Order information

Order number	Tunnel length (mm)	Controller[1]	
		steady mode	strobe mode
SAX3 5203	119	1 A	8 A
SAX3 5204	155	1 A	8 A
SAX3 5205	191	1 A	8 A
SAX3 5206	227	1 A	8 A
SAX3 5207	283	1 A	8 A
SAX3 5208	299	1 A	8 A
SAX3 5209	335	1 A	8 A
SAX3 5210	371	1 A	8 A

[1] See controller selection for details

Color information

Replace "X" in order number by one character[2]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[2] Example for red tunnel light: SAH3 5203

Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"
- Camera hole adapter to reduce camera hole size on request

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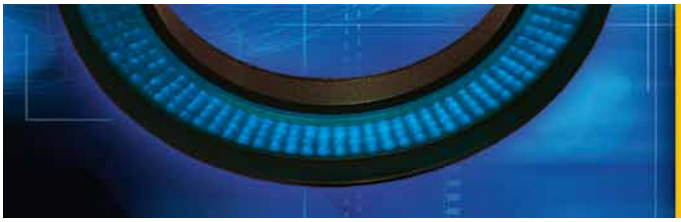

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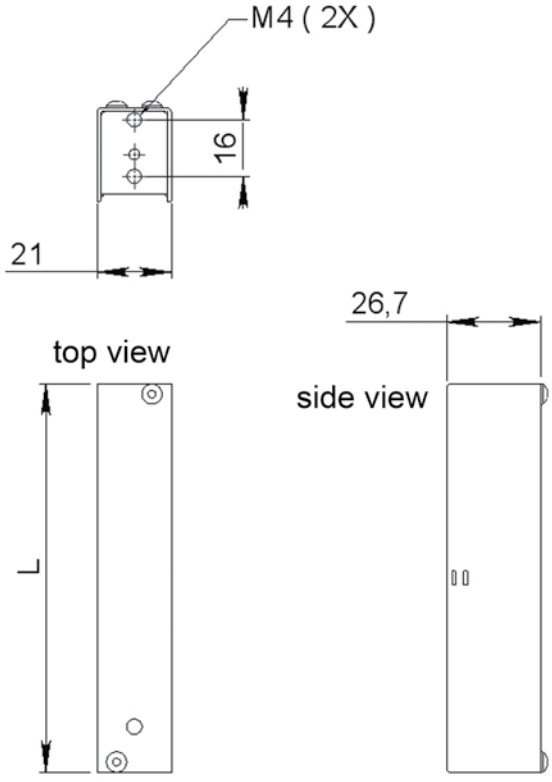
Industrial LED Lighting

Line lights - single line

Front line lights are built in modules from 50 to 446 mm.

A diffuser for evenness of illumination is available as an option.

Mechanical dimensions



Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"
- Diffuser see "Order options"

Order information

Order number	Length (mm)	Controller[1]	
		steady mode	strobe mode
SAX4 1050[2]	50	1 A	8 A
SAX4 1086	86	1 A	8 A
SAX4 1122[2]	122	1 A	8 A
SAX4 1158	158	1 A	8 A
SAX4 1194[2]	194	1 A	8 A
SAX4 1230	230	1 A	8 A
SAX4 1266[2]	266	1 A	8 A
SAX4 1302	302	1 A	8 A
SAX4 1338[2]	338	1 A	8 A
SAX4 1374	374	1 A 3 A[3]	8 A 24 A[3]
SAX4 1410[2]	410	1 A	8 A
SAX4 1446	446	1 A 3 A[3]	8 A 24 A[3]

[1] See controller selection for details

[2] Available only in light colors red and IR

[3] For light colors white, blue, green and UV

Color information

Replace "X" in order number by one character[4]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[4] Example for red line light: SAH4 1050

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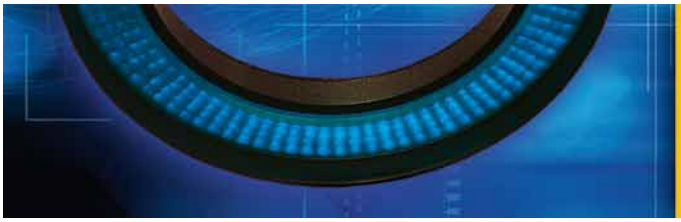


LATAB
Industrial LED Lighting

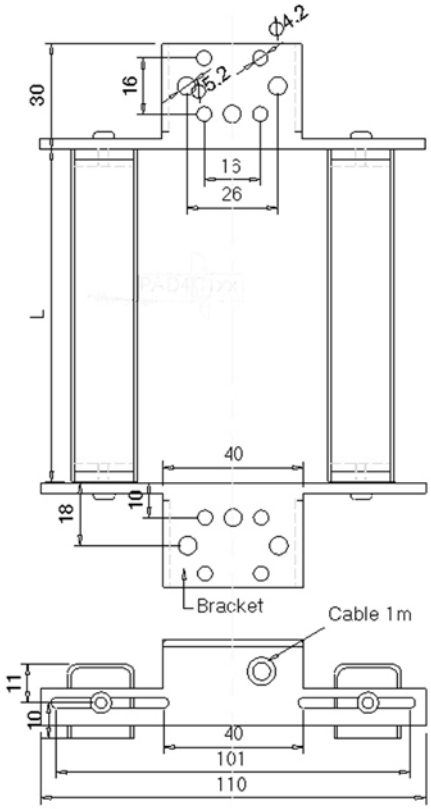
Line lights - two lines

Two front line lights, which are based on the single line light (SAX4 1XXX), are available in modules from 50 to 446 mm.

The aluminum frame can be adjusted for width (40 to 101 mm) as well as the angle of the lights.

So a custom adaption to applications is very easy.

Mechanical dimensions



Order information

Order number	Length (mm)	Controller[1]	
		steady mode	strobe mode
SAX4 2050[2]	50	1 A	8 A
SAX4 2086	86	1 A	8 A
SAX4 2122[2]	122	1 A	8 A
SAX4 2158	158	1 A 3 A[3]	8 A 24 A[3]
SAX4 2194[2]	194	1 A	8 A
SAX4 2230	230	3 A	24 A
SAX4 2266[2]	266	3 A	24 A
SAX4 2302	302	3 A	24 A
SAX4 2338[2]	338	3 A	24 A
SAX4 2374	374	3 A	24 A
SAX4 2410[2]	410	3 A	24 A
SAX4 2446	446	3 A	24 A

[1] See controller selection for details

[2] Available only in light colors red and IR

[3] For light colors white, blue, green and UV

Color information

Replace "X" in order number by one character[4]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[4] Example for red line light: SAH4 2050

Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"
- Diffuser see "Order options"
- Different spacer width between lights:
  - 40 - 101 mm width: standard
  - 40 - 90 mm width: add "B90" to order code
  - 70 - 190 mm width: add "B190"to order code
  - 130 - 290 mm width: add "B290" to order code

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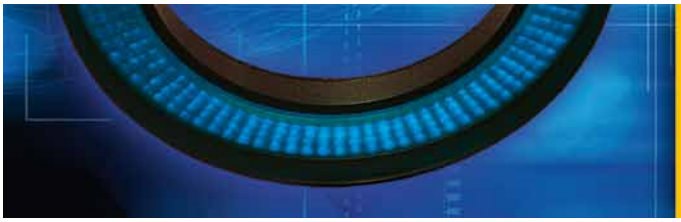

LATAB
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Line lights - square lines

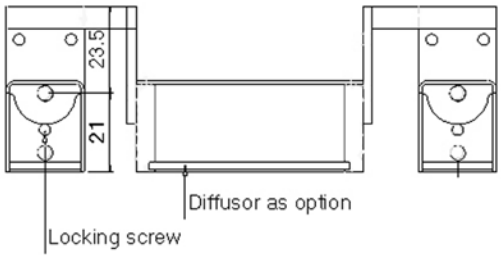
Four front line lights, which are based on the single line light (SAX4 1XXX), are avaliable in modules from 50 to 446 mm.

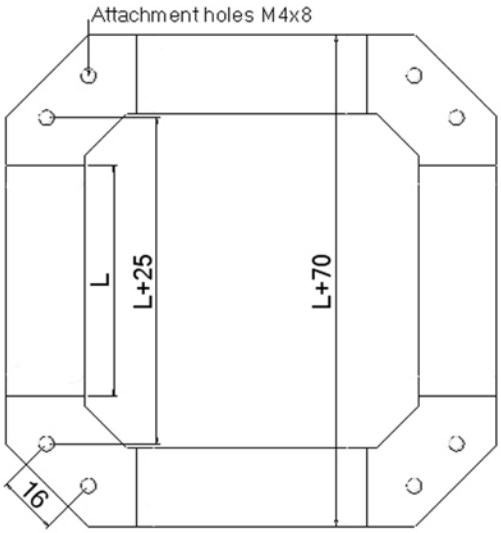
The aluminum frame allows for the adjustment of the angle of the lights.

So a custom adaption to applications is very easy.

Other rectangular combinations on request.

Mechanical dimensions





Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"
- Diffuser see "Order options"

Order information

Order number	Length (mm)	Controller[1]	
		steady mode	strobe mode
SAX4 4050[2]	50	1 A	8 A
SAX4 4086	86	1 A 3 A[3]	8 A 24 A[3]
SAX4 4122[2]	122	3 A	24 A
SAX4 4158	158	3 A	24 A
SAX4 4194[2]	194	3 A	24 A
SAX4 4230	230	3 A	24 A
SAX4 4266[2]	266	3 A	24 A
SAX4 4302	302	3 A	24 A
SAX4 4338[2]	338	on request	on request
SAX4 4374	374	on request	on request
SAX4 4410[2]	410	on request	on request
SAX4 4446	446	on request	on request

[1] See controller selection for details

[2] Available only in light colors red and IR

[3] For light colors white, blue, green and UV

Color information

Replace "X" in order number by one character[4]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[4] Example for red line light: SAH4 4050

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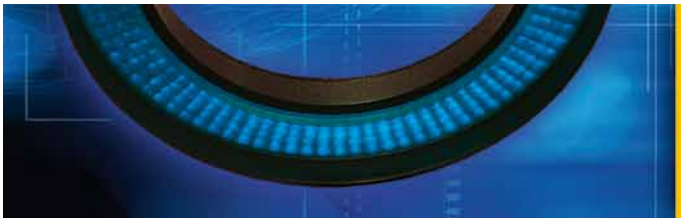


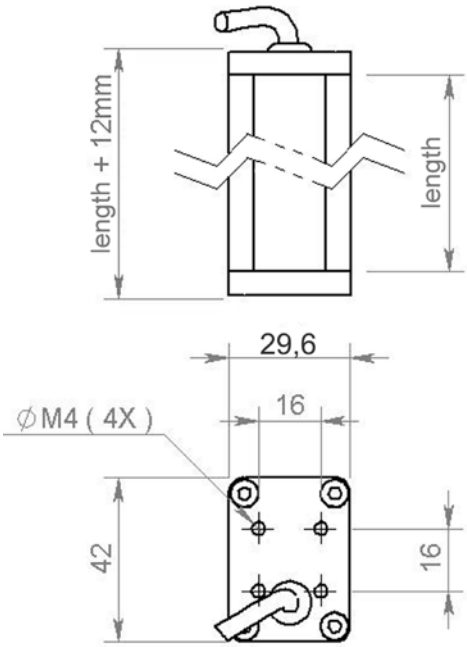
LATAB
Industrial LED Lighting

Line lights with fresnel lens

This line light series is designed for line scan camera applications. It produces a very thin light beam of 4 mm width.

The standard working distance is 40 mm.
The light lengths range from 58 to 788 mm.
Custom lengths on request.

Mechanical dimensions



Color information

Replace "X" in order number by one character[1)]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[1)] Example for red line light: SAH4 6058

Order information

Order number	Length (mm)	Controller[2)]	
		steady mode	strobe mode
SAX4 6058	58 mm	1 A	8 A
SAX4 6097	97 mm	1 A	8 A
SAX4 6135	135 mm	1 A	8 A
SAX4 6173	173 mm	1 A	8 A
SAX4 6212	212 mm	1 A	8 A
SAX4 6250	250 mm	1 A	8 A
SAX4 6289	289 mm	1 A	8 A
SAX4 6327	327 mm	1 A	8 A
SAX4 6365	365 mm	1 A	8 A
SAX4 6404	404 mm	1 A 3 A[3)]	8 A 24 A[3)]
SAX4 6442	442 mm	1 A 3 A[3)]	8 A 24 A[3)]
SAX4 6481	481 mm	3 A	24 A
SAX4 6519	519 mm	3 A	24 A
SAX4 6557	557 mm	3 A	24 A
SAX4 6593	593 mm	3 A	24 A
SAX4 6634	634 mm	3 A	24 A
SAX4 6673	673 mm	3 A	24 A
SAX4 6711	711 mm	3 A	24 A
SAX4 6749	749 mm	3 A	24 A
SAX4 6788	788 mm	3 A	24 A

[2)] See controller selection for details

[3)] For light colors white, blue, green and UV

Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"

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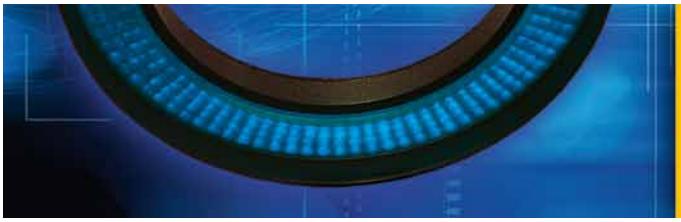


LATAB
Industrial LED Lighting

Front / back lights

Due to its high intensive LEDs this light series can be used either as front light or as back light. For a front light application the diffuser is replaced by a clear glass cover.

Size options range from 51 x 84 to 207 x 336 mm respectively 147 x 516 mm. Other sizes on request.

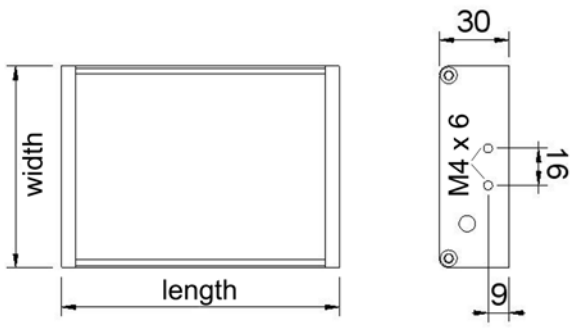
Order information

(for red and IR lights, other light colors on request)

mm	84	120	156	192	228	264	300	336	372	444	516
51	SAX7 0602	SAX7 0603	SAX7 0604	SAX7 0605	SAX7 0606	SAX7 0607	SAX7 0608	SAX7 0609	SAX7 0610	SAX7 0612	SAX7 0614
63	SAX7 0802	SAX7 0803	SAX7 0804	SAX7 0805	SAX7 0806	SAX7 0807	SAX7 0808	SAX7 0809	SAX7 0810	SAX7 0812	SAX7 0814
75	SAX7 1002	SAX7 1003	SAX7 1004	SAX7 1005	SAX7 1006	SAX7 1007	SAX7 1008	SAX7 1009	SAX7 1010	SAX7 1012	SAX7 1014
87	SAX7 1202	SAX7 1203	SAX7 1204	SAX7 1205	SAX7 1206	SAX7 1207	SAX7 1208	SAX7 1209	SAX7 1210	SAX7 1212	SAX7 1214
99	SAX7 1402	SAX7 1403	SAX7 1404	SAX7 1405	SAX7 1406	SAX7 1407	SAX7 1408	SAX7 1409	SAX7 1410	SAX7 1412	SAX7 1414
111	SAX7 1602	SAX7 1603	SAX7 1604	SAX7 1605	SAX7 1606	SAX7 1607	SAX7 1608	SAX7 1609	SAX7 1610	SAX7 1612	SAX7 1614
123	SAX7 1802	SAX7 1803	SAX7 1804	SAX7 1805	SAX7 1806	SAX7 1807	SAX7 1808	SAX7 1809	SAX7 1810	SAX7 1812	SAX7 1814
135	SAX7 2002	SAX7 2003	SAX7 2004	SAX7 2005	SAX7 2006	SAX7 2007	SAX7 2008	SAX7 2009	SAX7 2010	SAX7 2012	SAX7 2014
147			SAX7 2204	SAX7 2205	SAX7 2206	SAX7 2207	SAX7 2208	SAX7 2209	SAX7 2210	SAX7 2212	SAX7 2214
159			SAX7 2404	SAX7 2405	SAX7 2406	SAX7 2407	SAX7 2408	SAX7 2409	SAX7 2410	SAX7 2412	
171			SAX7 2604	SAX7 2605	SAX7 2606	SAX7 2607	SAX7 2608	SAX7 2609	SAX7 2610		
183				SAX7 2805	SAX7 2906	SAX7 2807	SAX7 2808	SAX7 2809	SAX7 2810		
195					SAX7 3006	SAX7 3007	SAX7 3008	SAX7 3009	SAX7 3010		
207					SAX7 3206	SAX7 3207	SAX7 3208	SAX7 3209			

Required controller:	1 A controller for continuous mode and 8 A controller for strobe mode, see "Controller selection"
Required controller:	3 A controller for continuous mode and 24 A controller for strobe mode, see "Controller selection"
Required controller:	Two 3 A controllers for continuous mode and two 24 A controllers for strobe mode, see "Controller selection"

Mechanical dimensions



The table above states length (columns) and width (rows) of the outer dimension. The effective light area is reduced by 12 mm in length and width.

Color information

Replace "X" in order number by one character[1)]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[1)] Example for red back light: SAH7 0602

Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"
- Clear glass for front light application add "C" to order code, i.e. SAH7 0602C

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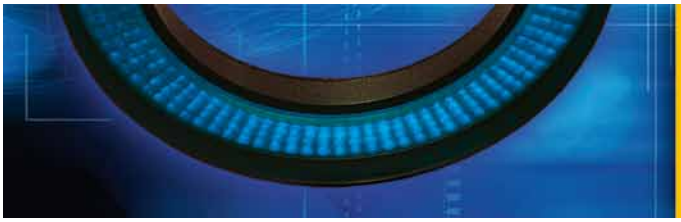


LATAB
Industrial LED Lighting

Front lights 80 x 56 mm

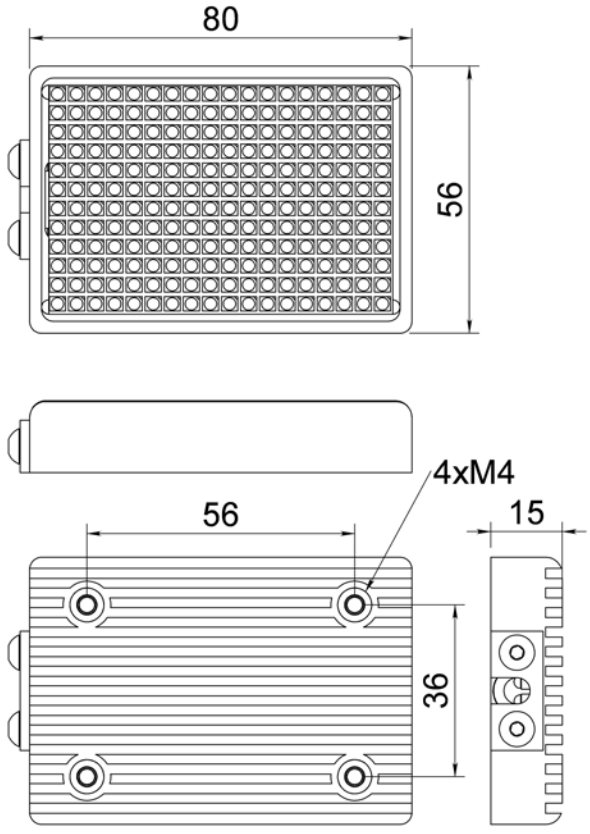
This front light series with its common dimensions suits most applications.

A diffuser can be mounted for more even illumination.

The effective light area is 48 x 72 mm.

Four M4 screws serve for securing the lighting head or a bracket for S-series (SXX3 010213).

Mechanical dimensions



Order information

Order number	Color	Controller[1]	
		steady mode	strobe mode
SAH5 1011	Red (617 nm)	1 A	8 A
SAW5 1011	White	1 A	8 A
SAR5 1011	IR (880 nm)	1 A	8 A
SAB5 1011	Blue (465 nm)	1 A	8 A
SAG5 1011	Green (520 nm)	1 A	8 A
SAU5 1011	UV (395 nm)	1 A	8 A

[1] See controller selection for details

Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"
- Diffuser see "Order options"

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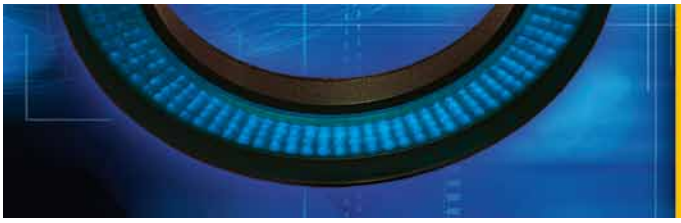


LATAB
Industrial LED Lighting

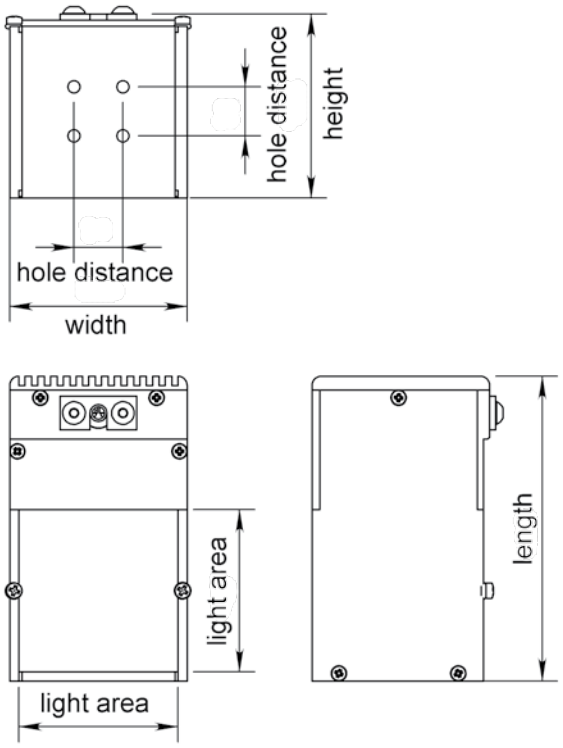
Coaxial lights

Coaxial lights are used for sharp detection which requires a very even light over the whole area.

The light is covered by a coated protective glass.

Mounting: four M4 screws suited for LATAB brackets.

Mechanical dimensions



Order information

Order number	Side length of active light area (mm)	Width (mm)	Height (mm)	Length (mm)	Mounting hole distance (mm)	Controller[1]	
						steady mode	strobe mode
SAX9 2525	25	30.5	33	70	10	1 A	8 A
SAX9 5050	50	55.5	58	95	16	1 A	8 A
SAX9 7575	75	80.5	84	120	16	3 A	24 A
SAX9 0110	109	115	118	159	16	3 A	24 A
SAX9 0145	145	150	153	190	16	3 A[2]	24 A[2]

[1] See controller selection for details

[2] For light colors red and IR, others on request

Color information

Replace "X" in order number by one character[3]	Color	Wavelength
H	Red	617 nm
W	White	
R	IR	880 nm
B	Blue	465 nm
G	Green	520 nm
U	UV	395 nm

[3] Example for red coaxial light: SAH9 2525

Options

- Cable length and type see "Order options"
- Bracket options see "Brackets"

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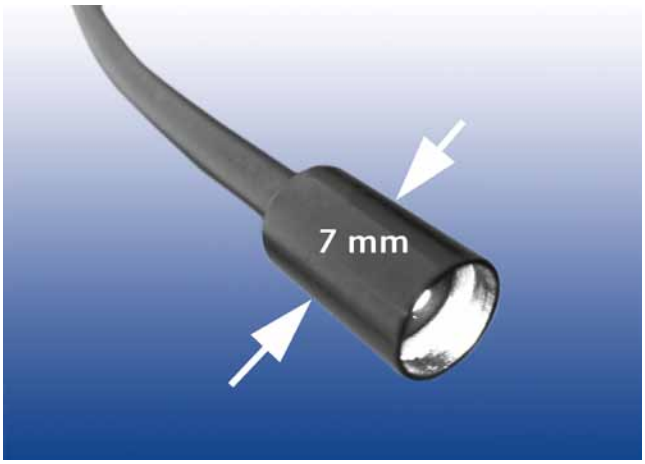
Spot lights

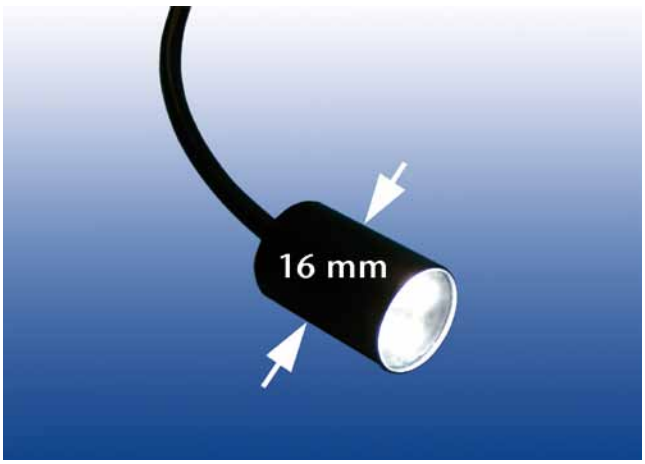
SAX-spot light with 7 mm diameter

The small spot light is based on one S-LED. It is designed especially for lighting small areas. Option: Multi-light head applications are available with up to 10 spots using one controller.

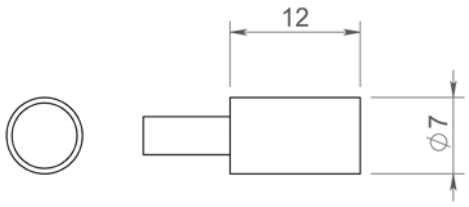
OSX-spot light with 16 mm diameter

The small spot light contains four high-power O-LEDs. It is designed especially for lighting small areas. Option: Multi-light head applications are available with up to four spots using one controller.

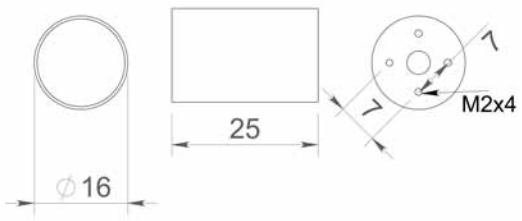




Mechanical dimensions SAX-spot light



Mechanical dimensions OSX-spot light



Order information

Order number	Sizes (mm)		Controller[1]	
	outer Ø	height	steady mode	strobe mode
SAX3 7007	7	12	1 A	8 A
OSX3 7016	16	25	1 A	8 A

[1] See controller selection for details

Color information

Replace "X" in order number by one character[2]	Color	Wavelength
H	Red	617 nm
W	White	
R[3]	IR	880 nm
B	Blue	465 nm
G	Green	520 nm

[2] Example for red spot light: SAH3 7007

[3] Only for SAX3 7007

Options

• Cable length and type see "Order options"

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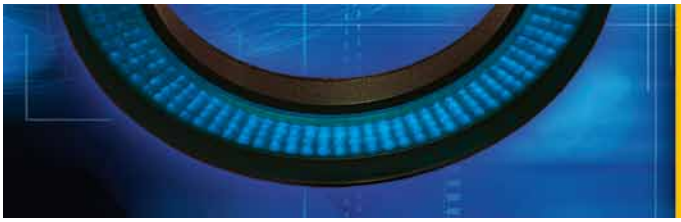

LATAB
Industrial LED Lighting

Control units

General information

Reliable controllers are a precondition for efficient LED lighting. That's why LATAB has developed an extensive range of its own controllers. These not only maximize the life time of the sensitive LEDs, but automatically adapt to the connected light head.

The product features of the LATAB controllers are numerous: designs suitable for industrial use, adjustable light intensity, up to 4 channels, PC operation via Ethernet or other interfaces, as well as stand-alone solutions, either for continuous mode operation or strobe mode, with adjustable pulse durations from 50 µs to 1.5 ms.

The controllers are based on constant current generators with a "plug and play" feature that automatically adapts to the connected LED light for exact light intensity.

The major differentiating factor of LATAB controllers is the illumination technique:

Continuous mode

The adjustable parameter for continuous mode controllers is light intensity.

Continuous mode controllers are equipped with the "long flash" feature: The long flash function is a kind of trigger-controlled light. Light starts with trigger pulse and lasts as long as the trigger pulse is on.

In the long flash mode double intensity is available, that means that light intensity is twice the standard intensity. In double intensity (DI) mode ON-time is limited to five seconds, followed automatically by five seconds OFF-time. Shorter ON-time double intensity pulses are not limited and can be repeated at users demand.

Rise time is about 1.5 msec and fall time about 10 to 15 msec.

Strobe mode

The adjustable parameters for strobe controllers are light intensity and strobe pulse length.

For PC-controlled units also a trigger pulse delay is available.

Strobe controllers provide 5 times more intensity compared to continuous devices.

In strobe mode the pulse length is tuneable by internal set time from 50 to 1500 µsec.

Rise and fall time is a few µsec.

A second differentiating factor of LATAB controllers is the interface:

Ethernet interface

These controllers communicate by Ethernet protocol. In principle this allows an unlimited number of units to be connected to the same computer. When using the test program the number is limited to 8 controllers.

The trigger signal is connected to the controller by a separate connector.

RS-232 interface

The RS-232 interface is converted (within the COM-port connector itself) to RS-485, enabling up to 16 units to be connected to the same COM-port in a so-called multi drop system. These units are delivered with a test/demo PC-software which can also be used in real applications.

Stand alone operation

In the stand alone mode the controller operates without an external computer. Light is adjusted by either an internal or an external potentiometer. Intensity can also be modulated by the voltage from zero (0 V) to full brightness (10 V).

Test program

The PC-control unit is delivered with a test program for testing purposes and lab applications.

The protocol has a simple form and is therefore easily programmable by the user.

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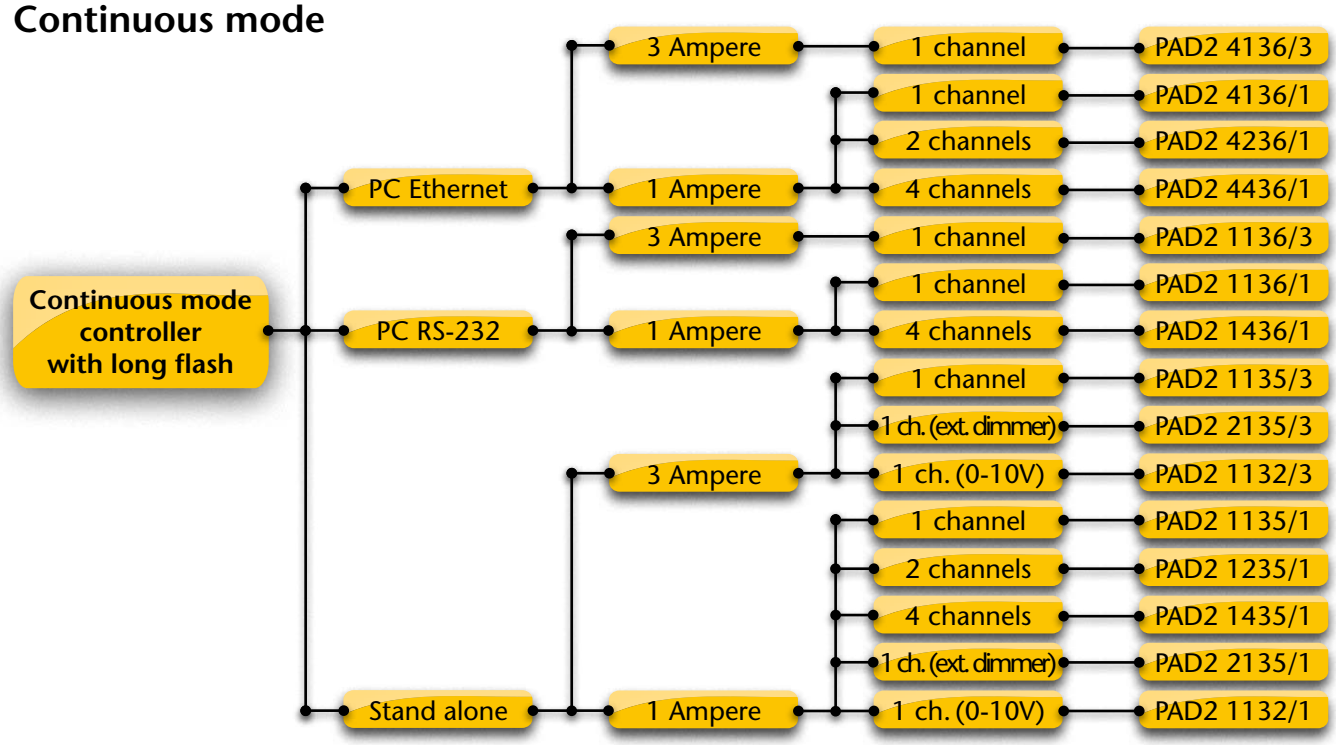
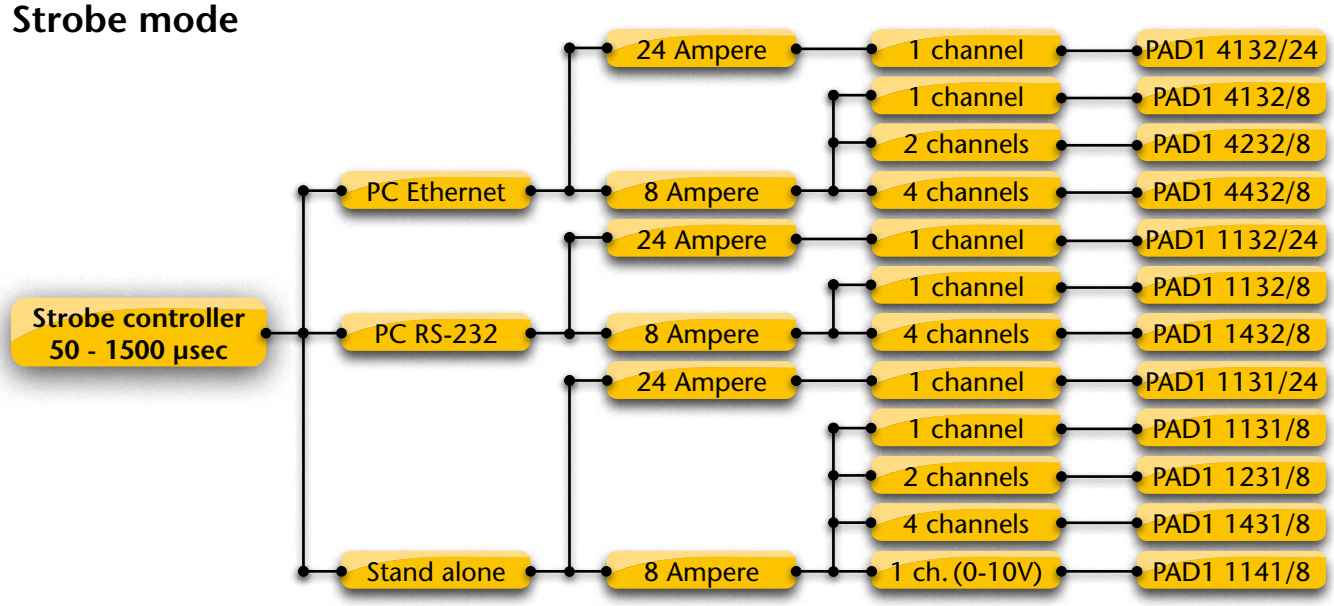
Controller selection

Continuous mode



Strobe mode



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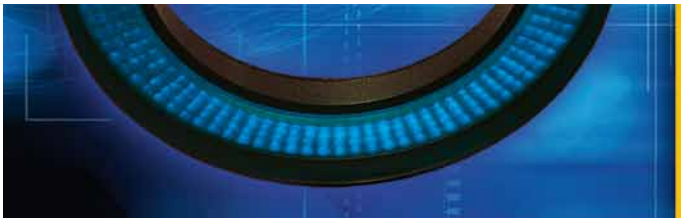

LATAB
Industrial LED Lighting

Continuous mode controllers

The continuous mode controllers are microprocessor-based and specially designed to control all types of LATAB lighting heads. Like the lighting heads, they come in a black aluminium housing.

The controller is enabled for plug and play. Just connect the LATAB lighting head and the controller automatically identifies the lighting type by an electronic sensor and gives the maximum light intensity to the lighting head.

The light intensity can be adjusted by a dimmer inside the controller.

The unique "long flash" feature gives the opportunity to increase the light intensity up to 200% when a trigger pulse is received. In order to avoid overheating the pulse length is limited to 5 sec, followed by a 5 sec cool down period.

The controllers are supplied with a 5 m power/trigger cable.

General specifications

Supply voltage	24 V DC ± 10 %, max. 2.5 A
Power output	max. 1 A/3 A
Light intensity	0 - 100 % internal potentiometer
Trigger input	5 - 24 V, optically isolated
Trigger frequency	max. 200 Hz
Operation temperature	0 - 65 °C

Sample picture. Specific type pictures and drawings on the following pages.

Order information

Order number	Intensity control mode	Output	Number of channels	Figure number	Long flash option (5 sec)
PAD2 1135/1	Internal potentiometer	1 A	1	1	yes
PAD2 1135/3	Internal potentiometer	3 A	1	1	yes
PAD2 1132/1	0 - 10 V	1 A	1	1	
PAD2 1132/3	0 - 10 V	3 A	1	1	
PAD2 2135/1	External dimmer	1 A	1	9	
PAD2 2135/3	External dimmer	3 A	1	9	
PAD2 1235/1	Internal potentiometer	1 A/ chan.	2	3	yes
PAD2 1435/1	Internal potentiometer	1 A/ chan.	4	4	yes
PAD2 1136/1	RS-232	1 A	1	1	
PAD2 1136/3	RS-232	3 A	1	1	
PAD2 1436/1	RS-232	1 A	4	10	
PAD2 4136/1	Ethernet	1 A	1	5	yes
PAD2 4136/3	Ethernet	3 A	1	6	yes
PAD2 4236/1	Ethernet	1 A	2	7	yes
PAD2 4436/1	Ethernet	1 A	4	8	yes

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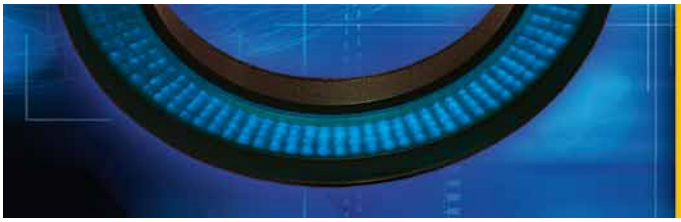

LATAB
Industrial LED Lighting

Strobe mode controllers

The strobe mode controllers are microprocessor-based and specially designed to control all types of LATAB lighting heads. Like the lighting heads, they come in a black aluminium housing.

The controller is enabled for plug and play. Just connect the LATAB lighting head and the controller automatically identifies the lighting type by an electronic sensor and gives the maximum light intensity to the lighting head.

The strobe pulse is adjustable in 16 steps. The light intensity can also be adjusted. Increasing the light intensity up to 200% at 50 and 100 µsec strobes can be selected by internal jumper.

The controllers are supplied with a 5 m power/trigger cable.

General specifications

Supply voltage	24 V DC ± 10%, max. 2.5 A
Power output	max. 8 A/24 A
Light intensity	0 - 100% internal potentiometer
Strobe pulse	50 - 1500 µsec in 16 steps
Trigger input	5 - 24 V, optically isolated
Trigger frequency	max. 200 Hz
Operation temperature	0 - 65 °C

Sample picture. Specific type pictures and drawings on the following pages.

Order information

Order number	Intensity control mode	Output	Number of channels	Figure number	Trigger delay (0 - 48 msec)
PAD1 1131/8	Internal potentiometer	8 A	1	1	
PAD1 1131/24	Potentiometer	24 A	1	2	
PAD1 1141/8	0 - 10 V	8 A	1	1	
PAD1 1231/8	Internal potentiometer	8 A/ chan.	2	3	
PAD1 1431/8	Internal potentiometer	8 A/ chan.	4	4	
PAD1 1132/8	RS-232	8 A	1	1	yes
PAD1 1132/24	RS-232	24 A	1	2	yes
PAD1 1432/8	RS-232	8 A/ chan.	4	4	yes
PAD1 4132/8	Ethernet	8 A	1	5	yes
PAD1 4132/24	Ethernet	24 A	1	6	yes
PAD1 4232/8	Ethernet	8 A/ chan.	2	7	yes
PAD1 4432/8	Ethernet	8 A/ chan.	4	8	yes

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Controller figures

Figure 1

PAD2 1135/1 · PAD2 1135/3 · PAD2 1132/1
PAD2 1132/3 · PAD2 1136/1 · PAD2 1136/3
PAD1 1131/8 · PAD1 1141/8 · PAD1 1132/8

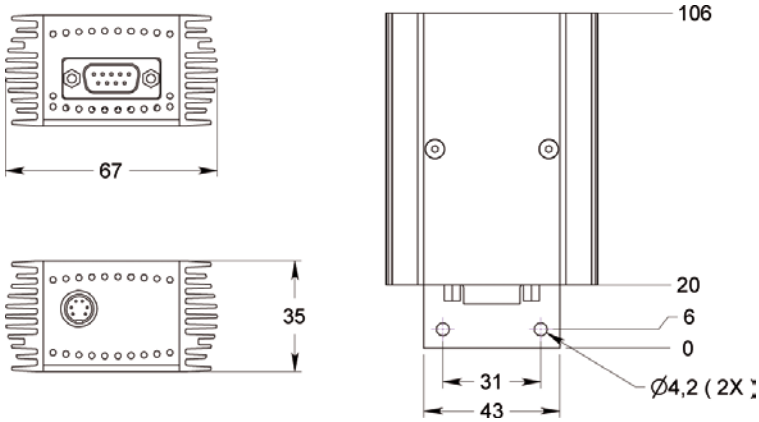

Figure 2

PAD1 1131/24 · PAD1 1132/24

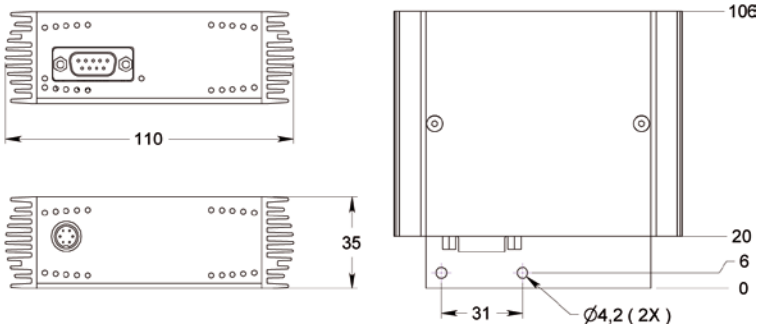

Figure 3

PAD2 1235/1 · PAD1 1231/8

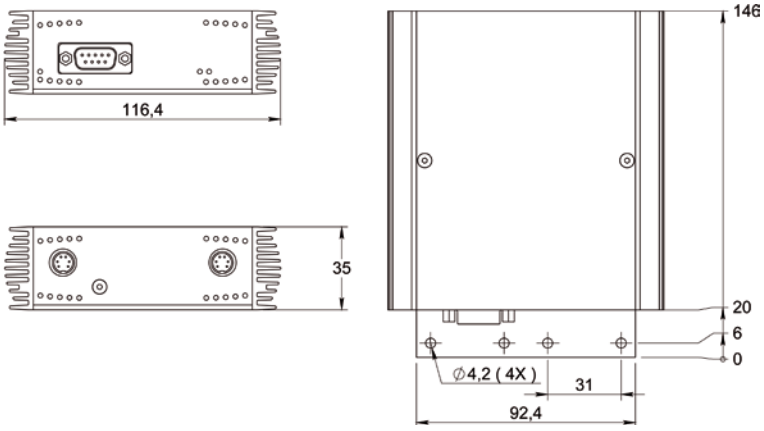

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Figure 4

PAD2 1435/1 · PAD1 1431/8 · PAD1 1432/8

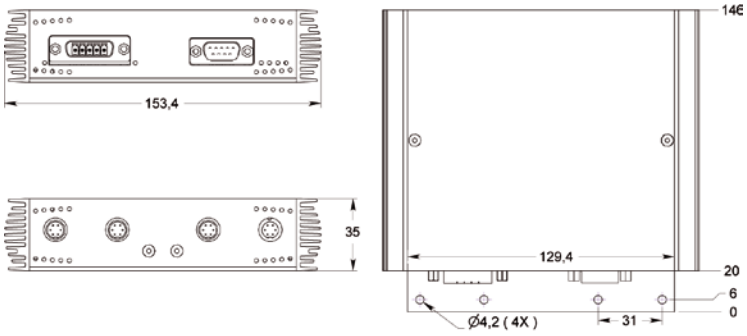

Figure 5

PAD2 4136/1 · PAD1 4132/8

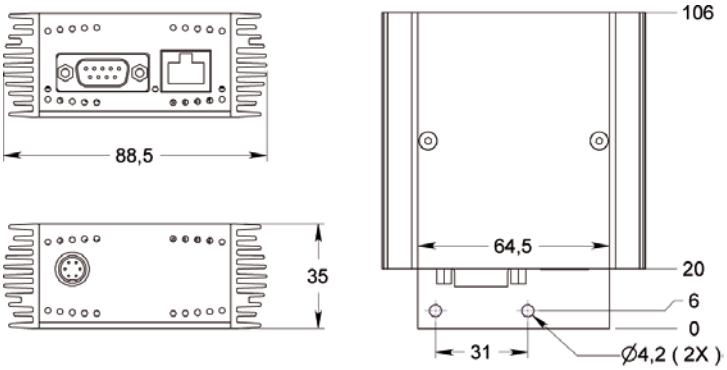

Figure 6

PAD2 4136/3 · PAD1 4132/24

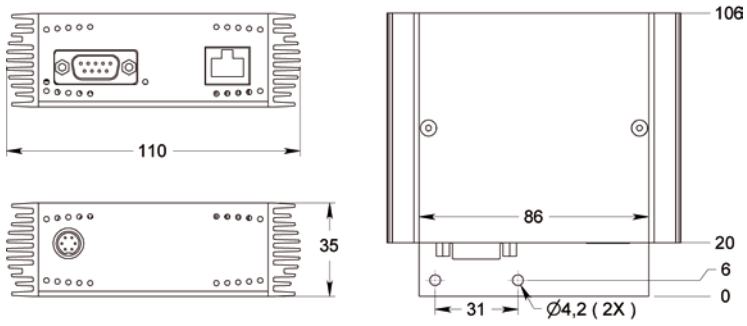

Figure 7

PAD2 4236/1 · PAD1 4232/8

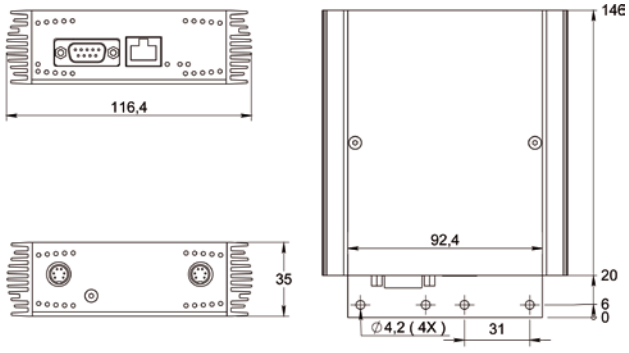

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Figure 8

PAD2 4436/1 · PAD1 4432/8

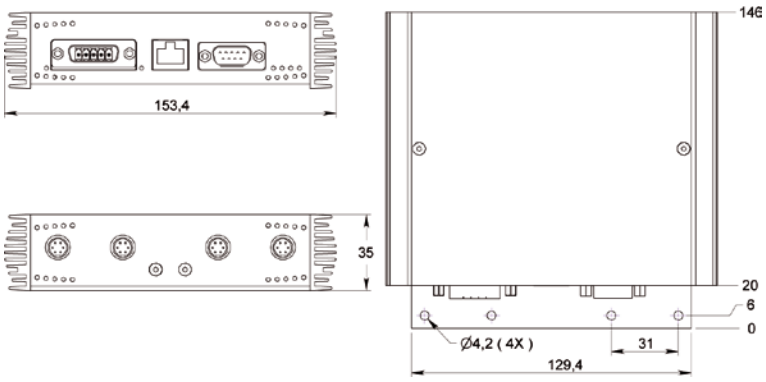


Figure 9

PAD2 2135/1 · PAD2 2135/3

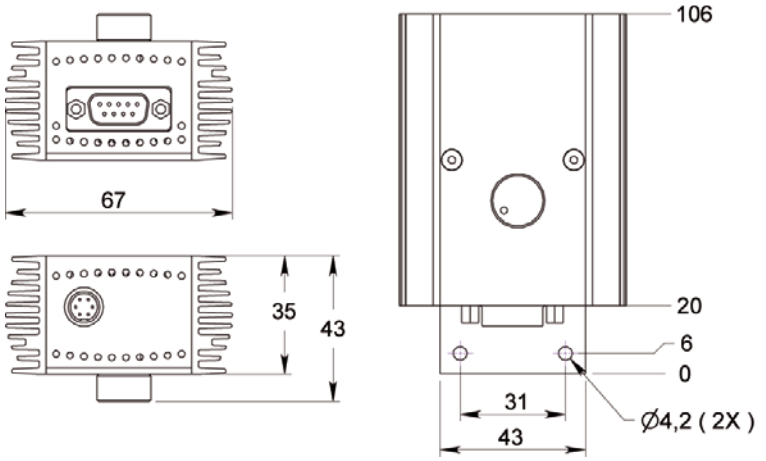
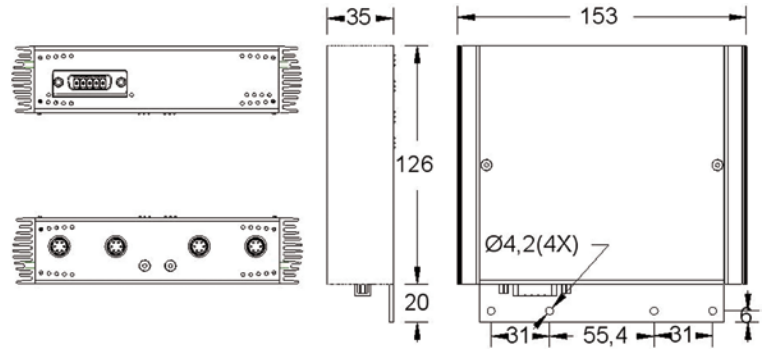


Figure 10

PAD2 1436/1



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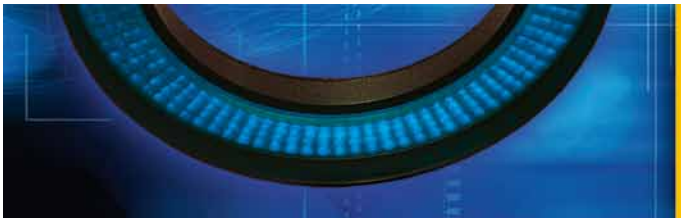
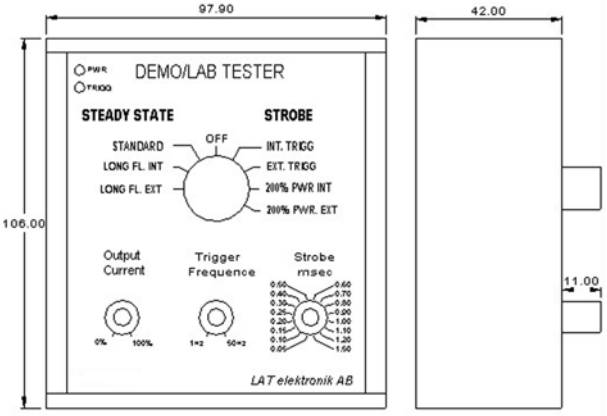


LATAB
Industrial LED Lighting

Demo controller / laboratory tester

- A demo controller / laboratory tester with plug & play functionality.
- All adjustments can be made from the front panel.
- The demo controller can operate in both continuous and strobe modes.
- Continuous mode: normal as well as long flash (double light intensity) with internal or external trigger.
- Strobe mode: with internal or external trigger.
- Adjustable trigger frequency and output current.

Mechanical dimensions



General specifications

Supply voltage	24 V DC ± 5%, max. 1 A
Continuous mode	Brightness adjustable, max. 1 A, fine adjustment by potentiometer, 200% more light intensity with long flash mode at 50% on/off at max. 5 sec
Strobe mode	Brightness adjustable, max. 8 A, strobe time from 0.05 - 1.5 msec in 16 steps, trigger frequency 1 - 50 Hz
Operation temperature	0 - 65 °C

Order number
PAD8 1012

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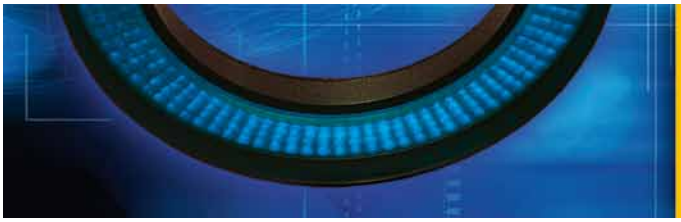

LATAB
Industrial LED Lighting

Demo / laboratory lighting kit

Different environmental conditions for machine vision applications can often make the choice of suitable lighting difficult. That's why in many cases different lighting applications have to be tested for the ideal solution.

The different lights are controlled by the demo controller / laboratory tester with all possible functions of the LATAB controllers.

The demo / laboratory lighting kit comes in a black suitcase.

Contents

Product	Dimensions (mm)	Available light colors	Order number
Demo controller/ laboratory tester			PAD8 1012
Ring light	outer Ø 102	Red / White	SAX3 1102
Dome light	outer Ø 102	Red / White	SAX3 2102
Dark field	outer Ø 103	Red / White	SAX3 4103
Line lights - two lines	122mm length 86mm length	Red White	SAH4 2122 SAW4 2086
Front light	56 x 80 x 15	Red / White	SAX5 1011
Back light	63 x 84 x 30	Red / White	SAX7 0802
Coaxial light	25 x 25	Red / White	SAX9 2525
AC/DC converter			

Other combinations on request.

Mechanical dimensions

440 x 325 x 135 mm

General specifications

Supply voltage	24 V DC ± 5%, max. 1 A
Continuous mode	Brightness adjustable, max. 1 A, fine adjustment by potentiometer, 200% more light intensity with long flash mode at 50% on/off at max. 5 sec
Strobe mode	Brightness adjustable, max. 8 A, strobe time from 0.05 - 1.5 msec in 16 steps, trigger frequency 1 - 50 Hz
Operation temperature	0 - 65 °C

Order information

Order number	Color	Wavelength
SAH8 6110	Red	617 nm
SAW8 6110	White	

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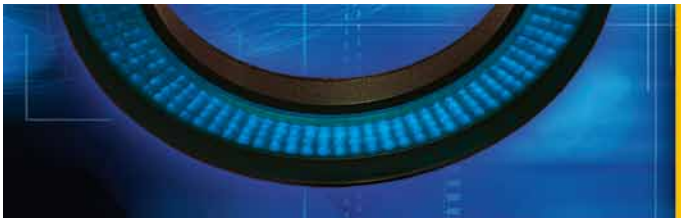

LATAB
Industrial LED Lighting

Order options

Cable options for lighting heads

LATAB lighting heads are supplied with a 1 m cable by default.

For different lengths and types of cables please select the order code extension from the table below.

Extension cables for lighting heads

Extension cables between lighting head connector and controller are available for continuous and strobe mode controllers. Please select the cable length and type from the table below.

Diffuser

For a particularly homogeneous lighting there are diffusers available for the line light families and the front light 80 x 56 mm.

Ring lights and back lights have a diffuser included as standard.

Polarization filters

For ring lights with 78 and 102 mm diameter there are polarization filters available. For details please see page 31.

Custom light beam angle

For dark field and ring lights the light beam angle can be adapted to customer needs. See also page 5.

Lighting head brackets

There are different brackets available. For details please see page 30.

DIN clips for controllers

For a controller mounting on DIN rails there are DIN clips available for all control units. Two clips are mounted on the controller back side. For assembling just push the controller with the clips on the rail. Please select the option from the table below.

Order information

Order option	Specified	Order code	Example
Cable options for lighting heads	different lengths	add "/XX" behind light head order number	SAH3 1078/5 for 5 m cable or SAH3 1078/05 for 0.5 m cable
Cable options for lighting heads	various flexibility	add "/R" behind light head order number	SAH3 1078/R for flexible 1 m cable or SAH3 1078/R3 for flexible 3 m cable
Extension cables for lighting heads	for continuous mode controllers	LKP1 XXXX	LKP1 3500 for 3.5 m extension cable
Extension cables for lighting heads	for strobe mode controllers	LKS1 XXXX	LKS1 5000 for 5 m extension cable
Diffuser	for line lights and front light 80 x 56 mm	add "/S" behind light head order number	SAH4 1050/S
Polarization filter	see page 31		
Custom light beam angle for dark field lights	degrees of beam angle, 80° is standard, adjustable from 70° - 90°	add "/(XX)" behind light head order number	SAX3 4072/(85) for 85° light beam angle
Custom light beam angle for ring lights	degrees of beam angle, 12° is standard, adjustable from 0° - 40°	add "/(XX)" behind light head order number	SAX3 1078/(05) for 5° light beam angle
Lighting head brackets	see page 30		
DIN clips for controllers	two clips on back side	add "/D" behind controller order number	PAD1 1131/8/D

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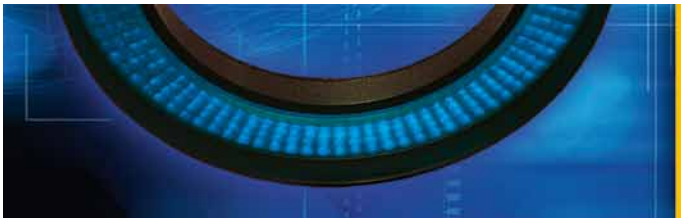


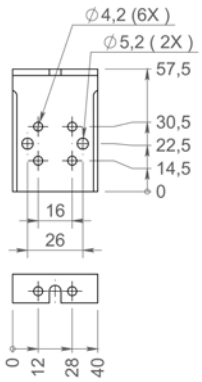
LATAB
Industrial LED Lighting

Lighting head brackets

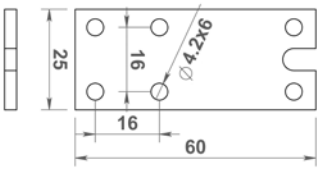
Alternative brackets with different dimensions are available to fit the LATAB lighting heads to special requirements.

Mechanical dimensions

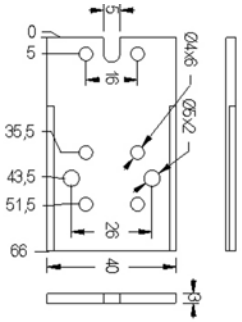
Universal, angle for S-series (SXX3 010213)



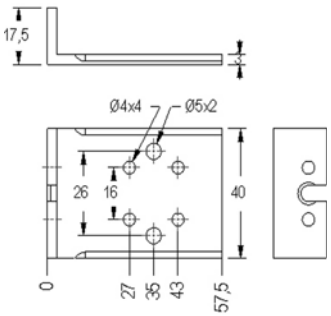
Universal, straight for S-series dark field (LAD3 4011)



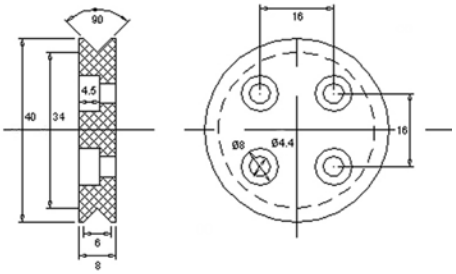
Universal, straight (LAD3 6114)



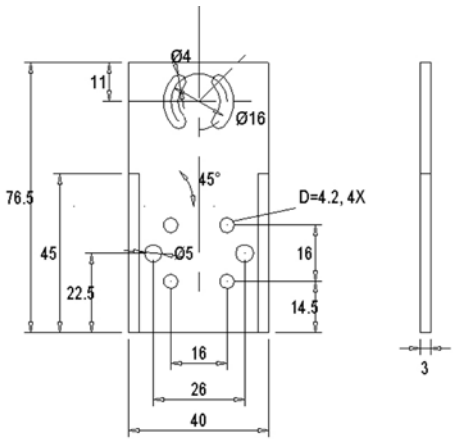
Universal, angle (LAD3 7217)



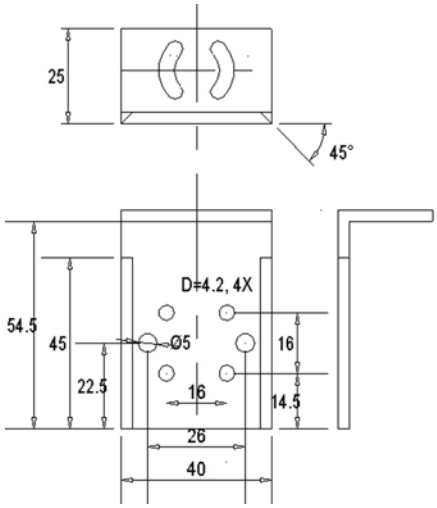
Round for Montech (LDF6 1011)



Adjustable, straight (LDF6 1023)



Adjustable, angle (LDF6 1022)



Order information

Order number	Design
SXX3 010213	Universal, angle for S-series only
LAD3 4011	Universal, straight for dark field of S-series only
LAD2 6114	Universal, straight, for P-series and SXX4, SXX7, SXX9-series
LAD3 7217	Universal, angle, for P-series and SXX4, SXX7, SXX9-series
LDF6 1011	Round for Montech, for P-series and SXX4, SXX7, SXX9-series
LDF6 1023	Adjustable, straight, for P-series and SXX4, SXX7, SXX9-series
LDF6 1022	Adjustable, angle, for P-series and SXX4, SXX7, SXX9-series

Other types and custom designs on request.

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Polarization filters for ring lights

There are polarization filters for ring lights with 78 and 102 mm diameter available.

The filter consists of two parts: an outer part for the ring light and an inner part for the camera. The outer section is fixed by three screws. The inner section is twistable in order to adjust the polarization effect.

The most used polarization filter is HN38 with a total luminous transmittance of approximately 38% and it's noted for the lack of color distortion.

The filter ring is made of black aluminium.

Other types of polarization filters on request.

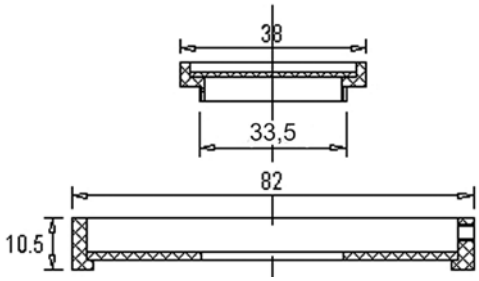
Order information

Order number	Design
LFL3 1078	polarization filter for SAX3 1078
LFL3 1102	polarization filter for SAX3 1102

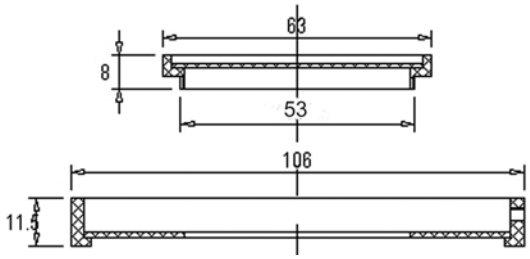
Other types and custom designs on request.

Mechanical dimensions

LFL3 1078



LFL3 1102



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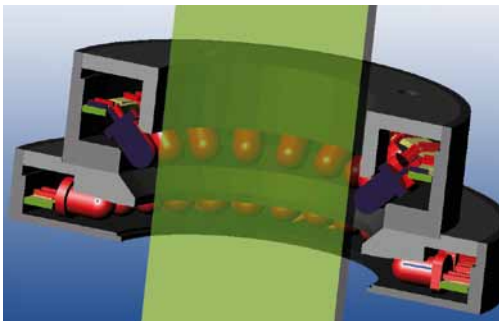
LATAB
Industrial LED Lighting

Customer-specific engineering

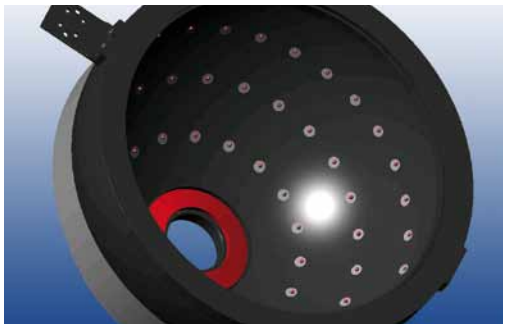
Customer-specific developments and adaptations are a core part of LATAB's business at near standard prices of course, and with short project lead times. You name it, we'll make it!

Design skills:

- CAD engineering
- Electronics development
- Optical design
- Thermal management



Customer-specific light in sectional view



Customer-specific dome light with integrated ring light in top section and three LED rings in dome

Modular high brightness LED components for various applications

General LED lighting

In addition to LED lighting for the machine vision market, LATAB also offers general lighting solutions.

Examples include decorative lighting and object illumination, both indoors and out, using light modules based on high brightness or ultra-bright LEDs. LATAB's extensive experience in meeting the requirements of industrial applications paired with many years of design skills are the key to its successful LED engineering.

Intelligent interior illumination

International Sales Contact:

E-Mail sales@latab.de

Phone +49 (0) 7243 604-180

Fax +49 (0) 7243 69944

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LAT elektronik AB (Sweden)
Krossgatan 18
SE-162 50 Vällingby
Tel. +46 (0) 8704 9225
Fax +46 (0) 8564 32006
info@latab.se

International Sales:
Polytec GmbH (Germany)
Polytec-Platz 1-7
D-76337 Waldbronn
Tel. + 49 (0) 7243 604-0
Fax + 49 (0) 7243 69944
info@polytec.de

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