

Back light, incident light and line laser

Lighting Modules: Incident Light, Back Light and Line Laser



There is no optical recognition without light – a simple rule. However, it is not as easy to provide the perfect illumination for camera sensors. High cycle rates, fast moving products, difficult to capture objects and ambient conditions all have an affect on illumination.

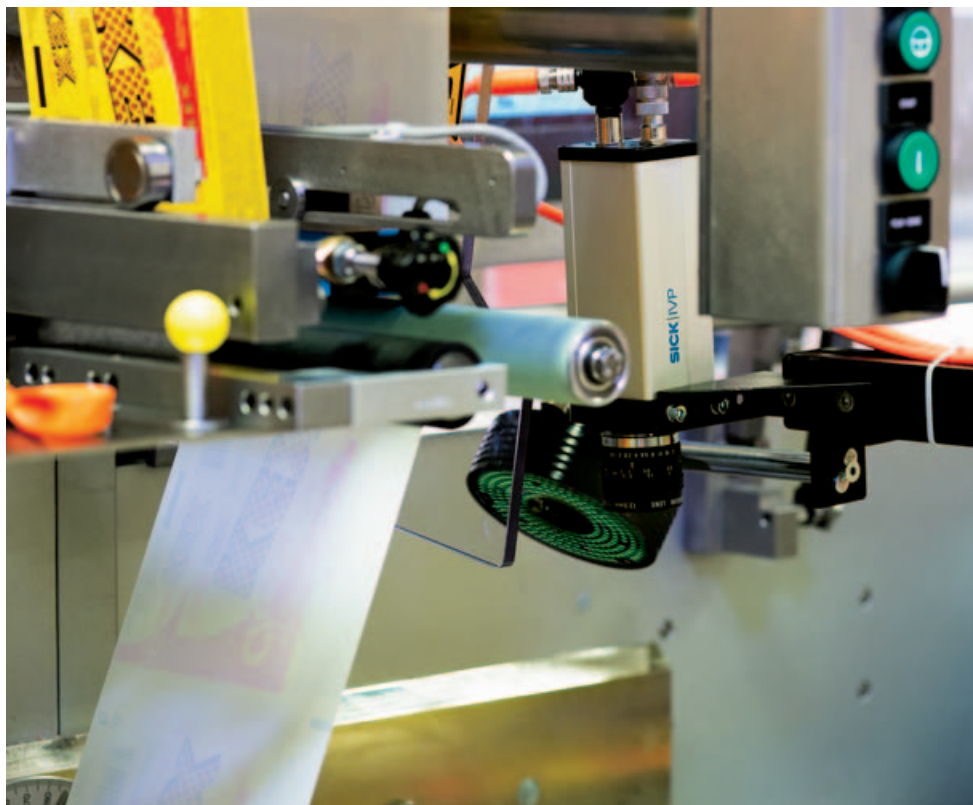
ICL lighting, incident lighting and back light, offers nonfluctuating, high intensity illumination through constant-current regulation.

ICL lighting does not require a ballast and has a dedicated input receiving the camera trigger signals from the camera.

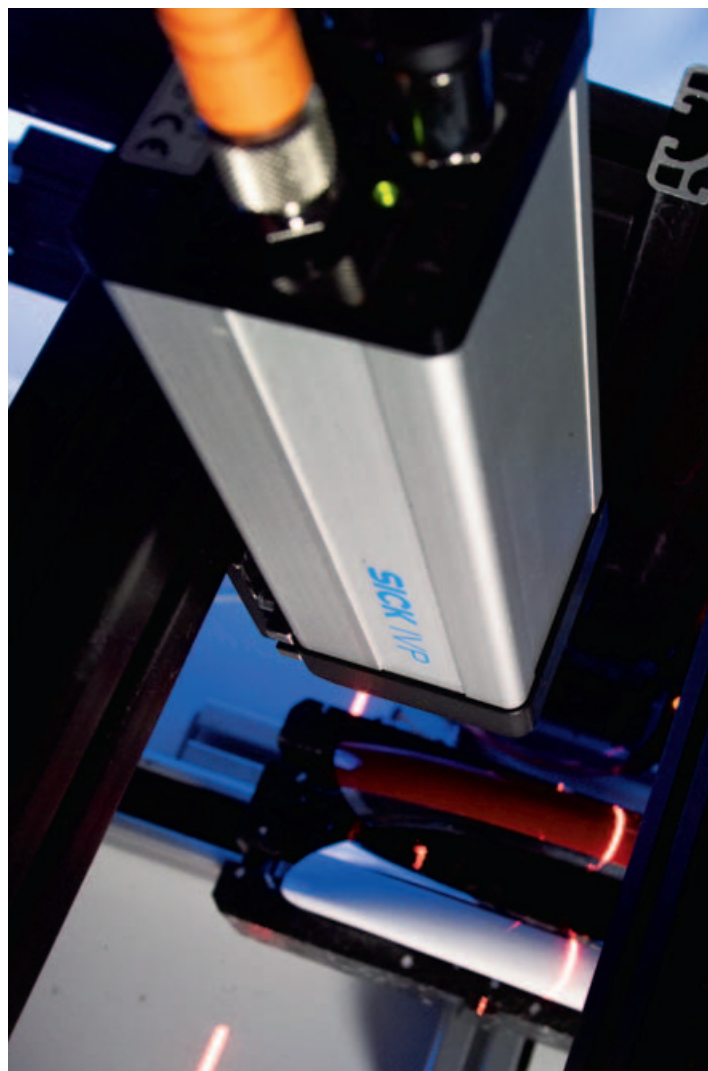
Wherever tasks based on height information must be solved, the Industrial Laser Projector together with a 2D-sensor can be the basis for a reliable solution. A laser line is projected on a part and a matrix camera takes a picture of the line from a different angle. This way a height profile can be calculated.

All components of the Industrial Laser projector are easily connected to each other: The cameras are connected to the ICT-B laser control box via standard M12 cables and via T-splitter to power supply. The lasers are connected to the prepared terminals in the ICT-B. Additionally a trigger sensor for the camera can be easily connected to the ICT-B.

By applying a filter to the camera, from our accessories, the solutions become very robust against ambient light changes.

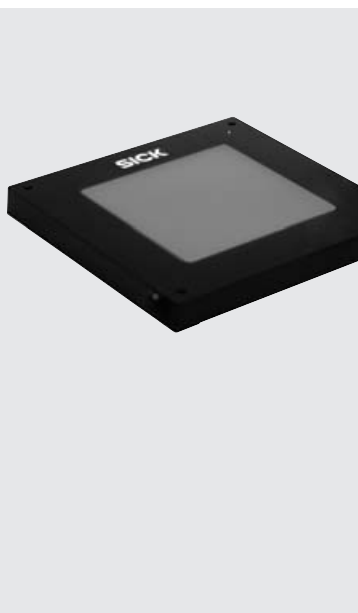


In automatic packaging plants, big and small objects are checked by camera sensors. Correct illumination plays an essential part in this.



	Area illuminated
	100 x 100 m ² / 180 x 180 m ²
	Back lights

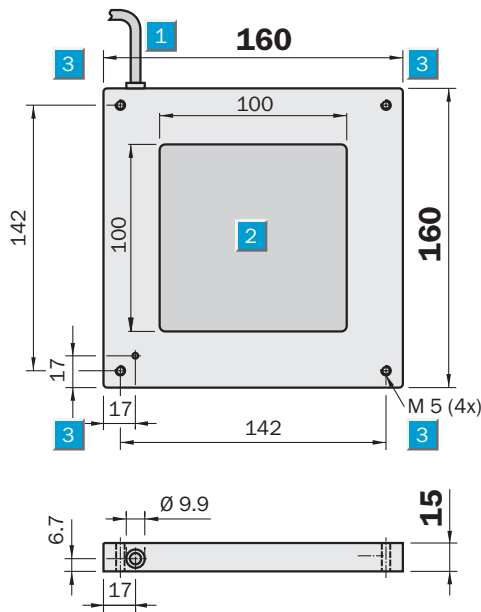
- Sturdy housing (IP 67)
- Flat design (15 mm/20 mm)
- Intense illumination ($\geq 8 \text{ W/m}^2$)
- Enhanced edge intensity to compensate for lens characteristics (vignetting)
- Constant current control
- Trigger input



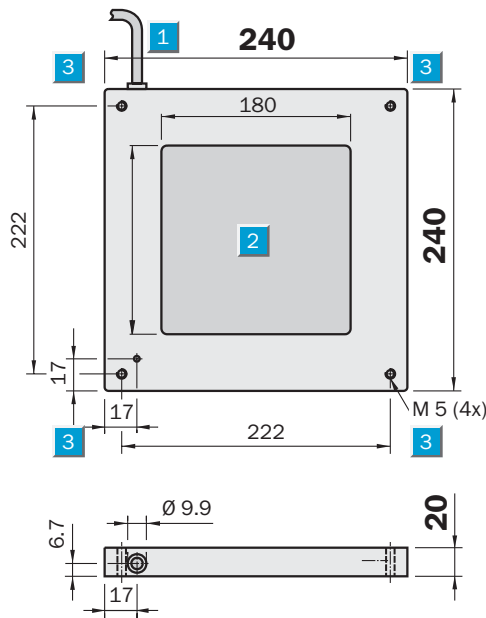
See chapter Accessories
Cables and connectors

Dimensional drawing

ICL100B



ICL180B

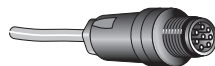


- 1 Cable with M12 plug, 8-pin
- 2 Area illuminated
- 3 Mounting hole, M5

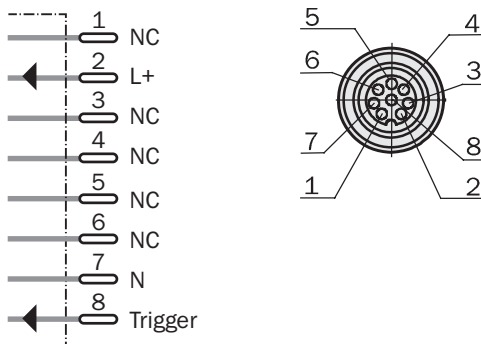
Connection types

ICL100B

ICL180B



8-pin, M12

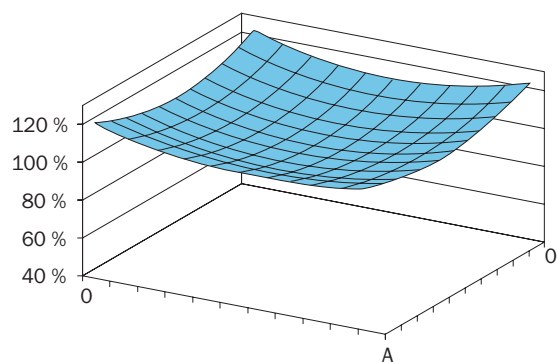


Technical data		ICL	100B	180B							
Optical characteristics											
Area illuminated	100 x 100 mm ²		■								
	180 x 180 mm ²			■							
Light source	LED, 630 nm		■	■							
Emittance ¹⁾	≥ 8 W/m ²		■	■							
Higher emittance on outer regions	Approx. 20 % ²⁾		■	■							
Degradation period of LEDs ³⁾	> 50,000 h ⁴⁾ /> 35,000 h		■	■							
Regulation of emittance on V _S	Constant at V _S = 19.2 to 28.8 V		■	■							
Electrical characteristics											
Supply voltage V _S	19.2 ... 28.8 V DC ⁵⁾		■	■							
Residual ripple	5 V _{PP}		■	■							
Current consumption	Approx. 250 mA		■								
	Approx. 550 mA			■							
Trigger input	TTL, 28.8 V max. ⁵⁾ , LOW = lighting on		■	■							
VDE protection class ⁶⁾	V		■	■							
Connecting cable	M12 plug, 8-pin, L = 0.8 m ⁷⁾		■								
	M12 plug, 8-pin, L = 1.2 m ⁷⁾			■							
Mechanical characteristics											
Enclosure rating	IP 67		■	■							
Weight	800 g		■								
	2.0 kg			■							
Ambient conditions											
Ambient temperature	Operation: 0 °C ... +50 °C		■	■							
	Storage: -25 °C ... +70 °C		■	■							
Shock load	Single: 15 g		■	■							
	Continuous: 10 g		■	■							
Vibration	± 0,35 mm at 10 ... 58/s		■	■							
	5 g, at 58 ... 150/s		■	■							
Humidity	93 %, relative		■	■							

- 1) Emittance at distance of 0 m, mean value over entire area illuminated
- 2) This compensates for normal lens vignetting (see vignetting compensation)
- 3) Drop in intensity to 50 %
- 4) In triggered mode at pulse-interval ratio of ≤ 20 %
- 5) Reverse-polarity protection
- 6) Reference voltage 50 V DC
- 7) Assignment, see connection diagram

Vignetting compensation

ICL100B	A = 100 mm
ICL180B	A = 180 mm




Order information

Type	Order no.
ICL100B 321	1024224
ICL180B 321	1024225

Filter for ICV-2D with C-mount lenses

Type	Order no.
OBF-IVC-630-1	2039202

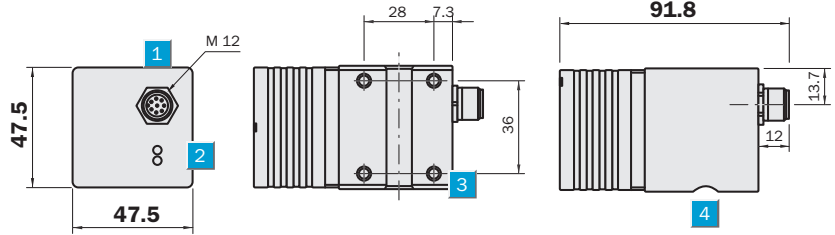
	Area illuminated
	20 x 20 mm ² / 40 x 40 mm ² / 110 x 110 mm ²
	Direct lights

- Sturdy housing (IP 65)
- Intense illumination (approx. 50 W/m²)
- Enhanced edge intensity to compensate for lens characteristics (vignetting)
- Constant current control
- Trigger input

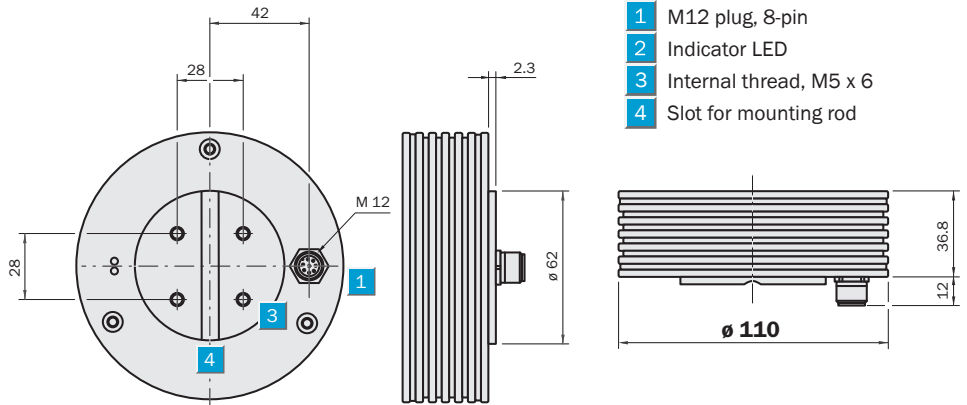


Dimensional drawing

ICL20S

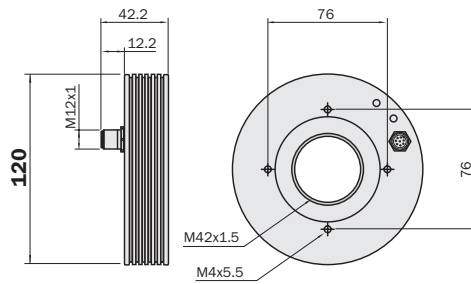


ICL40S



- 1 M12 plug, 8-pin
- 2 Indicator LED
- 3 Internal thread, M5 x 6
- 4 Slot for mounting rod

ICL110-F142

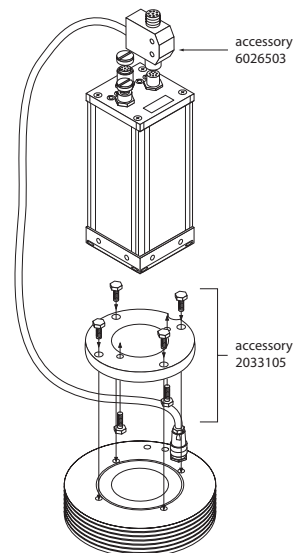
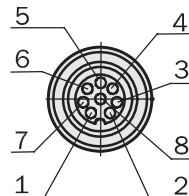
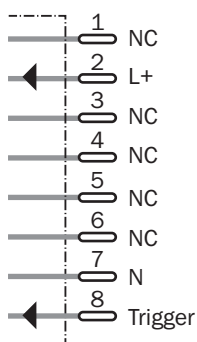
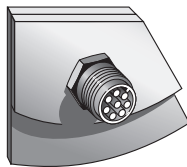


Connection types

ICL20S

ICL40S

ICL110-F142



See chapter Accessories

Cables and connectors

Mounting systems

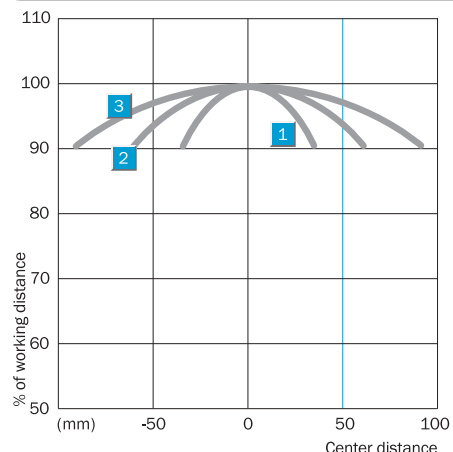
Technical data		ICL	20S	40S	110-F142							
Optical characteristics												
Area illuminated	∅ 28 mm; □ 20 x 20 mm ²											
	∅ 50 mm; □ 35 x 35 mm ²											
	110 mm x 110 mm at 250 mm dist.											
Nominal distance	70 mm											
	140 mm											
	100 ... 300 mm											
Light source	LED, 525 nm											
Emittance ¹⁾	Approx. 50 W/m ²											
Higher emittance on outer regions	Approx. 20 % ²⁾											
Degradation period of LEDs ³⁾	≥ 50,000 h											
Regulation of emittance on V _S	Constant at V _S = 19.2 ... 28.8 V											
Electrical characteristics												
Supply voltage V _S	19.2 ... 28.8 V DC ⁴⁾											
Residual ripple	5 V _{PP}											
Current consumption	Max. 150 mA											
	Max. 250 mA											
	Max. 400 mA											
Trigger input	TTL, max. 28.8 V ⁴⁾ , LOW = lighting on											
VDE protection class ⁵⁾	III											
	V											
Connecting cable	M12 plug, 8-pin ⁶⁾											
Mechanical characteristics												
Enclosure rating	IP 65											
Weight	230 g											
	540 g											
	580 g											
Ambient conditions												
Ambient temperature	Operation: 0 °C ... +50 °C											
	Storage: -25 °C ... +70 °C											
Shock load	Single: 15 g											
	Continuous: 10 g											
Vibration	± 0.35 mm at 10 ... 58/s											
	5 g at 58 ... 150/s											
Humidity	93 %, relative											

- 1) At nominal distance
- 2) This compensates for normal lens vignetting
- 3) Drop in intensity to 50 %
- 4) Reverse-polarity protection
- 5) Reference voltage 32 V DC
- 6) Assignment, see connection diagram

Vignetting compensation	
ICL20S	A = 28 mm
ICL40S	A = 50 mm

Order information	
Type	Order no.
ICL 20-S212	1024222
ICL 40-S212	1024223
Rod mounting	2029022
ICL110-F142	1027286

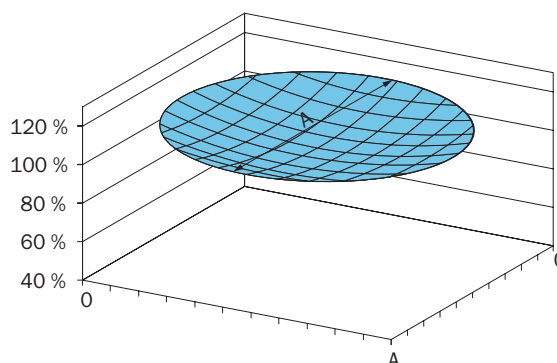
ICL110-F142

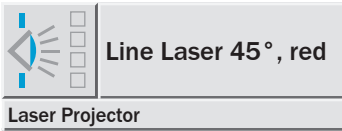


- 1 100 mm: ≤ ~20 W/m²
- 2 200 mm: ≤ ~7 W/m²
- 3 300 mm: ≤ ~4 W/m²

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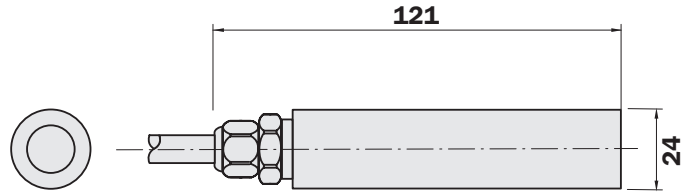
ICL20S, ICL40S



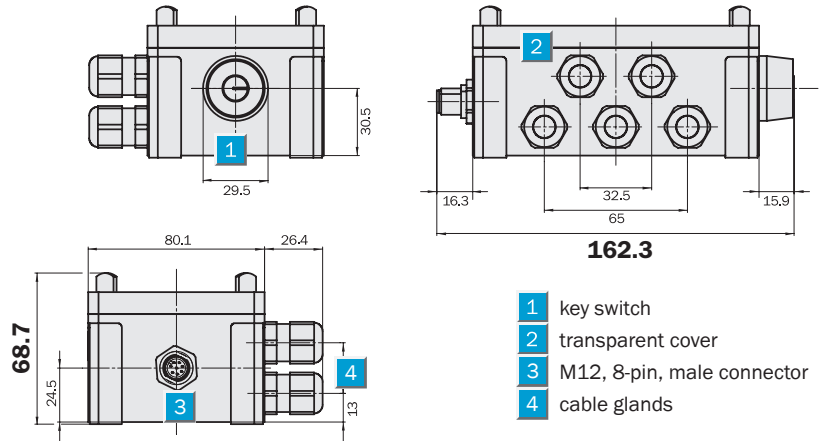


- Robust mechanical, electrical and optical design
- Long life time
- Flexible mechanical set-up
- Easy connection to IVC-2D and ICS
- High availability and reliability due to shock and water proof housing

Dimensional information ILP2 and ILP3

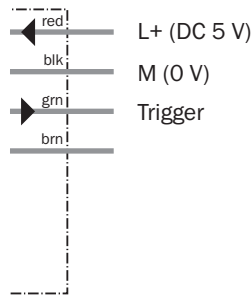


Dimensional information ICT-B

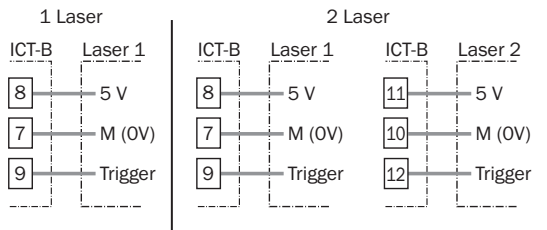


Electrical connections ILP2 and ILP3

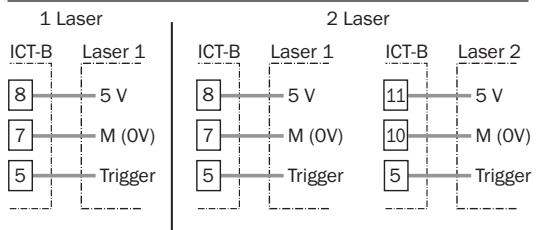
ILP



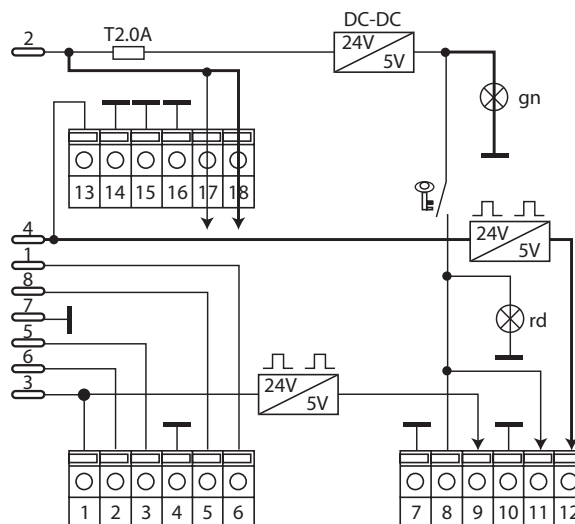
ILP with IVC-2D



ILP with ICS



Electrical connections ICT-B



Technical data		ILP2- L11111	ILP3- L11111	ICT-B						
Laser fan angle	45°									
Laser wavelength	660 nm ± 10 nm (red)									
Laser class after optics	II/2M									
DCRH/IEC	III/3B									
Laser line homogeneity	± 25 %									
Beam divergence	≤ ± 1.5 mrad									
Focal length	∞									
Laser power output	< 1 mW									
	< 5 mW									
Pulsed operation	Controlled by trigger input ¹⁾									
Minimum pulse length	10 µs									
Pulse rise + delay time	< 3 µs									
Power down time	< 1 µs									
Duty cycle	Any ²⁾									
Life time of laser diode	50.000...100.000h h MTTF at 20 °C									
Power requirement V _S	4.5 ... 6 V DC									
	24 V DC ± 20%									
Delay after power on	< 10 ms									
Operating current	<150 mA at V _S = 5 V ± 5%									
	< 50 mA ³⁾									
Output voltage for laser	5.3 V DC ± 2%									
Max output current for lasers	≤ 500 mA ⁴⁾									
Residual ripple	< 5 V _{pp}									
Circuit protection	A ⁵⁾									
Connection type	5 m cable, 4-pin, terminal end									
	M12, 8-pin, male connector									
	for camera connection									
	Cable glands and terminals									
	for laser connection									
Shock load	Single 15 g; continuous 10 g									
Vibration resistance	± 0.35 mm at 10 ...									
	58/s; 5 g at 58 ... 150/s									
	1g, 10 ... 2000 Hz, 3 axes									
Ambient Temperature	Operation: -10 ... +48 °C									
	Storage: -20 ... +70 °C									
Enclosure rate	IP67									
Weight	Approx . 400 g									
	Approx. 350 g									
Housing material	Aluminum, anodized									
	Plastics									

¹⁾ HIGH (4.5 ... 6V DC) = Laser on,
LOW or not connected = Laser off

²⁾ Continuous wave allowed

³⁾ Current for ICT-B only (increased when
Laser connected to ICT-B is on)

⁴⁾ Total sum of all connected lasers

⁵⁾ A = reverse polarity protection

Ordering information			
Main Components		Accessories	
Type	Order no.	Type	Order no.
ILP2-L11111	1028625	Mounting bracket for lasers	2034486
ILP3-L11111	1028626	Optical filter, red, for lenses	2034437
ICT-B	1028342	5314041 and 5314042	
		OBF-IVC-660-1 IVC-2D filter for	2039191
		C-mount lenses	
		T-Splitter	6026503
		Extension cable, M12, 8-pin, 1 m,	6026625
		Female connector, M12, 8-pin,	6020633
		straight, with 2 m cable	