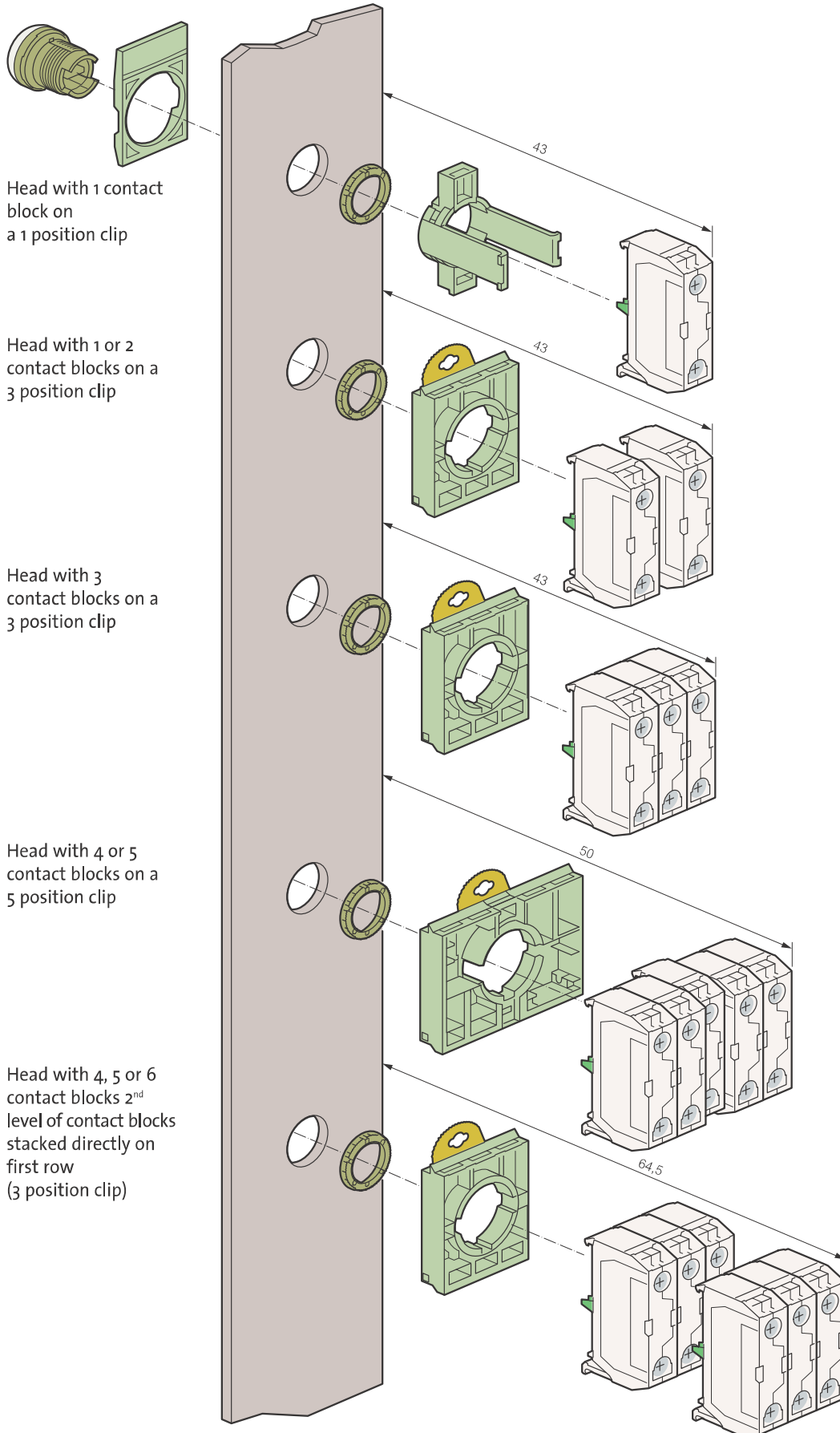


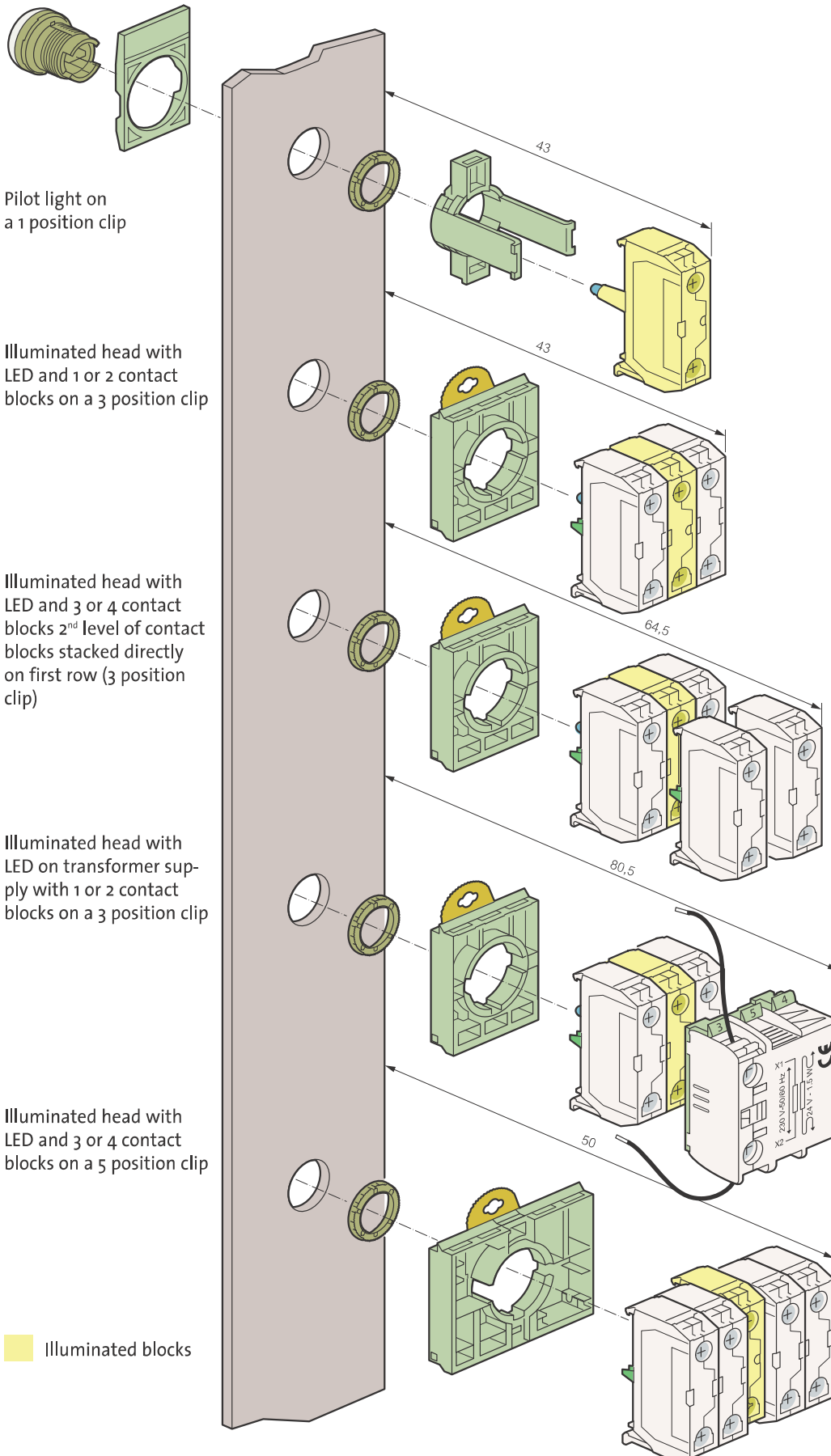
# Mounting blocks $\varnothing 22$

NON ILLUMINATED



# Mounting blocks $\varnothing 22$

## ILLUMINATED



# Technical characteristics

## ▶ GENERAL

Characteristics	Data	Standards
▶ Storage temperature	- 40 °C to + 70 °C	
▶ Operating temperature	- 25 °C to + 70 °C	
▶ Climatic resistance	Constant humid heat Cyclic damp heat Resistance to sea air	IEC 60068-2-3 IEC 60068-2-30 IEC 60068-2-52
▶ Degree of protection	IP 65 for adjustable mechanical push button IP 65 for USB interface IP 66 for standard heads IP 67 for shrouded heads IP 66 for equipped control stations IP 69 and IP 69K for push buttons IP 69 and IP 69K for selector switches IP 69 and IP 69K for pilot devices IP 69 and IP 69K for emergency stops IP 69 and IP 69K for audible warning buzzers IP 20 at the rear of the panel for contact blocks and one piece pilot lights Type 1, 2, 3, 3R, 3S, 4, 4X, 12, and 13 for heads and control stations	IEC 60529 IEC 60529 IEC 60529 IEC 60529 IEC 60529 IEC 60529 - ISO 20653 IEC 60529 - ISO 20653 IEC 60529 - ISO 20653 IEC 60529 - ISO 20653 IEC 60529 - ISO 20653 IEC 60529 - ISO 20653 NEMA standard
▶ Protection against mechanical impacts	IK 05 illuminated and non illuminated heads IK 07 empty control station	IEC 62262
▶ Electrical insulation	Class II - heads and control station	IEC 60947-5-1
▶ Terminal marking		IEC 60947-1
▶ Tightening torques	Locking ring: recommended 3 N.m or tightened with the fixing tool to hand tight after pressure point plus another half turn Terminals: max. 1.2 N.m	
▶ Approvals	UL United states and Canada BV Bureau Véritas Certification OC/CB	UL 508, CSA 22.2 Marine rules IEC 60947-5-1 IEC 60947-5-5 IEC 60947-5-4
▶ Vibrations	withstand vibration Fc test: 2 to 25 Hz, 1.6 mm; 25-100 Hz, 4 g	IEC 60068-2-6

# Technical characteristics

## ▶ CONTACT BLOCKS

Screw and plug-in connection characteristics	Data	Standards	
▶ Rated insulation voltage	690 V AC 600 V AC	IEC 60947-1 UL 508	
▶ NC contacts	Positive opening	IEC 60947-5-1	
▶ Rated impulse voltage Uimp Pollution degree	6kV 3		
▶ Conventional thermal current in free air conditions	AC15: 10 A DC13: 2,5 A	IEC 60947-5-1	
▶ Electrical ratings	<p><b>Alternating current</b> AC15 - A 600 Ue = 120 V, Ie = 6 A Ue = 240 V, Ie = 3 A Ue = 380 V, Ie = 1,9 A Ue = 480 V, Ie = 1,5 A Ue = 500 V, Ie = 1,4 A Ue = 600 V, Ie = 1,2 A</p> <p><b>Minimum operating current</b> - standard blocks Ue = 24 V DC and Ie = 5 mA Failure rate &lt; 10<sup>-8</sup></p>	<p><b>Direct current</b> DC13 - Q 600 Ue = 125 V, Ie = 0,55 A Ue = 250 V, Ie = 0,27 A Ue = 400 V, Ie = 0,15 A Ue = 500 V, Ie = 0,13 A Ue = 600 V, Ie = 0,1 A</p> <p>- golden contacts Ue = 5 V DC and Ie = 1 mA Failure rate &lt; 10<sup>-8</sup></p>	IEC 60947-5-1
▶ Electrical operating life	<p><b>1 million cycles for:</b> - AC15 - B 300 Ue = 120 V, Ie = 3 A Ue = 240 V, Ie = 1,5 A</p> <p>- DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A</p>		
▶ Applicable wire sizes	Rigid or flexible wire without ferrule: 0,5 mm <sup>2</sup> to 2 x 2,5 mm <sup>2</sup> Rigid or flexible wire with ferrule: 0,5 mm <sup>2</sup> to 2 x 1,5 mm <sup>2</sup>		

Faston connection	Data	Standards	
▶ Rated insulation voltage	320 V AC 300 V AC	IEC 60947-1 UL 508	
▶ NC contacts	Positive opening	IEC 60947-5-1	
▶ Rated impulse withstanding voltage Uimp Pollution degree	6 kV 3		
▶ Conventional thermal current in free air conditions	AC 15: 10 A DC 13: 2,5 A	IEC 60947-5-1	
▶ Electrical ratings	<p><b>Alternating current</b> AC15 - A 300 Ue = 120 V, Ie = 6 A Ue = 240 V, Ie = 3 A</p> <p><b>Minimum current of use</b> Ue = 24 V DC and Ie = 5 mA Failure rate &lt; 10<sup>-8</sup></p>	<p><b>Direct current</b> DC13 - Q 300 Ue = 125 V, Ie = 0,55 A Ue = 250 V, Ie = 0,27 A</p> <p>- DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A</p>	IEC 60947-5-1
▶ Electrical operating life	<p><b>1 million cycles for:</b> - AC15 - B 300 Ue = 120 V, Ie = 3 A Ue = 240 V, Ie = 1,5 A</p> <p>- DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A</p>		
▶ Faston size	6,35 mm or 2 x 2,8 mm		

# Technical characteristics

## ▶ CONTACT BLOCKS

Pin-style connection (for PCB)	Data		Standards
▶ Rated insulation voltage	250 V AC 250 V AC		IEC 60947-1 UL 508
▶ NC contacts	Positive opening		IEC 60947-5-1
▶ Rated impulse withstanding voltage Uimp Pollution degree	4 kV 3		
▶ Conventional thermal current in free air conditions	AC 15: 5 A DC 13: 1 A		IEC 60947-5-1
▶ Electrical ratings	<b>Alternating current</b> AC 15 - B 300 Ue = 120 V, Ie = 3 A Ue = 240 V, Ie = 1,5 A	<b>Direct current</b> DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A	IEC 60947-5-1 IEC 60947-5-4
	<b>Minimum current of use</b> - standard blocks Ue = 24 V DC and Ie = 5 mA Failure rate < 10 <sup>-8</sup>	- golden contacts Ue = 5 V DC and Ie = 1 mA Failure rate < 10 <sup>-8</sup>	
▶ Electrical operating life	<b>1 million cycles for:</b> - AC15 - B 300 Ue = 120 V, Ie = 3 A Ue = 240 V, Ie = 1,5 A	- DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A	
▶ Pin diameter	ø 1 mm		

# Technical characteristics

## ▶ LED BLOCKS FOR ILLUMINATED HEADS AND ONE PIECE LED PILOT LIGHTS

Characteristics	Data	Standards
▶ Rated insulation voltage	300 V	IEC 60947-5-1
▶ Rated impulse voltage Uimp Pollution degree	4 kV (with filter block see p. 68) 3	IEC 60947-1
▶ Operating voltage	12 to 24 V AC/DC 48 V AC/DC (for LED block) 110 V DC 130 V AC 230 V AC	
▶ Frequency	50 or 60 Hz	
▶ Lifetime at rated supply voltage	Red and yellow: 100 000 hours at 25 °C Other colours: 50 000 hours at 25 °C	
▶ Consumption of LED blocks	Voltage: - 24 V: 25 mA ± 20% - 48 V: 15 mA ± 5% - 110 V: 20 mA ± 10% - 130 V: 20 mA ± 10% - 230 V: 16 mA ± 30%	

## ▶ ONE PIECE PILOT LIGHT BA9S

Characteristics	Data	Standards
▶ Rated insulation voltage	400 V	IEC 60947-5-1
▶ Rated impulse withstand voltage Uimp	4 kV	IEC 60947-1
▶ Bulb rating	400 V max. - 2,6 W max. 240 V max. - 2,6 W max.	IEC 60947-5-1 UL 508

# Technical characteristics

## ▶ USB INTERFACE 3.0

Characteristics	Data	Standards
▶ Rated insulation voltage	5 V AC/DC	IEC 60947-5-1
▶ Rated current	1,8 A	IEC 60947-5-1
▶ Insulation resistance	≥ 100 MΩ	
▶ Contact resistance	≤ 30 MΩ	
▶ USB class	3.0 (backward compatible with USB class 2.0)	
▶ Transmission characteristics for	5 Gbps (625 MB/sec)	
▶ Recommended fixing tool	Tightening flat wrench size 26 mm	

## ▶ AUDIBLE WARNING BUZZERS

Characteristics	Data	Standards
▶ Supply voltage	18 to 30 V AC/DC 85 to 140 V AC/DC 185 to 265 V AC/DC	IEC 60947-5-1
▶ Rated impulse voltage Uimp	4 KV	IEC 60947-5-1
▶ Sound Power	80 dB @ 10 cm	
▶ Frequency	50 or 60 Hz	
▶ Maximum power consumption	≤ 20 mA	
▶ Service life	30000 hours (continuously powered)	
▶ Recommended fixing tool	Tightening flat wrench size 26 mm	

# Technical characteristics

## ▶ HEADS

Characteristics	Data	Standards
▶ Mechanical endurance (in million cycles)	Spring return: 5 Push-push: 0,5 Selector switches: 0,3 Mushroom head maintained function ISO 13850: 0,10 Mushroom head maintained function: 0,15	
▶ Activation force in N	Spring return + NO: 6,5 Spring return + NC: 4,5 Additional NO contact: 4,5 Additional NC contact: 3,0 Push-pull mushroom head + NO + NC: 27 Push-turn mushroom head + NO + NC: 22 Push-pull mushroom head ISO 13850 + NO + NC: 37 Push-turn mushroom head ISO 13850 + NO + NC: 60	
▶ Activation force in Nm	Selector switch + NO: 0,04 Additional NO contact: 0.03	

## ▶ EMERGENCY STOP ACTUATORS - ISO 13850:

According to IEC 60947-5-5, the emergency stop function can be provided by an ISO 13850 mushroom head combined with a «positive opening» NC contact block.

The mechanism of our ISO 13850 mushroom heads is so designed that a «push» action of sufficient force to open the contact systematically triggers an irreversible locking of this opening. This generates an «emergency stop» signal which can be cancelled only by deliberate manual resetting of the mushroom head (pull and turn or unlocking by key).

This function allows to generate an «emergency stop» signal for any equipment subject to directive 98/37CE (machinery safety) completed by the IEC 60204-1 standard.

The ISO 13850 mushroom heads also comply with the safety requirements detailed in standard ISO 13850.

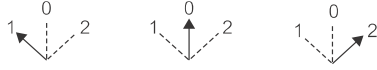


## Diagrams

### MECHANICAL OPERATION

For 3 position selector switches

**Handle**  
(View from front of panel)



**Contacts block actuation**  
(View from front of panel)



Back side view

Non operated block



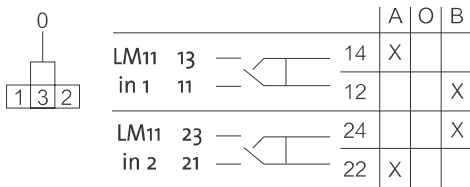
Operated block



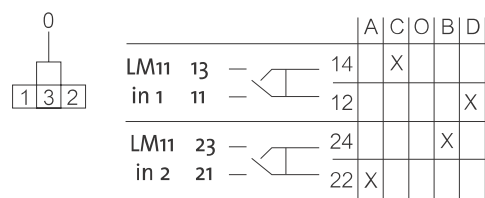
### MECHANICAL OPERATION

For Joysticks

2 positions

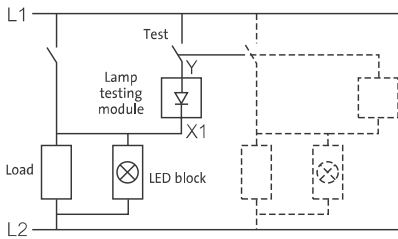


4 positions

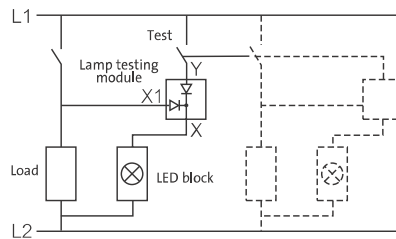


### PUSH-TO-TEST LED PILOT LIGHT DIAGRAMS

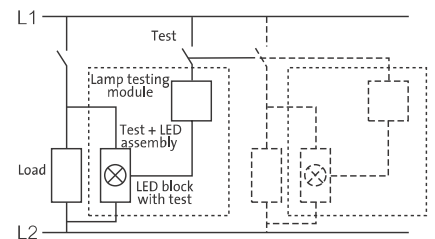
Lamp-testing module with 1 diode (33ET) for direct supply 24 V and 48 V



Lamp-testing module with 2 diodes (33ETT) for direct supply 24 V and 48 V



Lamp-testing assembly for direct supply 130 V and 240 V (Consult us - see page 79)



### PRINTED CIRCUIT BOARD MOUNTING

