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Technical Information

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Technical Information

General Information

Degrees of protection

Overview

IP protection ratings comply with DIN VDE 0470 Part 1, EN 60 529, IEC 529

The protection rating is indicated by the two code letters IP (International Protection) followed by two code numbers, which denote the degree of protection according to the two tables shown below.

If only one code number for the degree of protection is specified after the IP (often the case on installation material), an X replaces the omitted code number, e.g. IPX4 or IP6X. The term for the complete identification symbol (code letter and protection level code number) is "degree of protection".

The first code number (see table) indicates

- That the enclosure protects persons against direct contact, whereby the ingress of a body part, or an object held by a person, is prevented or limited, and
- That the enclosure also ensures that equipment is protected against the ingress of the ingress of solid bodies.

First code number	Brief description	Definition
0	Not protected	–
1	Protected against contact with dangerous parts with the back of a hand	The access probe, ball 50 mm diameter, must have sufficient distance from dangerous parts
	Protected against the ingress of solid bodies > 50 mm in diameter	Limited ingress of object probe, ball 50 mm diameter ¹⁾
2	Protected against contact with dangerous parts with fingers	The jointed test finger, 12 mm diameter, 80 mm in length, must have sufficient distance from dangerous parts
	Protected against the ingress of solid bodies > 12.5 mm in diameter	Limited ingress of object probe, ball 12.5 mm diameter ¹⁾
3	Protected against contact with dangerous parts with tools	No ingress at all of access probe, 2.5 mm diameter
	Protected against the ingress of solid bodies > 2.5 mm in diameter	No ingress at all of object probe, 2.5 mm in diameter ¹⁾
4	Protected against contact with dangerous parts with a wire	No ingress at all of access probe, 1.0 mm diameter
	Protected against the ingress of solid bodies > 1.0 mm in diameter	No ingress at all of object probe, 1.0 mm diameter ¹⁾
5	Protected against contact with dangerous parts with a wire	No ingress at all of access probe, 1.0 mm diameter
	Dust-protected	The ingress of dust cannot be completely prevented, but limited ingress that will not affect reliable operation of the device or interfere with safety
6	Protected against contact with dangerous parts with a wire	No ingress at all of access probe, 1.0 mm diameter
	Dust-proof	No ingress of dust

1) The full diameter of the object probe must not fit into an opening of the enclosure.

The second code number (see table) specifies the degree of protection offered by the enclosure with regard to damage to equipment due to the ingress of water.

Second code number	Brief description	Definition
0	Not protected	–
1	Drip-proof	Vertically falling drops cannot have any damaging effects
2	Drip-proof, if the enclosure is inclined up to 15 from normal position	Vertically falling drops cannot have any damaging effect if the enclosure is tilted at an angle of up to 15 either side of the vertical
3	Protected against splashwater	Sprays up to 60° on both sides of the vertical must not cause any damage
4	Protected against splashwater	Water sprayed against the enclosure from all direction must not cause any damage
5	Protected against jet-water	Low pressure jets of water against the enclosure from all direction must not cause any damage
6	Protected against heavy jet-water	Strong jets of water against the enclosure from all direction must not cause any damage
7	Protected against the effects of temporary immersion in water	Water must not ingress to a degree that damage is caused when the enclosure is immersed in water under standardized pressure and timed periods under conditions to be agreed between the manufacturer and user.
8	Protected against the effects of continual submersion in water	Water must not ingress to a degree that damage is caused when the enclosure is immersed in water under conditions to be agreed between the manufacturer and user. However, the conditions must be more difficult than for the code number 7

Overview

	German approval mark (Verband Deutscher Elektrotechniker - Association of German Electrical Engineers)
	Approval mark for Switzerland
	Approval mark for the Netherlands
	Approval mark for Canada
	Approval mark for USA
	Total insulation, safety class II
IP44	Protection against the ingress of solid bodies and splashwater
IP55	Dust-protected, protection against the ingress of solid bodies and jet-water
IP66	Dust-proof, protection against the ingress of solid bodies and strong jet-water
	Suitable for harsh operating conditions complies with DIN 49 441
	Incandescent lamp
	LV halogen lamp
	HV halogen lamp
	Fluorescent lamp
	Conventional transformer
	Electronic transformer
SV (AEV)	Safety power supply (diesel generator set DIN VDE 0107)
ZSV (BEV)	Additional safety power supply, (battery-supported DIN VDE 0107)
WSV (BEV)	Other safety power supply
	Registered trademark of the SCHUKO-Warenzeichenverband e. V.
	Fire-retarding in compliance with DIN VDE 0606, corresponds to the guidelines of the Verband der Sachversicherer (Association of Property Insurers) for mounting on wood
	Can be installed in cavity walls
	Can be installed in furniture
EIB	Registered trademark of the European Installation Bus Association, Brussels

Technical Information

Switches and Pushbuttons

Switches

Overview

Maximum permissible lamp loads for switch inserts

Number of operations: 50,000

Type of lamp	Connection method	Power per lamp	Number	
Incandescent lamps ¹⁾		100 W	12	
Fluorescent lamps	Uncorrected	36 W	22	
		58 W	14	
	Parallel p.f. corrected	36 W	38	
		58 W	25	
	DUO circuit	36 W	21 x 2	
		58 W	14 x 2	
	ECG ²⁾		36 W	26
			58 W	18
		2 x 36 W	12	
		2 x 58 W	9	

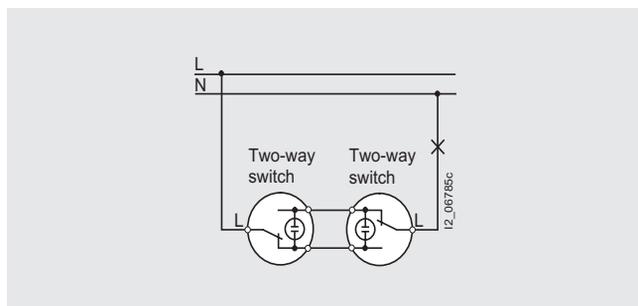
1) Incandescent lamps are cooled during the test.

2) Osram ECGs.

Universal switch

Schematics

Glow lamps for orientation

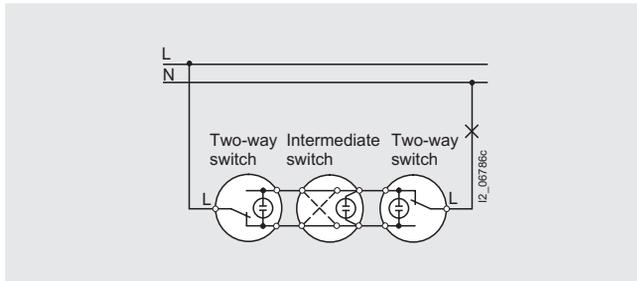


Order No. of the insert: 5TA2 156

Order No. of the glow lamp: 5TG7 332

Schematics

Glow lamps for orientation



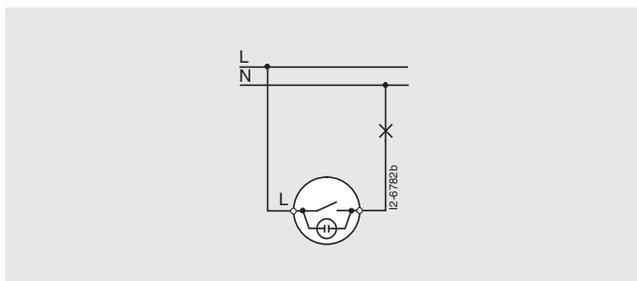
Order No. of the inserts:
5TA2 156 / 5TA2 117 / 5TA2 156

Order No. of the glow lamp: 5TG7 332

ON/OFF switch, 1-pole

Schematics

Glow lamp for orientation



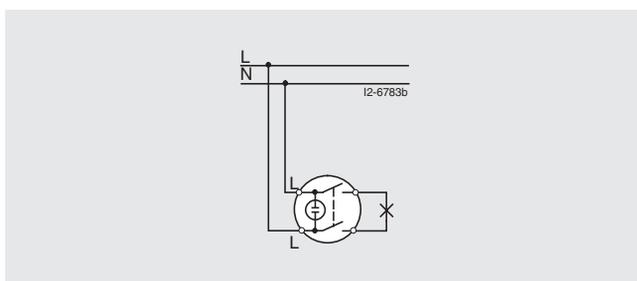
Order No. of the insert: 5TA2 151

Order No. of the glow lamp: 5TG7 332

ON/OFF switch, 2-pole

Schematics

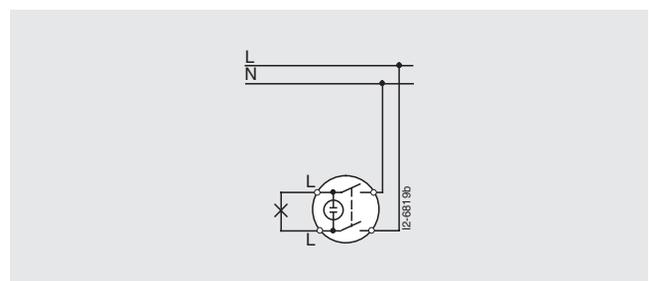
Glow lamp for orientation



Order No. of the insert:
5TA2 112, 10 A and 5TA2 162, 16 A

Order No. of the glow lamp: 5TG7 332

Glow lamp for control



Order No. of the insert:
5TA2 112, 10 A and 5TA2 162, 16 A

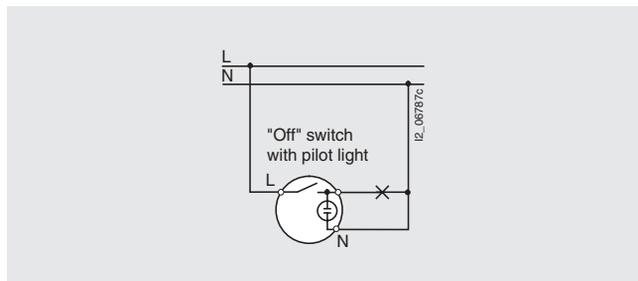
Order No. of the glow lamp: 5TG7 332

Technical Information

Switches and Pushbuttons

Switch with pilot lamp, OFF switching

Schematics



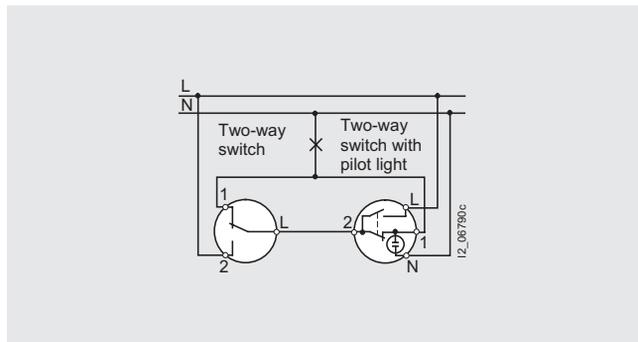
Order No. of the insert: 5TA2 150

Inserts incl. glow lamp: 5TG7 332

Switch with pilot lamp, for two-way switching

Schematics

Control two-way circuit with 1 two-way switch and 1 changeover control switch

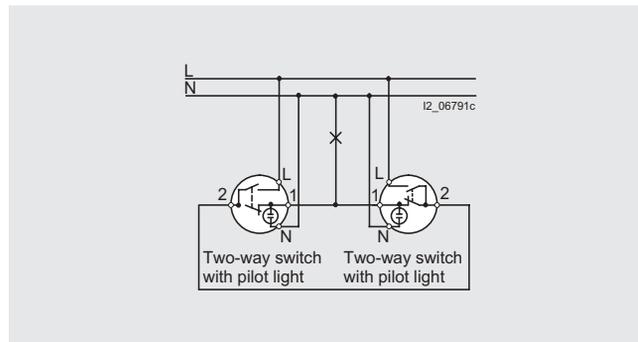


Order no. of inserts:

- 5TA2 156 (two-way switch)
- 5TA2 108 (changeover control switch)

Insert 5TA2 108 incl. glow lamp: 5TG7 332

Control two-way circuit with 2 changeover control switches



Order No. of the insert:

5TA2 108 (changeover control switch)

Insert 5TA2 108 incl. glow lamp: 5TG7 332

Technical specifications

Operating voltage	230 V AC ± 10 %
Rated current	6 A
Mains frequency	40 ... 60 Hz
Main circuit ¹⁾	see section <i>Switches / Maximum permissible lamp load for switch inserts (see page 18/4)</i>
Delay circuit	
• Fan	200 VA
• Delay time	0.5 ... 15 min
Ambient temperature	-10 ... +45 °C
Spare fuse	T 1.6 A; 250 V

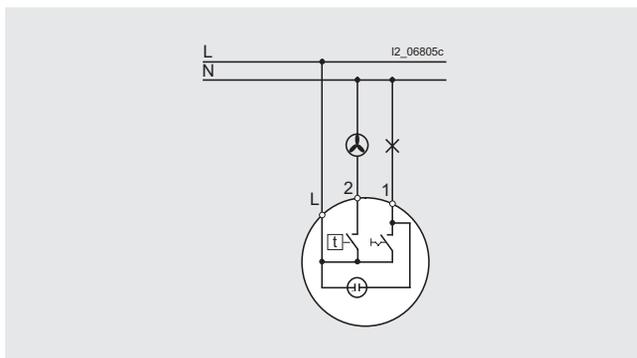
1) For operation without a lamp: resistance, 47 kΩ / 2 CO between 1 and N.

Schematics

Function of the delay timer

The lighting and fan are switched on simultaneously. Once the lighting is switched off, the fan continues running for the time set at the delay timer after which it switches off automatically.

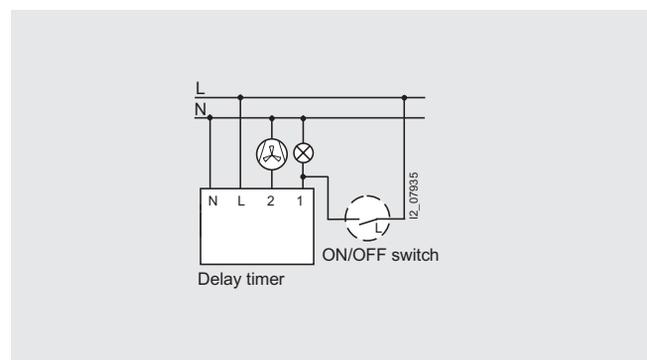
Installation in flush mounting switch boxes



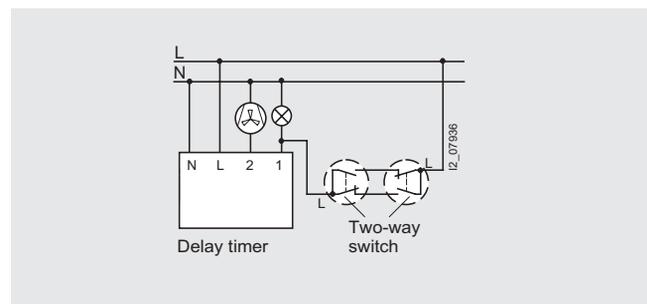
Order No. of the insert: 5TT1 210

Order No. of the spare fuse: 5TG8 302

Installation in flush mounting branching boxes



Basic circuit



Two-way circuit

Order No. of the insert: 5TT1 211

Order No. of the spare fuse: 5TG8 302

ON/OFF switch or two-way switch required

Technical Information

Switches and Pushbuttons

Timer

Overview

The electric flush mounting-timer can be used to replace an ON/OFF switch. Control with parallel pushbuttons not possible. The connections can be reversed without influencing the function of the switch.

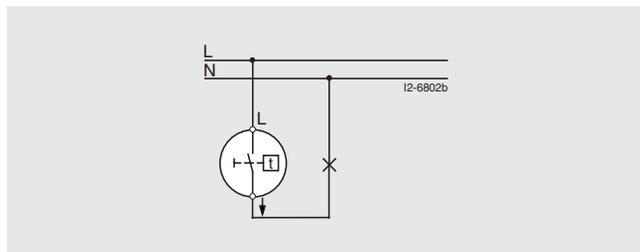
No connection required for neutral conductor (N). Can be reset to full time setting.

Technical specifications

Operating voltage	230 V AC \pm 10 %
Mains frequency	40 ... 60 Hz
Time setting	1 ... 6 minutes
Incandescent lamp rating	200 W
Ambient temperature	-10 ... +45 °C
Spare fuse	
• Order number	5TG8 302
• Type	T 1.6 A, 250 V

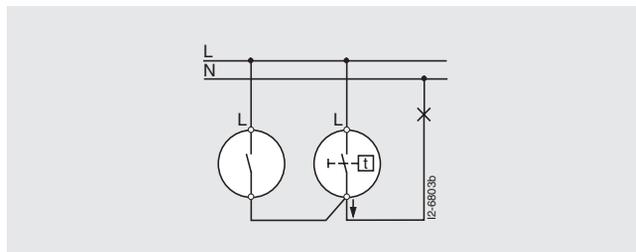
Schematics

Basic circuit

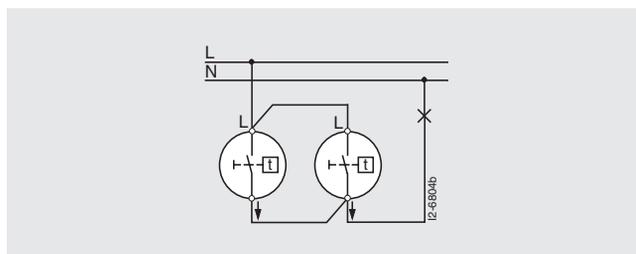


Only suitable for incandescent lamps.

Application parallel to an ON/OFF switch



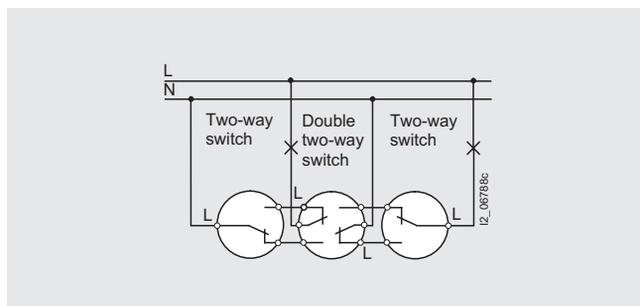
Application in an existing two-way circuit



Double two-way switch

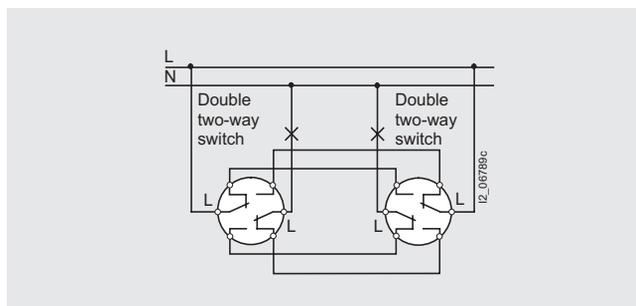
Schematics

Double two-way circuit



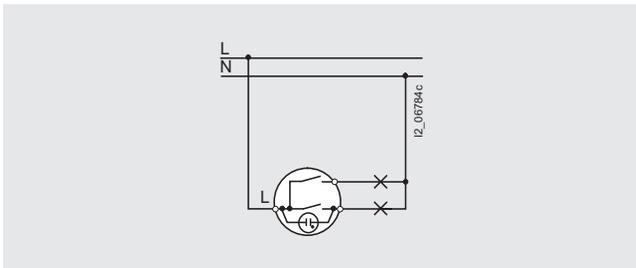
Order No. of the inserts: 5TA2 156 / 5TA2 118 / 5TA2 156

Double two-way circuit with two double two-way switches



Order No. of the inserts: 5TA2 118 / 5TA2 118

Schematics

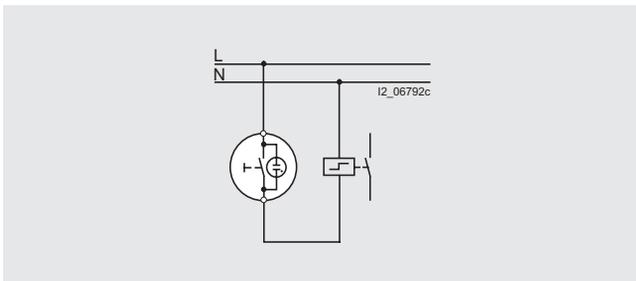


Order No. of the insert: 5TA2 155

Order No. of the glow lamp: 5TG7 332

Pushbutton, 1 NO contact

Schematics

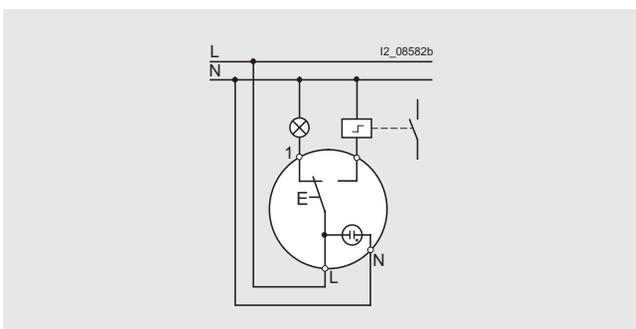


Order No. of the insert: 5TD2 120

Order No. of the glow lamp: 5TG7 332

Pushbutton, 1 CO contact, with separate neutral terminal

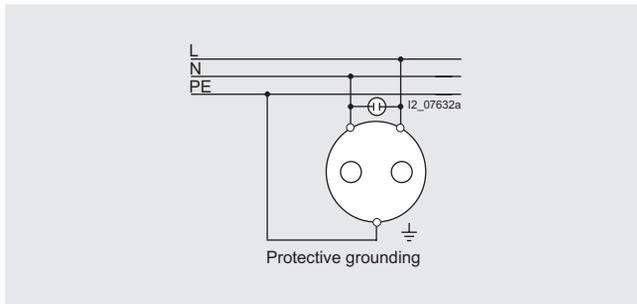
Schematics



Order No. of the insert: 5TD2 117

Order No. of the glow lamp: 5TG7 332

Schematics



SCHUKO outlet with overvoltage protection

Overview

For protecting electronic devices from overvoltages (in overvoltage category II complies with DIN VDE 0110-1:1997-04).

Surge arresters of requirement category D complies with E DIN VDE 0675-6:1989-11 and 0675-6/A1:1996-03.

Features:

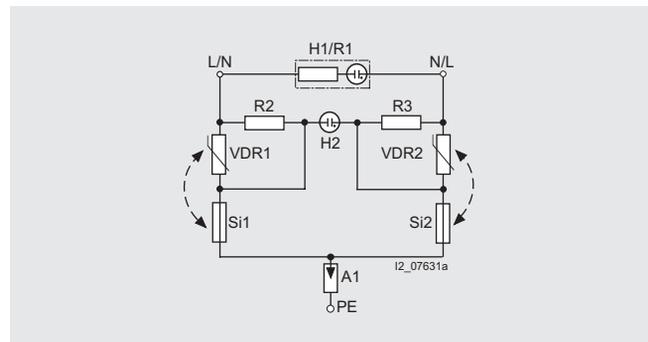
- overvoltage protection with monitoring device and disconnecter
- visual function indicator (glow lamp, green)
- visual fault display (glow lamp red, no disconnection)
- with retaining ring for installation in switch boxes (60 mm Ø, 40 mm deep)

Technical specifications

Tested	E DIN VDE 0675-6:1989-11 and 0675-6/A1:1996-03	
Rated voltage	U_N	230 V / 50 Hz
Surge arrester rated voltage (maximum permissible operational voltage)	U_C	255 V / 50 Hz
Rated discharge current (8/20)	I_{SN}	L (N) -> PE, L 3 kA
		L + N -> PE 5 kA
Combined surge	U_{OC}	L (N) -> PE, L 6 kV
		L + N -> PE 10 kV
Protection level	U_p	L -> N 1.25 kV
		L(N) -> PE 1.5 kV
Response time	t_A	L -> N 25 ns
		L(N) -> PE 100 ns
Series fuse ¹⁾	16 A gL/gG or C 16 A	
Temperature range	J	-25 ... +40 °C
Connections	3 double terminals, each up to 2.5 mm ² also suitable for through-wiring	
Approval	VDE	

1) Only required, if not already available in the system.

Schematics

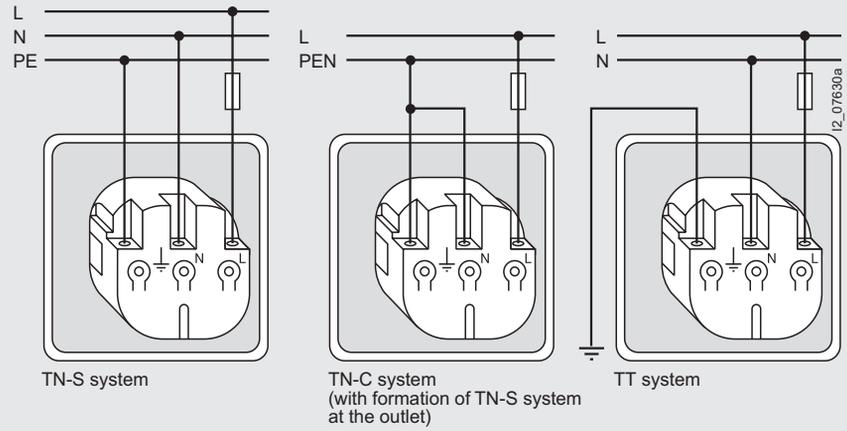


Technical Information

Outlets

SCHUKO outlet with residual-current protection

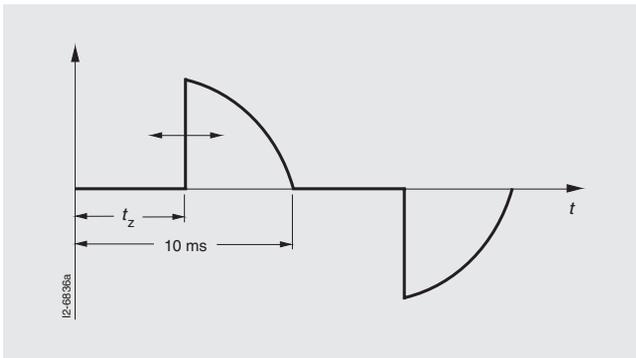
Schematics



Overview

Leading-edge phase principle

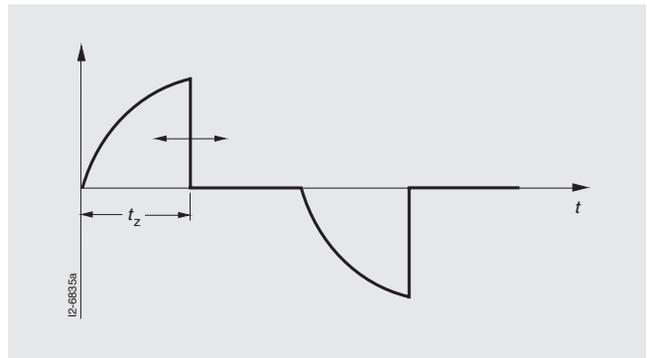
Conventional dimmers operate using the leading-edge phase principle. At the beginning of each sinusoidal half-wave, the dimmer blocks the current to the lamp, it is non-conducting. The TRIAC (the electronic switch in the dimmer) is only connected after the startup of a user-definable delay time t_z , which energizes the connected loads. In this way, the brightness of the connected lighting medium can be infinitely adjusted. The interference voltages produced by the switching operation are dampened by means of suitable filtering measures.



Trailing-edge phase principle

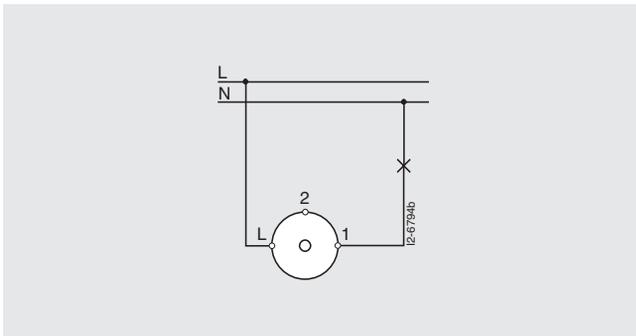
For this purpose, the load is switched on during the zero crossing of each sinusoidal half-wave and, on expiration of the time t_z , it is switched off again. This allows changes to the r.m.s. value of the lamp voltage, and thus the brightness. No interference voltages are produced when switching on, because the voltage has the value zero. When turning off, any resonance points are dampened, as the full load of the transformers is effective at this point.

No need for additional systems for noise suppression. There is no occurrence of the dreaded resonance points with their unpleasant humming or flickering.

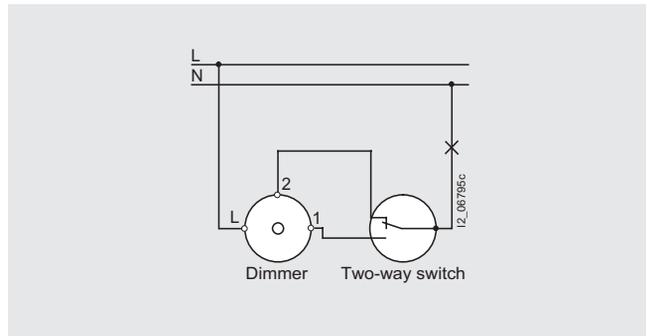


Schematics

Rotary dimmers for ON/OFF and two-way switching, 60 to 600 W, 50 Hz, 230 V AC, incandescent lamps, leading-edge phase principle

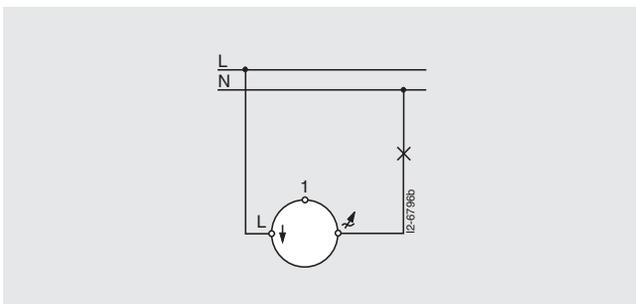


Application in ON/OFF circuit (on/off switching and dimmer control from one point)

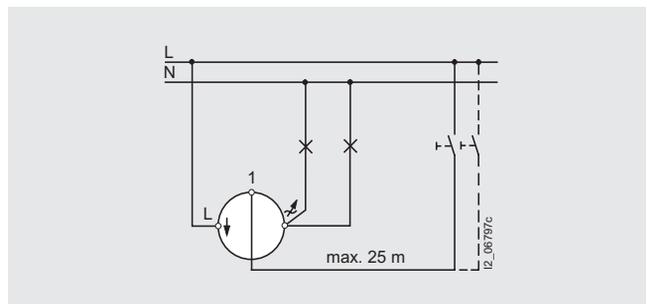


Application in two-way circuit (on/off switching from 2 points and dimmer control from 1 point)

Sensor dimmers for on/off, series and two-way switching with and without memory function, 20 to 400 W, 50 Hz, 230 V AC incandescent lamps, leading-edge phase principle



Application in ON/OFF circuit (on/off switching and dimmer control from one point)



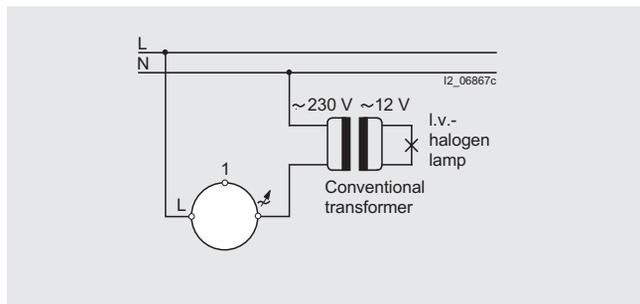
Application in two-way circuit (on/off switching and dimmer control from two points with mechanical pushbuttons)

Technical Information

Dimmers

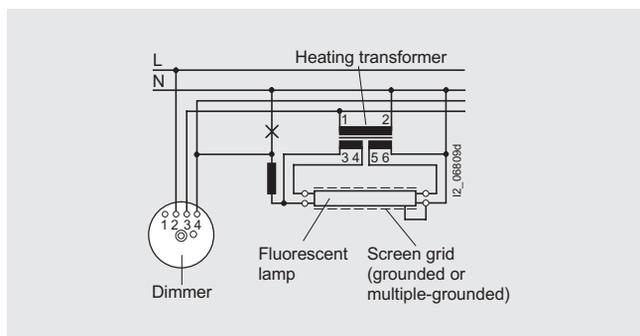
General

Sensor dimmers for on/off, series and two-way switching with and without memory function, 20 to 300 VA, 50 Hz, 230 V AC, low-voltage halogen lamp with conventional transformers

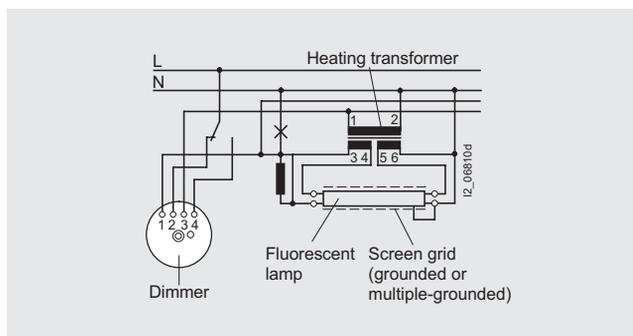


Application in ON/OFF circuit (on/off switching and dimmer control from one point)

Rotary dimmers for ON/OFF and two-way switching, 20 to 800 VA and 20 to 1000 VA, 50 Hz, 230 V AC, fluorescent lamps, leading-edge phase principle

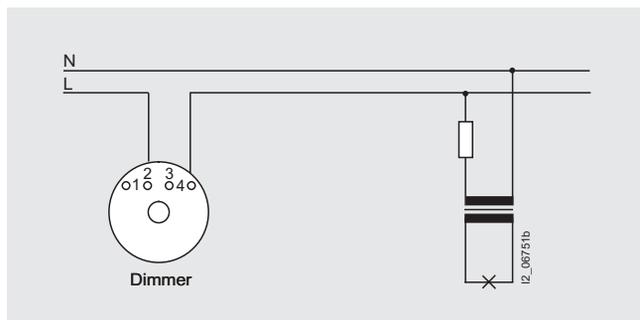


Application in ON/OFF circuit (on/off switching and dimmer control from one point)



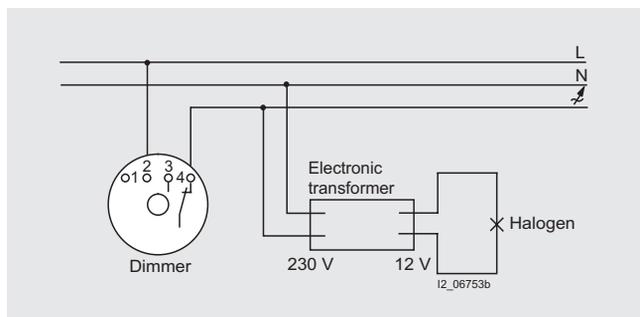
Application in two-way circuit (on/off switching from 2 points and dimmer control from 1 point)

Rotary dimmers for ON/OFF and two-way switching, 15 to 500 W, 50 Hz, 230 V AC, low-voltage halogen lamp with conventional transformers, leading-edge phase principle

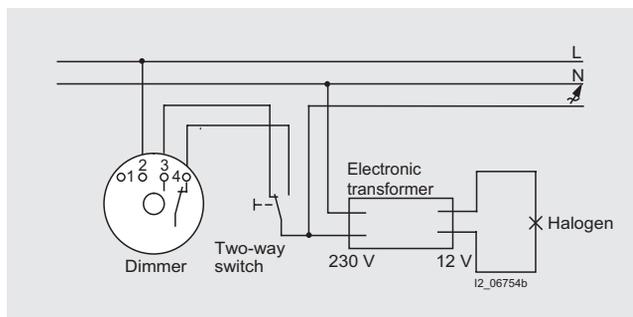


For the protection of transformers, we recommend a miniature fuse (corresponding to the transformer rating)

Rotary dimmers for ON/OFF and two-way switching, 10 to 350 W, 50 Hz, 230 V AC, low-voltage halogen lamp for electronic transformers, trailing-edge phase principle



All dimmers can be used with On/Off circuits and pushbutton two-way circuits



Only dimmers with pushbutton two-way circuit can be used

Overview

Maximum permissible lamp loads for incandescent lamp dimmers

Dimmers	Fluorescent lamps (26 and 38 mm Ø)	
	Power	Number
20 to 800 VA	18 or 20 W	max. 10
	36 or 40 W	max. 8
	58 or 65 W	max. 5
20 to 1000 VA	18 or 20 W	max. 12
	36 or 40 W	max. 10
	58 or 65 W	max. 6

Electronic potentiometer

Overview

Economy and comfort

Modern lighting concepts are particularly cost-efficient and user-friendly. The success of the Siemens fully electronic primary switching device (ECG) has played a key role in this: even lighting, 25 % less energy requirements and power-constant operation (in the case of power fluctuations) with minimum noise generation are just some of the advantages, which have even led to the ECG being used in music and film studios.

The ECG dynamic is a consistent and logical further development of this millionfold tried and tested device.

The wide dimming range – of 100 % to 1 % luminous flux – and the wattless dimmer control using low-voltage control signals opens up a whole new range of application options for ECG dynamic in the world of lighting technology

High energy saving

If fluorescent lamps are operated on conventional primary switching devices, the system consumption is approx. 25 % higher than with ECG operation.

Conventional dimming "burns up" additional energy. In addition, the high losses of the chokes, the constant power requirements of the auxiliary electronics and the heater transformers for the coil heating, the power loss of the leading-edge phase dimmer and the required base load also need to be taken into account.

This increases the system output for the operation of a lamp L58W to up to 80 W (at maximum modulation, leading-edge phase dimmer and base load not taken into account).

The ECG dynamic heats the lamp coil in accordance with the dimmer setting, using no more intensity than necessary for reliable lamp operation; dimmer control works without power consumption and does not require a base load.

System power during full modulation of a L58W lamp is only 56 W. This is 30 % less than for conventional dimming, with practically the same luminous flux.

Technical specifications

Load current circuit (terminals 3 and 4)

For switching (ON/OFF, 4 A, 230 to 240 V/AC, 50 to 60 Hz, single-phase) of a maximum of:

Items	ECG dynamic
18	1 x 18 W
9	2 x 18 W
18	1 x 36 W
9	2 x 36 W
12	1 x 58 W
6	2 x 58 W

Switching of several ECG dynamics, even on different phases, over contactor (load switch with max. 1 A, p.f. = 0.3).

Control circuit (terminals 1 and 2)

- For the manual dimmer control of max. 50 ECG dynamics of all performance levels or control of max. 16 signal amplifiers
- Please heed the signs of the control inputs of **all** devices when connecting (+ and – must not be confused)
- Parallel switching of several handheld controllers in a single control circuit **not** possible.

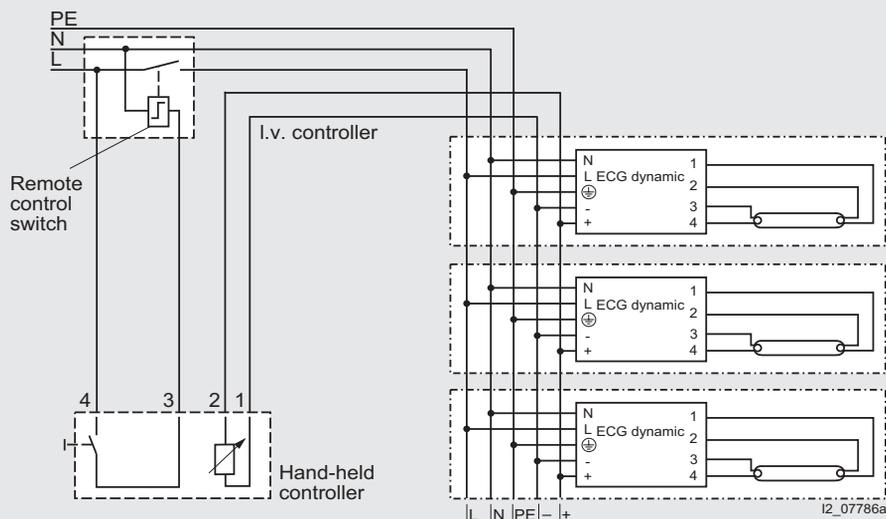
Technical Information

Dimmers

Electronic potentiometer

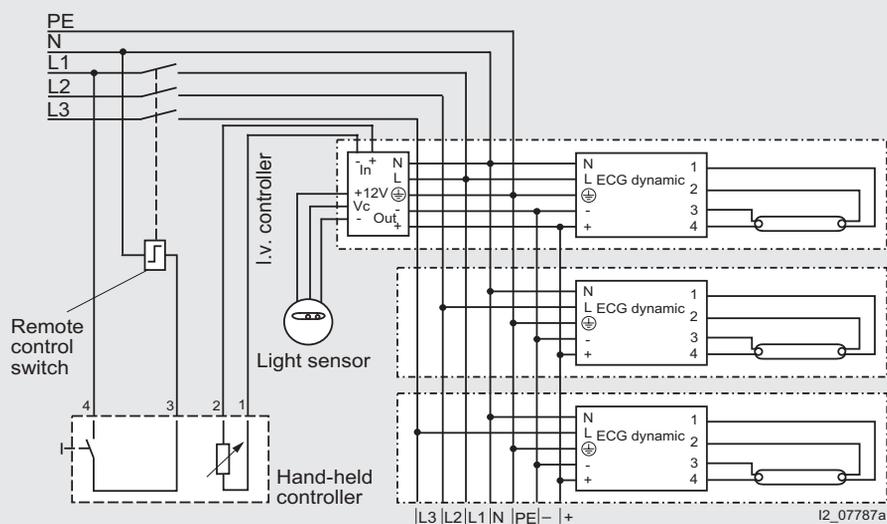
Schematics

Hand-held controller for manual dimmer control, single-phase



Hand-held controller for manual dimmer control, single-phase

Hand-held controller as setpoint generator for constant light control

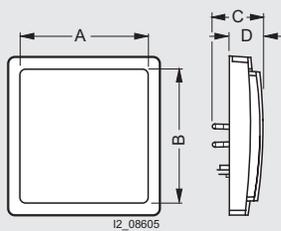


Hand-held controller as setpoint generator for constant light control

Technical specifications

Power supply	over 230-V user interface (230-V PEI) of the switch or dimmer sys inserts	
Connections	10-pole pin connector (230-V PEI) for connection to the switch or dimmer sys insert	
Mechanical specifications		
• Enclosure	plastic	
• Dimensions (L x W x D)	DELTA i-system	55 x 55 x 24 mm (incl. spring)
	DELTA profil	65 x 65 x 25 mm (incl. spring)
	DELTA style	68 x 68 x 27 mm (incl. spring)
• Weight	approx. 30 g	
• Fire load	approx. 950 kJ	
• Mounting	mounted on the switch or dimmer sys insert	
Electrical safety		
• Degree of soiling (in compliance with IEC 60664-1)	2	
• Degree of protection (in compliance with EN 60529)	IP20	
• Overvoltage category (in compliance with IEC 60664-1)	III	
• Standard	complies with EN 50090-2-2 and IEC 60664-1	
EMC requirements	complies with EN 50090-2-2, EN 61000-6-3, EN 61000-6-1	
Environmental conditions		
• Resistance to climate	EN 50090-2-2	
• Ambient temperature in operation	- 5 ... +45 °C	
• Storage temperature	-25 ... +70 °C	
• Relative humidity (not condensing)	5 ... 93 %	
CE marking	complies with EMC Directive (residential buildings), Low Voltage Directive	

Dimensional drawings



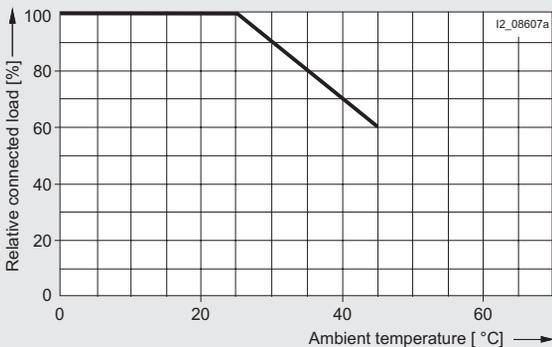
	A	B	C	D
DELTA i-system	55	55	24	13
DELTA profil	65	65	25	14
DELTA style	68	68	27	16,5

Technical Information

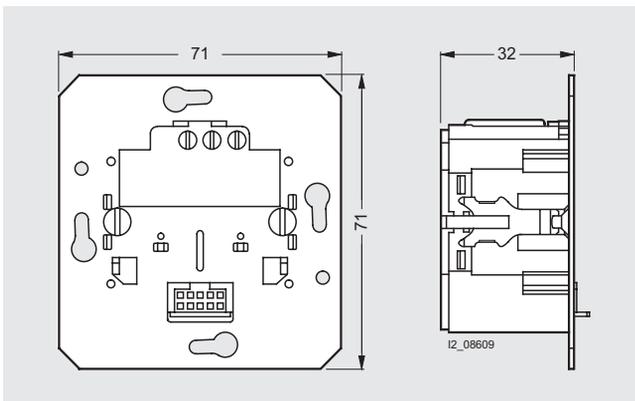
Dimmers

Universal dimmer sys insert

Technical specifications

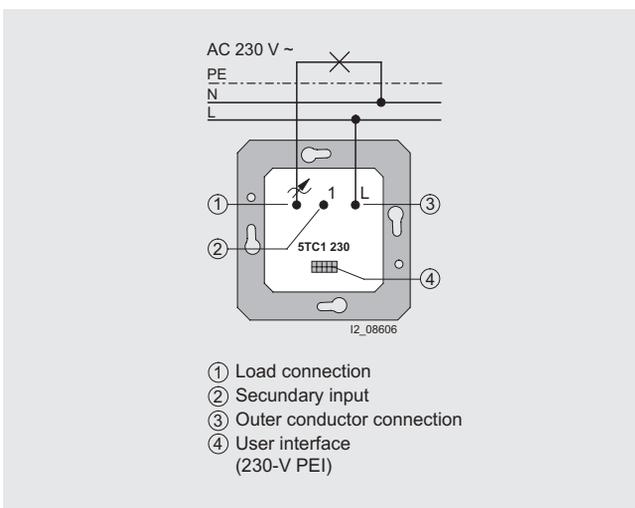
Power supply	mains connection 230 V (2-wire method) rated voltage: 230 V AC, 50 Hz	
Protection against short-circuit	in the event of a short-circuit, the universal dimmer switches off. As soon as the short-circuit is eliminated (voltage recovery), the universal dimmer automatically switches back on at the brightness value last set prior to the short-circuit	
Protection against overload	in the event of an overload, and if the maximum permissible temperature is exceeded, the universal dimmer switches off for at least two minutes. As soon as the device has cooled down, it is automatically switched to the current setpoint value	
Load output		
• Number	1	
• Rated voltage	230 V AC, 50 Hz	
• Rated load (up to 25 °C ambient temperature)		
– Incandescent lamp load	50 ... 420 W	
– Conventional transformers	50 ... 420 VA	
– Electronic transformers	70 ... 420 VA	
– Note	only mixed loads between incandescent lamp ratings and electric transformers are permissible.	
– Maximum connected load at ambient temperature	 <p>The graph shows the relationship between ambient temperature and the maximum relative connected load. The y-axis is 'Relative connected load [%]' ranging from 0 to 100. The x-axis is 'Ambient temperature [°C]' ranging from 0 to 60. A solid line starts at 100% for temperatures up to 25°C. From 25°C, the line slopes downwards, reaching approximately 60% at 45°C. A small label 'I2_08607a' is present in the top right corner of the graph area.</p>	<p>Warning: The connected load must be reduced by 20 %, depending on operating conditions</p> <ul style="list-style-type: none"> • for mounting on wood, Rigips, gas concrete or cavity walls • for installation in multiple combinations or surface mounting enclosures
Behavior on system voltage recovery	after system voltage recovery, the DELTA universal dimmer sys insert switches to the same dimming value set prior to power failure, whereby the DELTA universal dimmer sys insert automatically captures the load. A brief flickering indicates that the teach-in procedure is running.	
Connections	the connections for the DELTA universal dimmer sys insert comprise three screw-type terminals, the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 2.5 mm² solid • 0.5 ... 1.5 mm² finely stranded with end sleeve without insulating collar (gas-tight crimp connection) Caution: if the conductors are to be looped through, only conductors with max. 1.5 mm ² must be used	
Mechanical specifications		
• Enclosure	plastic	
• Dimensions	modular width: 71 mm x 71 mm mounting depth: 32 mm	
• Weight	approx. 70 g	
• Fire load	approx. 1000 kJ	
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1	
Electrical safety		
• Degree of soiling (in compliance with IEC 60664-1)	2	
• Degree of protection (in compliance with EN 60529)	IP20	
• Overvoltage category (in compliance with IEC 60664-1)	III	
• Standard	complies with EN 50090-2-2 and EN 60669-2-1	
EMC requirements	complies with EN 50090-2-2, EN 60669-2-1, EN 61000-6-3, EN 61000-6-1	
Environmental conditions		
• Resistance to climate	EN 50090-2-2	
• Ambient temperature in operation	– 5 ... +45 °C	
• Storage temperature	–25 ... +70 °C	
• Relative humidity (not condensing)	5% to 93%	
Certification	VDE approved	

Dimensional drawings



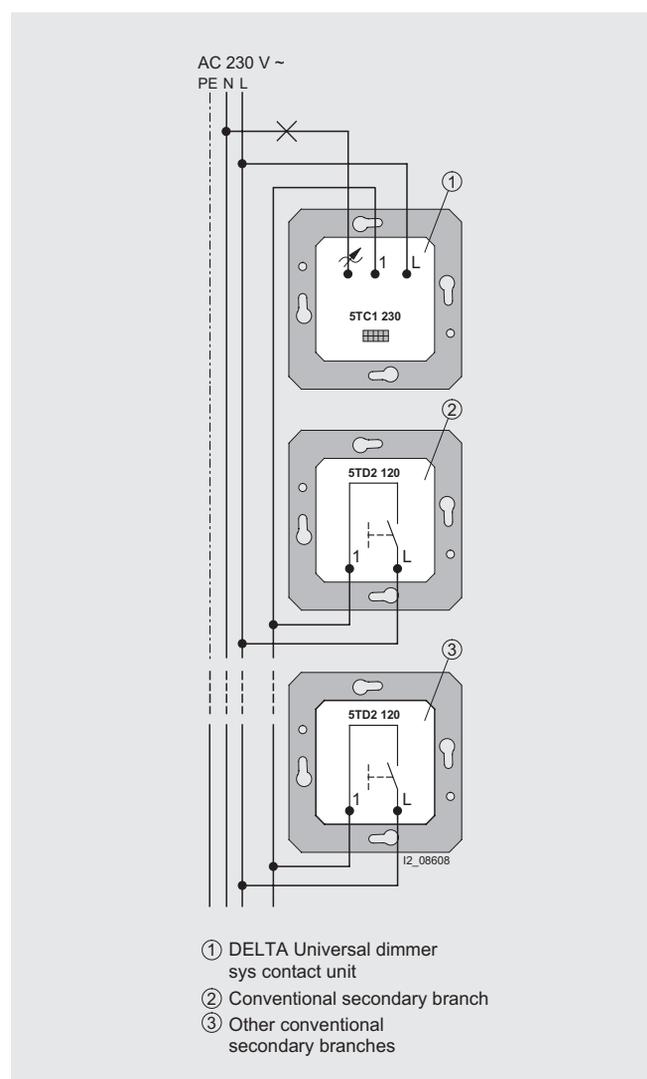
Schematics

Sample connection



Application options

Example: Universal dimmer with conventional secondary branches

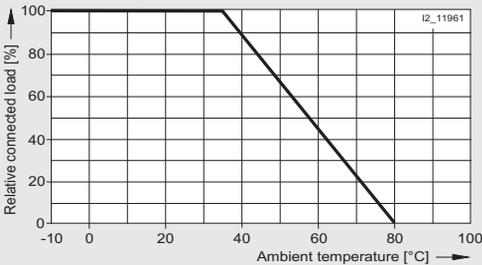


Technical Information

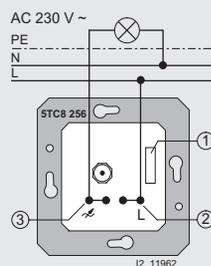
Dimmers

Incandescent lamp dimmer, 50 to 400 W

Technical specifications

Power supply	mains connection 230 V (2-wire method) rated voltage: 230 V AC, 50/60 Hz
Protection against short-circuit	with fuse ① (the fuse holder contains a spare fuse)
Load output	
• Number	one with two terminals ②
• Rated voltage	230 V AC, 50/60 Hz
• Rated load (up to 35 °C ambient temperature)	
– Incandescent lamps	50 ... 400 W
– HV halogen lamps	50 ... 400 W
– Note	only incandescent lamps and/or HV halogen lamps may be connected
– Maximum connected load at ambient temperature	 <p style="text-align: right;">Warning: The connected load must be reduced by 20 %, depending on operating conditions</p> <ul style="list-style-type: none"> • for mounting on wood, Rigips, gas concrete or cavity walls • for installation in multiple combinations or surface mounting enclosures
Connections	four screw-type terminals with anti-slip terminal body, of which two terminals have the same potential, the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 4.0 mm² solid • 0.5 ... 2.5 mm² finely stranded, with or without end sleeve (without insulating collar, gas-tight crimp connection)
Mechanical specifications	
• Enclosure	plastic
• Dimensions	modular width: 71 mm x 71 mm, mounting depth: 32 mm
• Weight	approx. 95 g
• Fire load	approx. 1000 kJ
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1
Electrical safety	
• Degree of soiling (in compliance with IEC 60664-1)	2
• Degree of protection (in compliance with EN 60529)	IP20
• Overvoltage category (in compl. with IEC 60664-1)	III
• Standard	complies with EN 60669-2-1
EMC requirements	complies with EN 60669-2-1, EN 61000-6-3 and EN 61000-6-1
Environmental conditions	
• Resistance to climate	EN 50090-2-2
• Ambient temperature in operation	– 5 ... +45 °C
• Storage temperature	–25 ... +70 °C
• Relative humidity (not condensing)	5 ... 93 %
Certification	VDE approved and KEMA-approved

Schematics



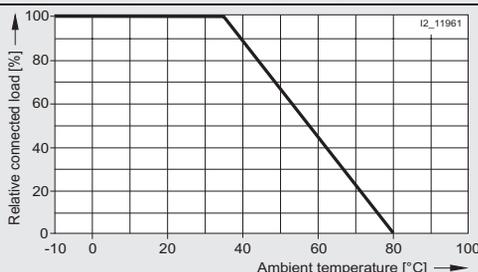
- ① T 1,6 H 250 V fuse switch with fuse
- ② Outer conductor connection
- ③ Load connection

Technical Information

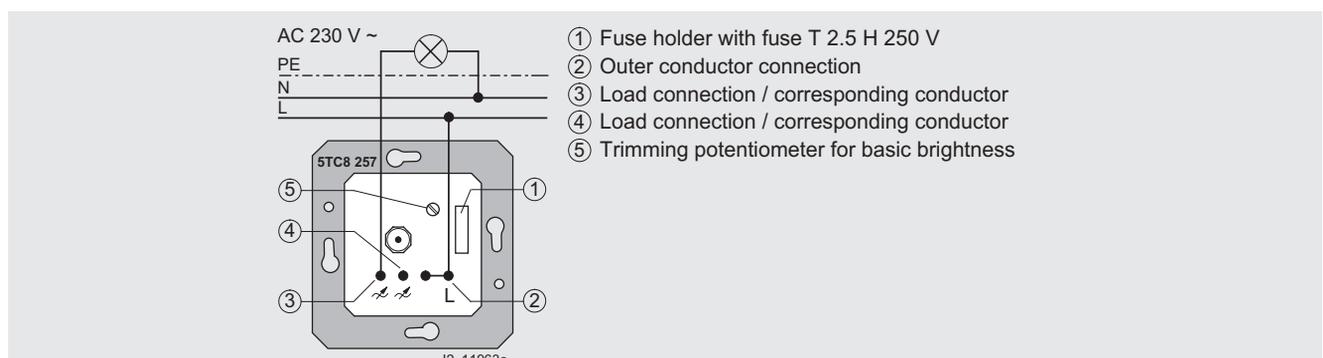
Dimmers

Incandescent lamp dimmer, 50 to 600 W,
for two-way switching

Technical specifications

Power supply	mains connection 230 V ① (2-wire method), rated voltage: 230 V AC, 50/60 Hz
Protection against short-circuit	fuse A1 (the fuse holder contains a spare fuse)
Protection against overload	with additional temperature cutout, which permanently shuts down the dimmer in the event of overload
Load output	
• Number	two terminals for two-way switching (③ and ④)
• Rated voltage	230 V AC, 50/60 Hz
• Rated load (up to 35 °C ambient temperature)	
– Incandescent lamps	50 ... 600 W
– HV halogen lamps	50 ... 600 W
– Note	only incandescent lamps and/or HV halogen lamps may be connected
– Maximum connected load at ambient temperature	 <p>Warning: The connected load must be reduced by 20 %, depending on operating conditions</p> <ul style="list-style-type: none"> • for mounting on wood, R-grips, gas concrete or cavity walls • for installation in multiple combinations or surface mounting enclosures
Connections	four screw-type terminals with anti-slip body. The two L-connection terminals are internally bridged (same potential), the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 4.0 mm² solid • 0.5 ... 2.5 mm² finely stranded, with or without end sleeve (without insulating collar, gas-tight crimp connection)
Mechanical specifications	
• Enclosure	plastic
• Dimensions	modular width: 71 mm x 71 mm, mounting depth: 32 mm
• Weight	approx. 95 g
• Fire load	approx. 1000 kJ
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1
Electrical safety	
• Degree of soiling (in compliance with IEC 60664-1)	2
• Degree of protection (in compliance with EN 60529)	IP20
• Overvoltage category (in compl. with IEC 60664-1)	III
• Standard	complies with EN 60669-2-1
EMC requirements	complies with EN 60669-2-1, EN 61000-6-3 and EN 61000-6-1
Environmental conditions	
• Resistance to climate	EN 50090-2-2
• Ambient temperature in operation	– 5 ... +45 °C
• Storage temperature	–25 ... +70 °C
• Relative humidity (not condensing)	5 ... 93 %
Certification	VDE approved and KEMA-approved

Schematics

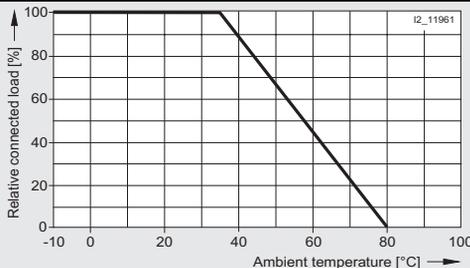


Technical Information

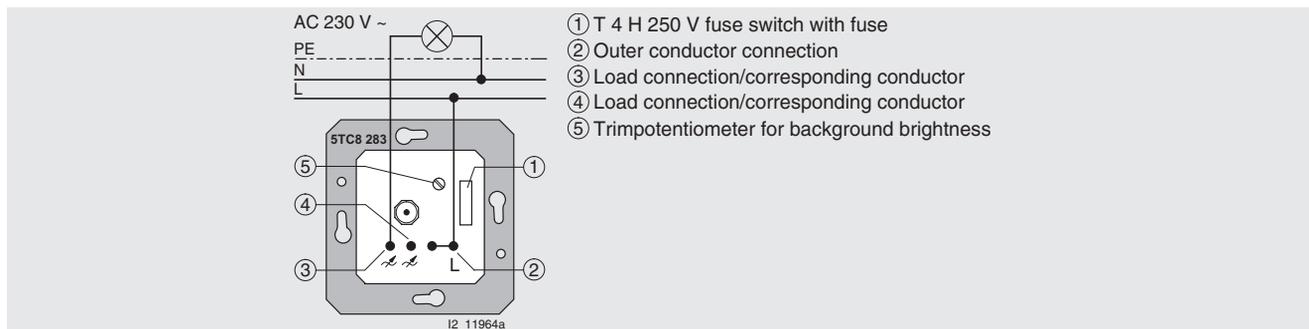
Dimmers

Low-voltage dimmer, for magnetic transformers, 50 to 600 W, 25 to 500 VA, for two-way switching

Technical specifications

Power supply	mains connection 230 V ① (2-wire method), rated voltage: 230 V AC, 50/60 Hz
Protection against short-circuit	fuse A1 (the fuse holder contains a spare fuse)
Protection against overload	with additional temperature cutout, which permanently shuts down the dimmer in the event of an overload
Load output	
• Number	two terminals for two-way switching (③ and ④)
• Rated voltage	230 V AC, 50/60 Hz
• Rated load (up to 35 °C ambient temperature)	
– Incandescent lamps	50 ... 600 W
– HV halogen lamps	50 ... 600 W
– LV halogen lamps, magnetic transformer	25 ... 500 VA
– Note	Connection of <ul style="list-style-type: none"> • energy-saving lamps • electronic transformers • power boosters is not permissible
– Maximum connected load at ambient temperature	 <p style="text-align: right; color: red; font-weight: bold;">Warning:</p> <p style="text-align: right; color: red;">The connected load must be reduced by 20 %, depending on operating conditions</p> <ul style="list-style-type: none"> • for mounting on wood, R-gips, gas concrete or cavity walls • for installation in multiple combinations or surface mounting enclosures
Connections	4 screw-type terminals with anti-slip terminal body, the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 4.0 mm² solid • 0.5 ... 2.5 mm² finely stranded, with or without end sleeve (without insulating collar, gas-tight crimp connection)
Mechanical specifications	
• Enclosure	plastic
• Dimensions	modular width: 71 mm x 71 mm, mounting depth: 32 mm
• Weight	approx. 105 g
• Fire load	approx. 1000 kJ
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1
Electrical safety	
• Degree of soiling (in compliance with IEC 60664-1)	2
• Degree of protection (in compliance with EN 60529)	IP20
• Overvoltage category (in compl. with IEC 60664-1)	III
• Standard	complies with EN 60669-2-1
EMC requirements	complies with EN 60669-2-1, EN 61000-6-3 and EN 61000-6-1
Environmental conditions	
• Resistance to climate	EN 50090-2-2
• Ambient temperature in operation	– 5 ... +45 °C
• Storage temperature	–25 ... +70 °C
• Relative humidity (not condensing)	5 ... 93 %
Certification	VDE approved and KEMA-approved

Schematics

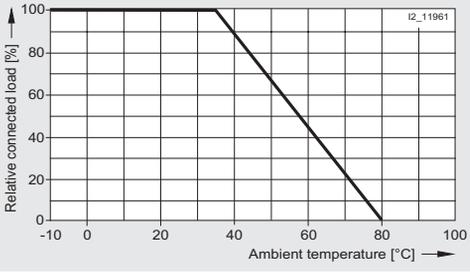


Technical Information

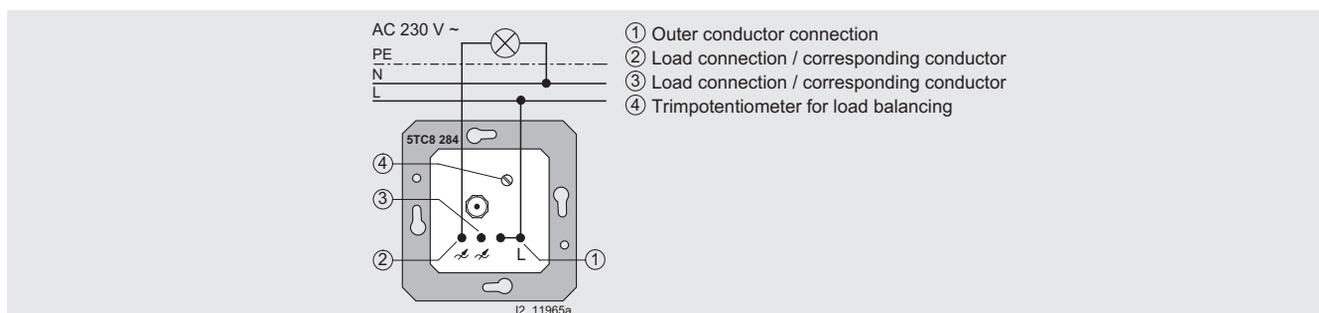
Dimmers

Low-voltage dimmer, for electronic transformers, 20 to 600 W, 20 to 525 VA, for two-way switching

Technical specifications

Power supply	mains connection 230 V (2-wire method) rated voltage: 230 V AC, 50 Hz	
Protection against short-circuit	reversible operating electronic fuse	
Protection against overload	with additional temperature cutout, which shuts down the dimmer in the event of overload and only resupplies it automatically with power when overload is eliminated after the device has sufficiently cooled down	
Load output		
• Number	two terminals for two-way switching (② and ③)	
• Rated voltage	230 V AC, 50 Hz	
• Rated load (up to 35 °C ambient temperature)		
– Incandescent lamps	20 ... 600 W	
– HV halogen lamps	20 ... 600 W	
– LV halogen lamps with electronic transformer	20 ... 525 W	
– Note	Connection of <ul style="list-style-type: none"> • energy-saving lamps • magnetic transformers is not permissible	
– Maximum connected load at ambient temperature	 <p style="text-align: right;">I2_11961</p>	<p>Warning: The connected load must be reduced by 25 %, depending on operating conditions</p> <ul style="list-style-type: none"> • for mounting on wood, Rigips, gas concrete or cavity walls • for installation in multiple combinations or surface mounting enclosures • If using highly thermally insulating materials (e.g. glass wool), it may be necessary to reduce the connected load even further
Connections	4 screw-type terminals with anti-slip terminal body, the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 4.0 mm² solid • 0.5 ... 2.5 mm² finely stranded, with or without end sleeve (without insulating collar, gas-tight crimp connection) 	
Mechanical specifications		
• Enclosure	plastic	
• Dimensions	modular width: 71 mm x 71 mm, mounting depth: 32 mm	
• Weight	approx. 95 g	
• Fire load	approx. 1000 kJ	
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1	
Electrical safety		
• Degree of soiling (in compliance with IEC 60664-1)	2	
• Degree of protection (in compliance with EN 60529)	IP20	
• Overvoltage category (in compl. with IEC 60664-1)	III	
• Standard	complies with EN 60669-2-1	
EMC requirements	complies with EN 60669-2-1, EN 61000-6-3 and EN 61000-6-1	
Environmental conditions		
• Resistance to climate	EN 50090-2-2	
• Ambient temperature in operation	– 5 ... +45 °C	
• Storage temperature	–25 ... +70 °C	
• Relative humidity (not condensing)	5 ... 93 %	
Certification	VDE approved	

Schematics



Technical Information

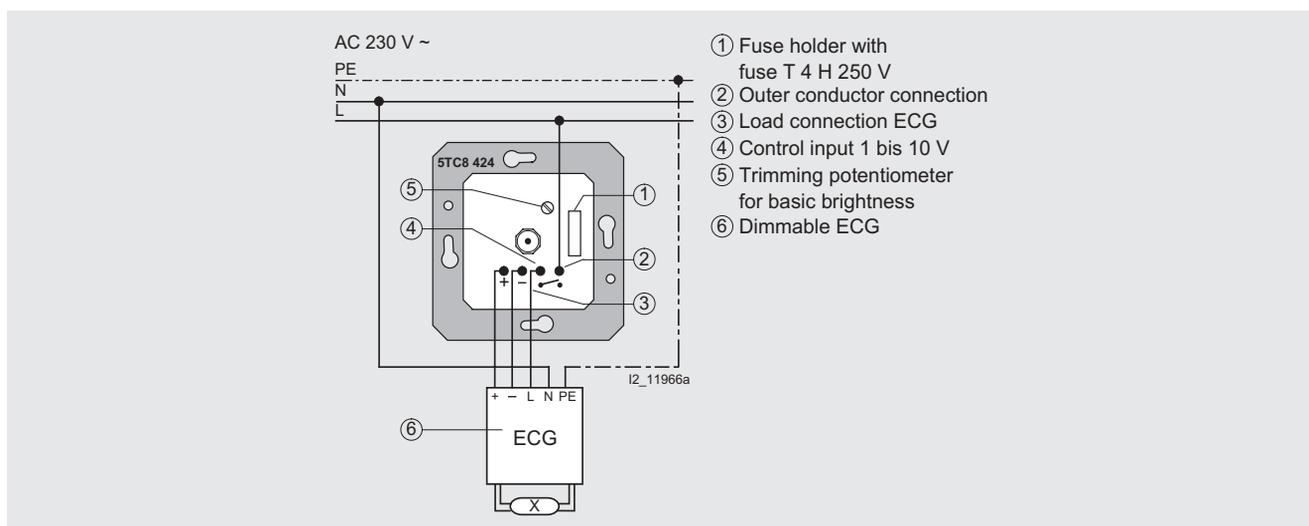
Dimmers

Electronic potentiometer, 1 to 10 V / 50 mA

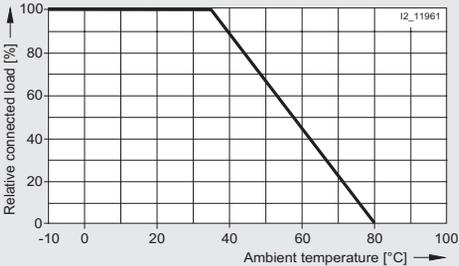
Technical specifications

Power supply	
• Control voltage	1 ... 10 V
• Maximum control current	50 mA
• Load connection	4 A
Protection against short-circuit	with miniature fuse ① (the fuse holder contains a spare fuse)
Switching capacity	
• Number of ECGs load outputs	
– Osram Quicktronik dimmable 1 x 58 W LL	max. 6
– Osram Quicktronik dimmable 1 x 36 W LL	max. 9
– Osram Quicktronik dimmable 2 x 58 W LL	max. 3
– Osram Quicktronik dimmable 2 x 36 W LL	max. 4
• Number of ECGs control output	
– Osram DIMM-ECG	max. 50
• Notes	<ul style="list-style-type: none"> • ECGs have high input currents: if more than six ECGs are to be switched, a power relay must be used • Always ensure that ECGs and fluorescent lamps are from the same manufacturer
Connections	4 screw-type terminals with anti-slip terminal body, the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 4.0 mm² solid • 0.5 ... 2.5 mm² finely stranded, with or without end sleeve (without insulating collar, gas-tight crimp connection)
Mechanical specifications	
• Enclosure	plastic
• Dimensions	modular width: 71 mm x 71 mm, mounting depth: 32 mm
• Weight	approx. 55 g
• Fire load	approx. 1000 kJ
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1
Electrical safety	
• Degree of soiling (in compliance with IEC 60664-1)	2
• Degree of protection (in compliance with EN 60529)	IP20
• Overvoltage category (in compl. with IEC 60664-1)	III
• Standard	complies with EN 60669-2-1
EMC requirements	complies with EN 60669-2-1, EN 61000-6-3 and EN 61000-6-1
Environmental conditions	
• Resistance to climate	EN 50090-2-2
• Ambient temperature in operating state	– 5 ... +45 °C
• Storage temperature	–25 ... +70 °C
• Relative humidity (not condensing)	5 ... 93 %
Certification	VDE approved and KEMA-approved

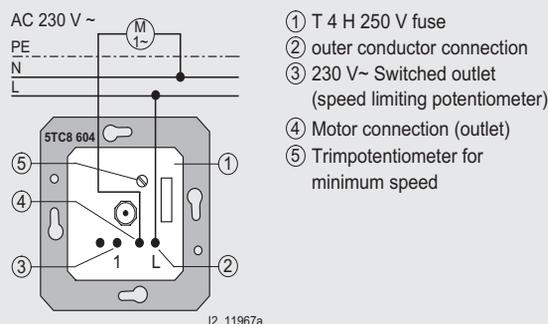
Schematics



Technical specifications

Power supply	mains connection 230 V (2-wire method) rated voltage: 230 V AC, 50/60 Hz
Protection against short-circuit	with fuse ① (the fuse holder contains a spare fuse)
Protection against overload	with additional thermostat, which permanently shuts down the speed regulating rheostat in the event of an overload
Load output	
• Number	one (④)
• Rated voltage	230 V AC, 50/60 Hz
• Rated load (up to 35 °C ambient temperature)	
– Single-phase induction motor	25 ... 600 VA / 0.1 ... 2.6 A
– Note	the outer conductor must be connected to the L terminal as the device may otherwise be permanently damaged
– Maximum connected load at ambient temperature	 <p style="color: red;">Warning: The connected load must be reduced by 20 %, depending on operating conditions</p> <ul style="list-style-type: none"> • for mounting on wood, Rigips, gas concrete or cavity walls • for installation in multiple combinations or surface mounting enclosures
Connections	four screw-type terminal with anti-slip terminal body the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 4.0 mm² solid • 0.5 ... 2.5 mm² finely stranded, with or without end sleeve (without insulating collar, gas-tight crimp connection)
Mechanical specifications	
• Enclosure	plastic
• Dimensions	modular width: 71 mm x 71 mm, mounting depth: 32 mm
• Weight	approx. 105 g
• Fire load	approx. 1000 kJ
• Mounting	installation in switch and socket boxes 60 mm Ø, 40 mm deep complies with DIN 49073-1
Electrical safety	
• Degree of soiling (in compliance with IEC 60664-1)	2
• Degree of protection (in compliance with EN 60529)	IP20
• Overvoltage category (in compl. with IEC 60664-1)	III
• Standard	complies with EN 60669-2-1
EMC requirements	complies with EN 60669-2-1, EN 61000-6-3 and EN 61000-6-1
Environmental conditions	
• Resistance to climate	EN 50090-2-2
• Ambient temperature in operation	– 5 ... +45 °C
• Storage temperature	–25 ... +70 °C
• Relative humidity (not condensing)	5 ... 93 %
Certification	VDE approved and KEMA-approved

Schematics



Technical Information

Motion Detectors

DELTA matic

Overview

Surface mounting version IP44

The surface mounting version is particularly ideal for use in non-residential buildings and outdoors.

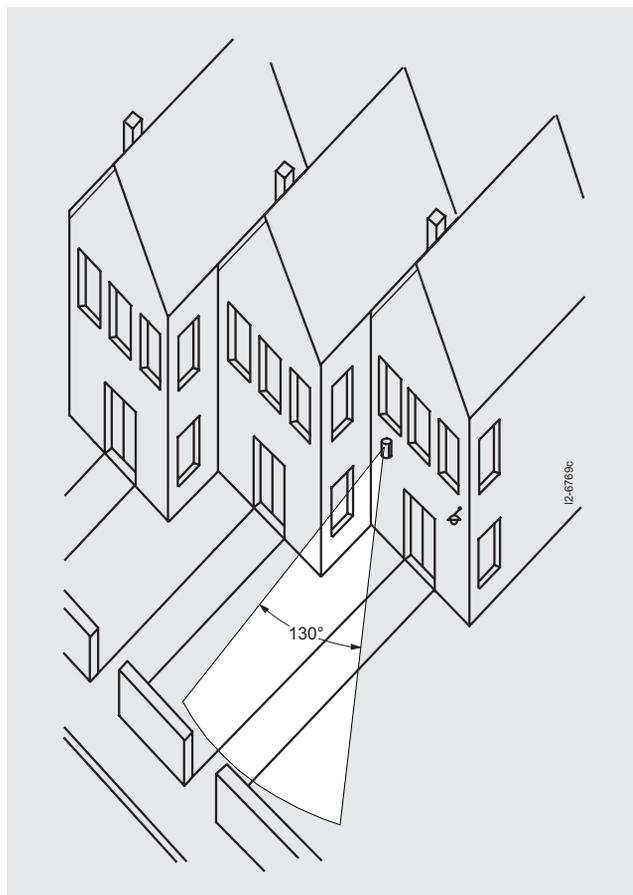
Degree of protection, assembly height

The degree of protection of this version is IP44 in compliance with DIN 40 050, EN 60 529 or IEC 529, the assembly height is preferably 2.5 m.

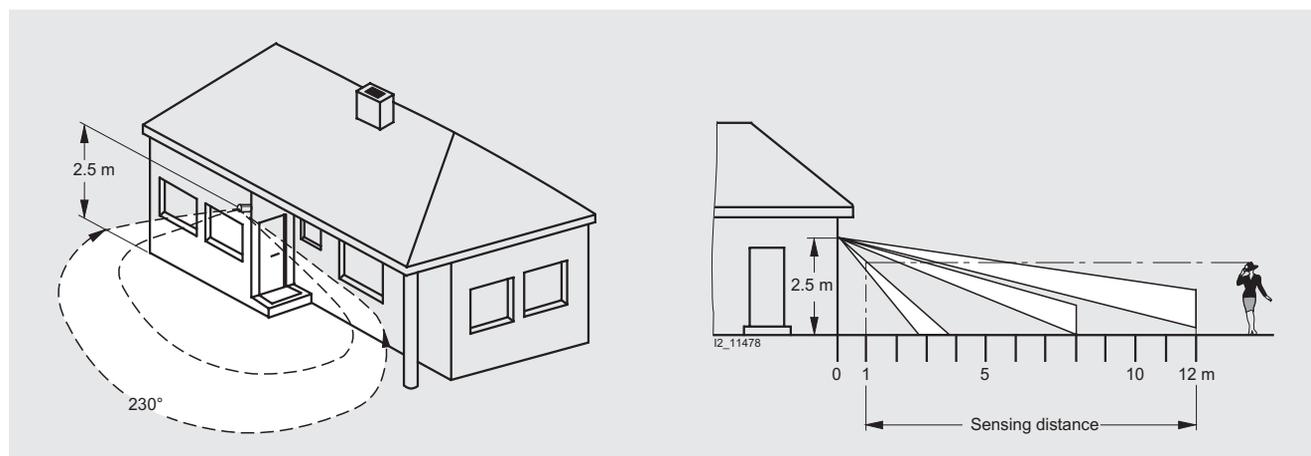
Sensing / monitoring range

According to the purpose of the application, the infrared DELTA matic motion detector can be used for the following sensing / monitoring ranges:

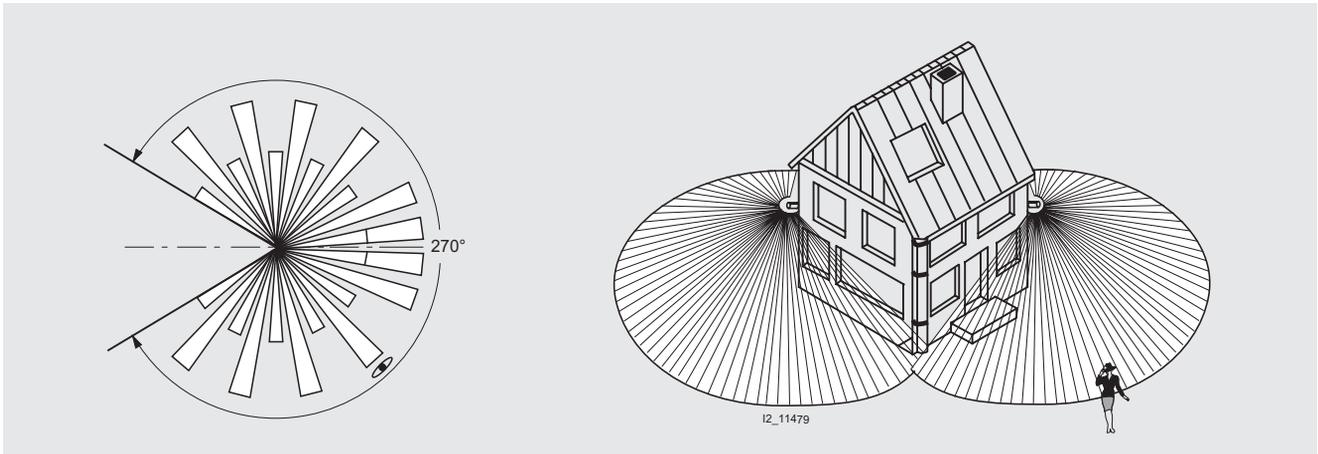
- 130°
- 230°
- 270°



Sensing / monitoring range 130°

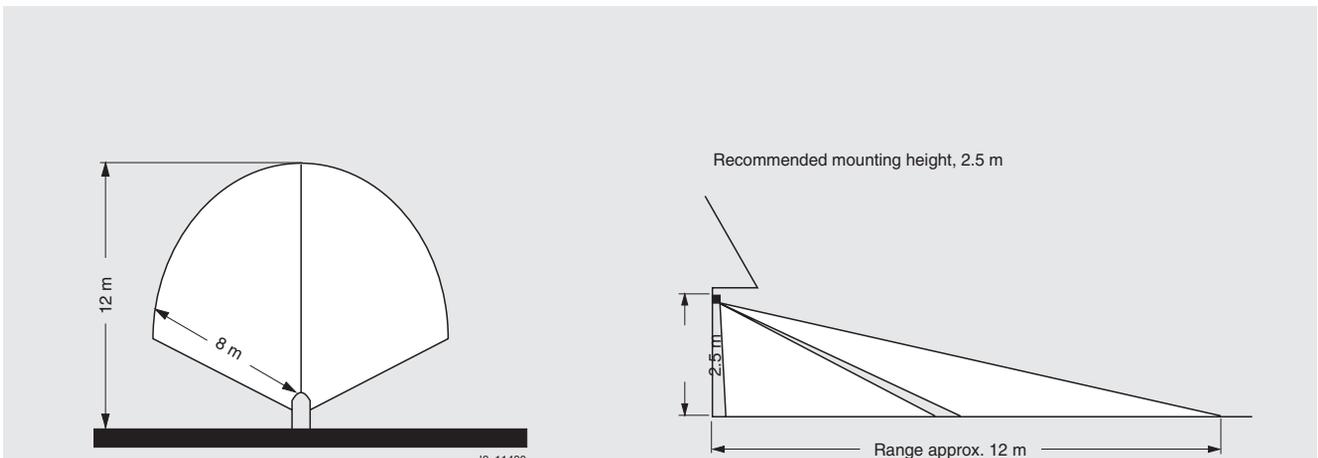


Sensing / monitoring range 230°

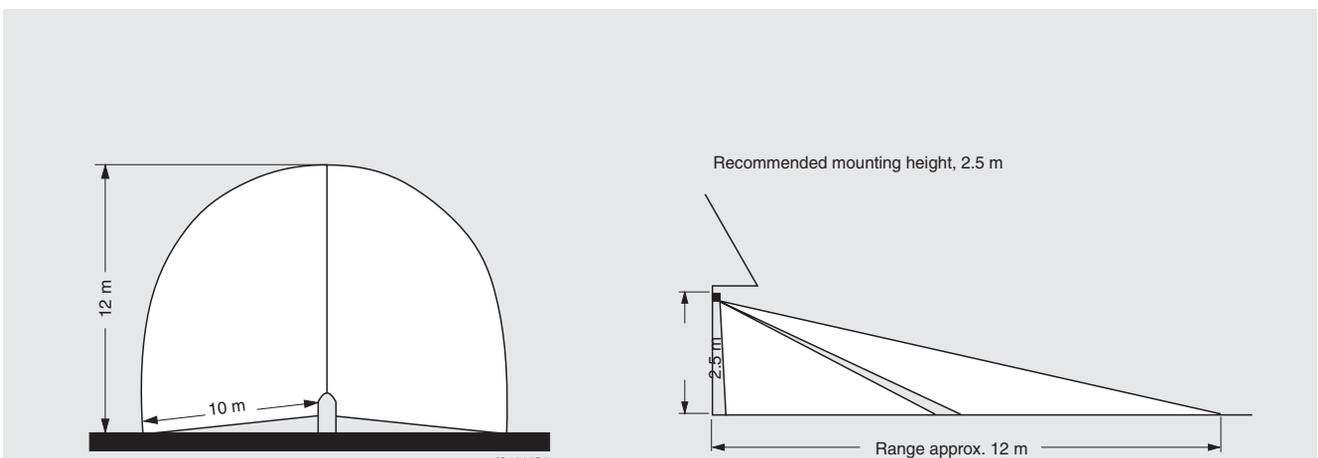


Sensing / monitoring range 270° and sensing distance 12 m

Possible applications



DELTA matic 130°: ideal for monitoring narrow areas

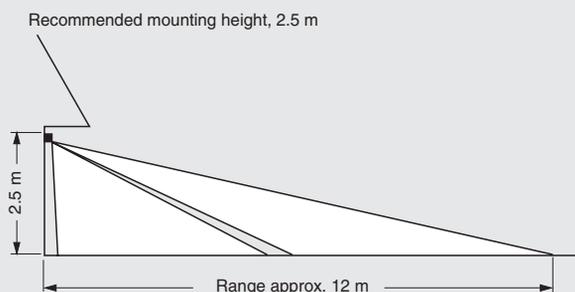
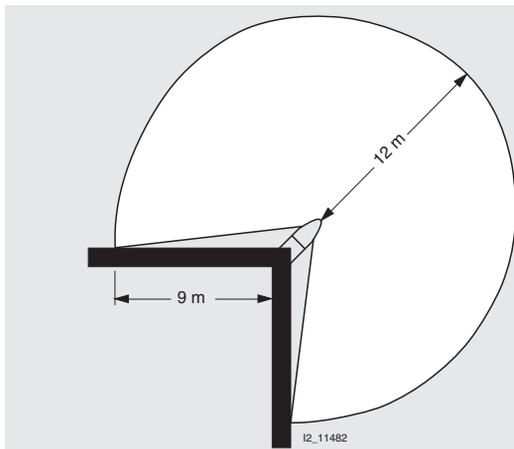


DELTA matic 230°: ideal for monitoring the side of a building, max. 2 x 10 m, without blind spot

Technical Information

Motion Detectors

DELTA matic

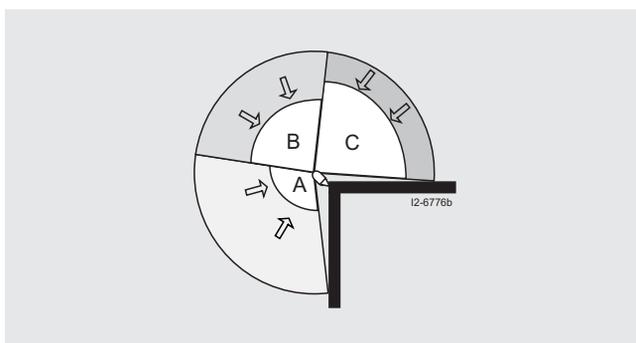


DELTA matic 270°: ideal for simultaneously monitoring two sides of a building

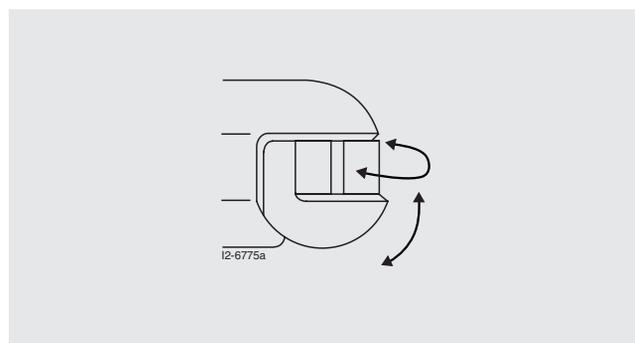
Sensing / monitoring range in three separate zones

The 230° monitoring range can be divided into two separate zones, the 270° monitoring range can be divided into three separate zones (see below). In addition, both the monitoring range and the

sensing range can be changed by swiveling the ball optics. By pivoting the ball optics down, the sensing range can also be reduced (see below).



Division of the sensing / monitoring range 270° in three separate zones

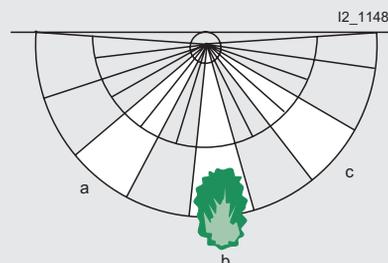
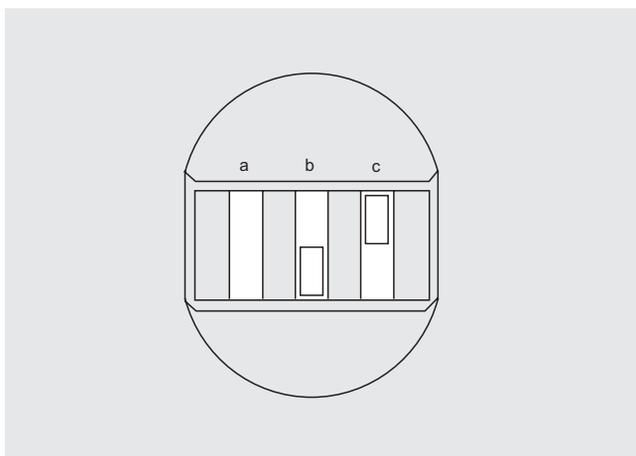


The sensing / monitoring range is adjusted by horizontal pivoting, the sensing distance by vertical pivoting of the ball optics.

Control of sensing / monitoring range by blanking out subranges

If required, semi cross-louvre shielding can be used to shield part of the sensing optical system, which allows the suppression of sources of interference, such as trees or branches being moved by the wind,

which could trigger the unwanted switching of the motion detector (see below). By using full cross-louvre shielding, the monitoring range can be individually restricted.



Blanking out of specific sensing / monitoring ranges of the sensing optical system using plug-in cross-louvre shielding demonstrated using a 230° monitoring range

Technical specifications

Rated voltage	230 V AC, 50/60 Hz
Rated current	10 A
Switching capacity	2300 W (~ 250 V AC for p.f. = 1)
Contact	1 NO contact, non-floating
Degree of protection	IP44, weatherproof and resistant to ultraviolet rays
Temperature range	-25 ... +70 °C
Dimensions (without special base for outside-angle mounting)	
• Length	approx. 125 mm
• Width	approx. 80 mm
• Height	approx. 80 mm
Time setting/delay time	approx. 4 s ... 10 min (infinitely adjustable), can be retriggered
Dusk switch	approx. 2 ... 1000 lx (infinitely adjustable)
Assembly height:	approx. 2.5 m
Range, front ¹⁾	approx. 12 m
Range, lateral ¹⁾	
• DELTA matic 270°	approx. 9 m
• DELTA matic 230°	approx. 10 m
• DELTA matic 130°	approx. 8 m
Parallel switching	max. 4 devices
Lamp loads	
• Incandescent lamps	max. 1600 W
• Florescent lamps	
– Uncorrected	max. 1200 W
– Parallel p.f. corrected	max. 650 W
– DUO circuit	max. 2400 W
• with compensated lamp load compensation capacitance	max. 70 µF
• Halogen lamps (230 V AC)	max. 1200 W
• Low-voltage halogen lamps with transformer (electronic and conventional)	max. 500 VA
Device parallel switching	max. 4 devices

1) Dimensions for an assembly height of approx. 2.5 m, at approx. 20 °C ambient temperature. The range depends on the setting of the range controller, the position of the ball optics, the weather and the direction of movement, cover clips for timed blanking out of subranges.

Technical Information

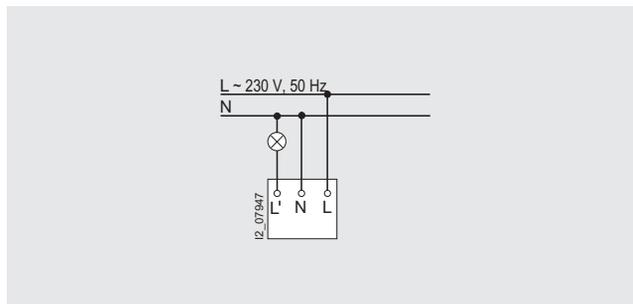
Motion Detectors

DELTA matic

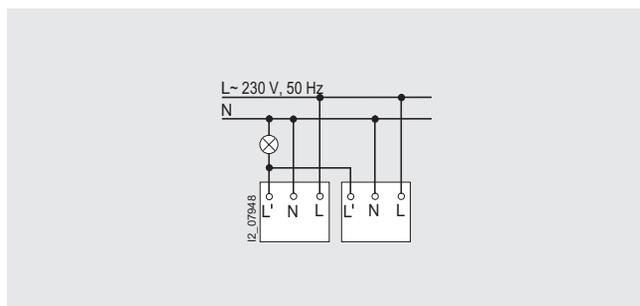
Schematics

The following are examples of circuits for the application of the surface mounting DELTA matic motion detector (5TC7 09.). A neutral conductor is always required.

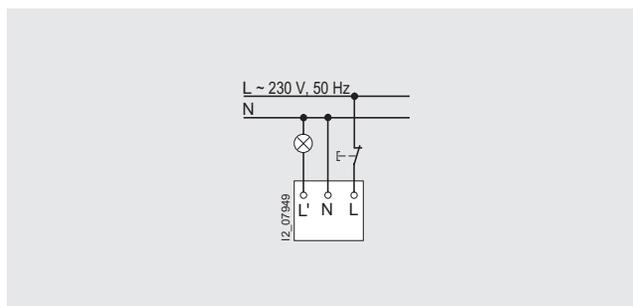
The integral switching relay of the DELTA matic infrared motion detector is designed for switching all kinds of lamps, such as incandescent lamps, fluorescent lamps, halogen lamps, mercury-vapor lamps, etc.



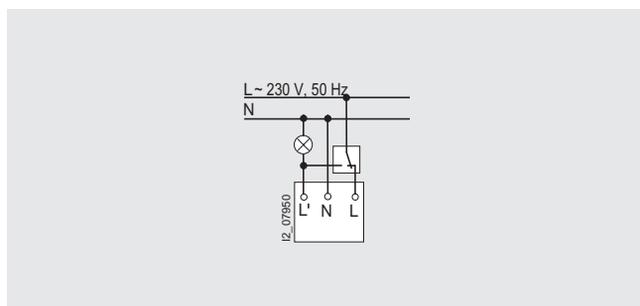
Motion detector always ready for operation



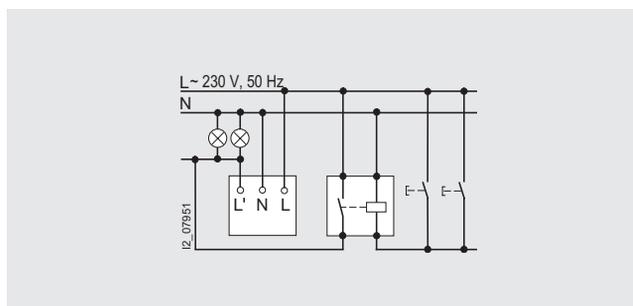
Parallel switching of max. 4 devices



Constant standby switching mode, but manual activation possible with pushbutton (NC contact)
Caution: the pushbutton (NC contact) requires an interruption of 3 to 4 sec.

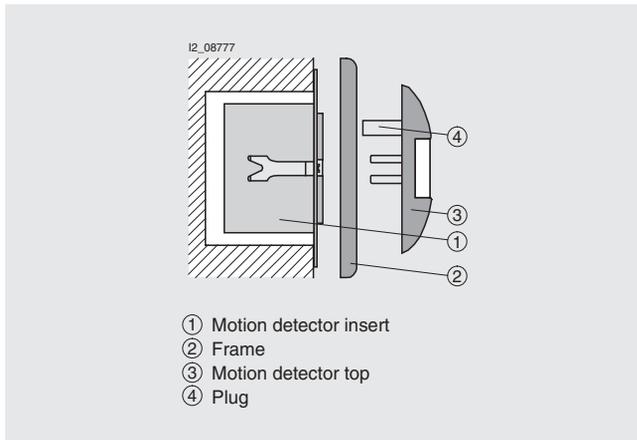


Automatic or manual operation through two-way switch



Parallel operation with stairwell lighting timer. Alternative switching of lights by the motion detector or the stairwell lighting timers (after actuating a pushbutton)

Design



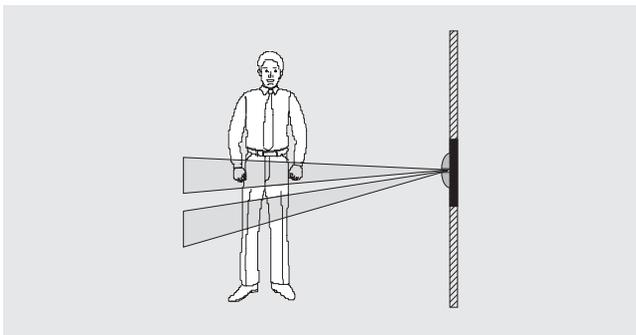
The motion detector insert ① is mounted in a DIN 49073-compliant device box.

The terminals of the insert must be directed downwards (wall mounting) as otherwise malfunctions may result.

Together with the motion detector top ③, the frame ② is plugged onto the insert.

An optimum detection is attained by mounting the top laterally to the walking direction. Otherwise persons might be detected too late.

The 1.10 m lens



Mode of operation of the 1.10 m lens

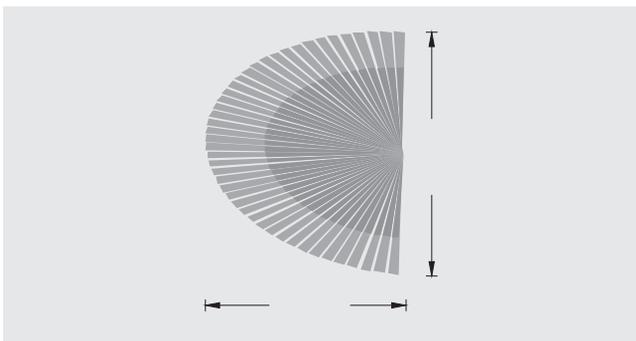
The assembly height generally amounts to 1.10 m.

The lens has a sensing range with an opening angle of 180° in two levels.

The radius of the sensing range amounts to approx. 10 x 12 m for an assembly height of 1.10 m. With other assembly heights, the detection radius varies.

As a result of the rectangular adjustment of the upper lens area, the sensing range is not subject to spatial limitations. Therefore, even motions outside the defined sensing range may initiate switching operations under certain circumstances (overreach).

Note: due to the almost horizontal adjustment of the upper sensing level, the motion detector tops equipped with the 1.10 m lens are suitable for indoor use only.



Sensing range of the 1.10 m lens

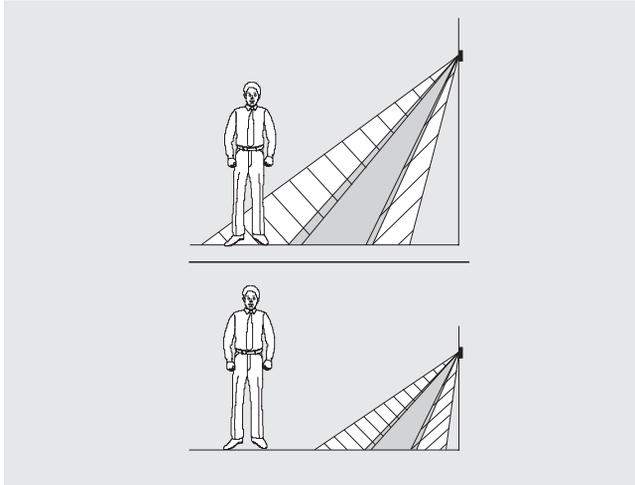
Technical Information

Motion Detectors

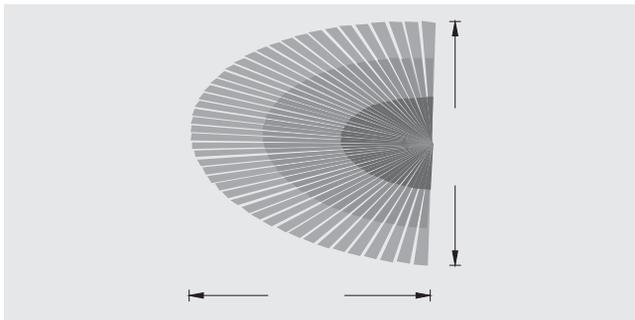
Motion detector top

Design

The 2.20 m lens



Mode of operation of the 2.20 m lens



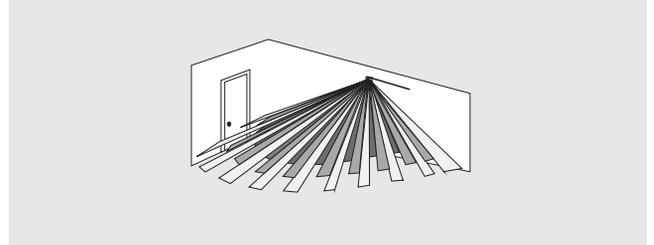
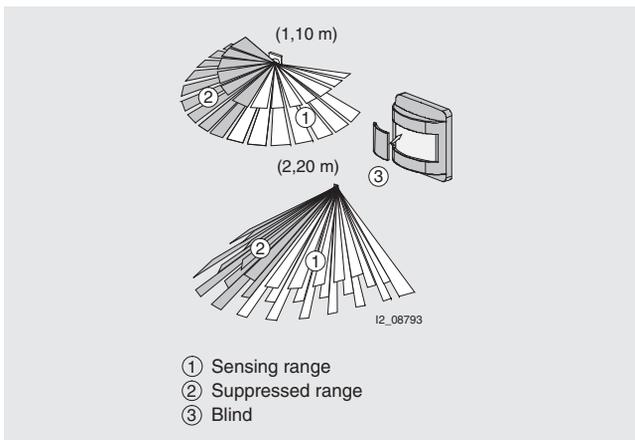
Sensing range of the 2.20 m lens

Avoidance of sources of interference

In order to avoid unintended switching operations, the following instructions should be respected when installing the motion detector:

- As a result of the heat radiation from the lighting or an insufficient distance between the motion detector and the lamp, an undefined switching operation may be initiated.

Use of the plug-on blind



The sensing levels of the 2.20 m lens arranged from the top to the bottom.

The assembly height generally amounts to 2.20 or 1.10 m.

If an assembly height higher than 2.20 m is selected, please note that under certain circumstances the energy radiated by a more distant heat signal source is not sufficient to release the motion detector top.

The lens has a sensing range with an opening angle of 180° in three levels. The three levels are directed from the top to the bottom.

The size of the sensing range equals

- for an assembly height of 2.20 m: approx. 12 m x 12 m
- for an assembly height of 1.10 m: approx. 6 m x 6 m

- When selecting the mounting location, it should be ensured that no sources of interference, e.g. lamps or heaters are positioned within the sensing field. If this is not possible, a plug-on blind should be used.

Using the plug-on blind, sources of interference can be suppressed by narrowing the sensing range. The blind covers 90° of the left or right sensing range.

More information

Adjustable brightness threshold

The brightness limit value at which a detected movement releases a switching operation, is called the brightness threshold. This threshold can be set by means of a potentiometer on the rear side of the motion detector top within a range of approx. 0 to 80 lux.

A setting of brightness-independent switching operations (daytime operation) is also possible.

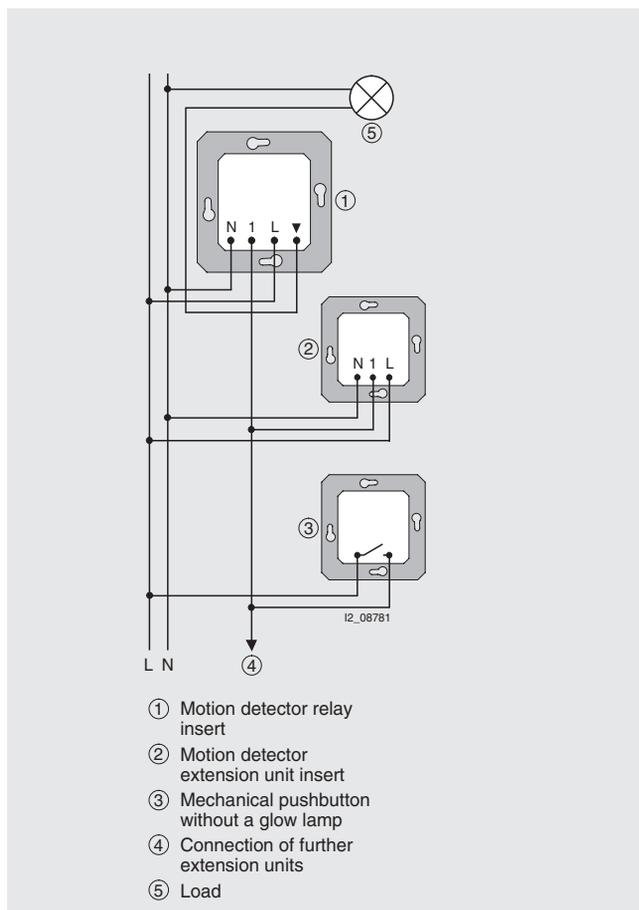
Behavior in case of power failure/recovery

Interruption time	Behavior
< 200 ms	no change of the switching state.
200 ms ... approx. 1 s	in case of a power recovery, the duration of the delay time is activated (retriggering)
> approx. 1 sec	in case of power recovery, auto-test for approx. 60 sec. The lighting is switched on for the time of the auto-test. After the test has been completed, the lighting is switched off and the motion detector top is ready for operation.

Behavior when pulling off the motion detector top

The insert's switching state remains. If the motion detector top is plugged on again, it behaves like after a power failure of over approx. 1 sec.

Schematics



Caution: Do not connect motion detector center units in parallel.

Extension units

The sensing range of the center unit can be extended by means of a motion detector extension unit insert ② in connection with a motion detector top. Motion detector extension unit inserts issue independent of brightness motion signals to the center unit. The brightness evaluation as well as the delay time are determined by the center unit.

Mechanical pushbuttons

Using a mechanical pushbutton without a glow lamp ③ the lighting can be switched on or retriggered independent of brightness.

It is not possible to switch off the lighting.

Notes:

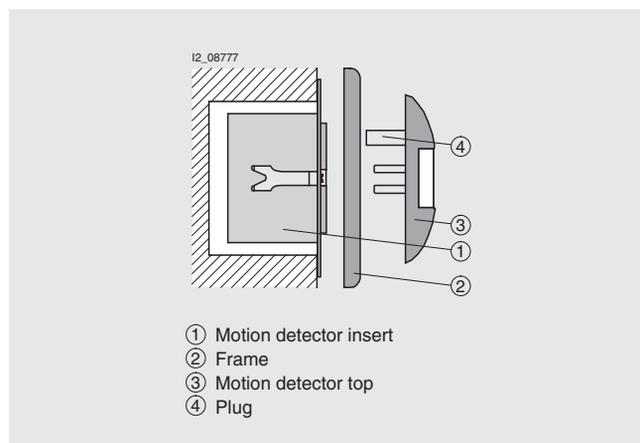
- Long and short operation have the same effect.
- It is not permissible to connect motion detector center units in parallel.
- If the mechanical pushbutton requires lighting, the type 5TD2 114 can be installed if there is a neutral wire.

Technical Information

Motion Detectors

Comfort motion detector top

Design



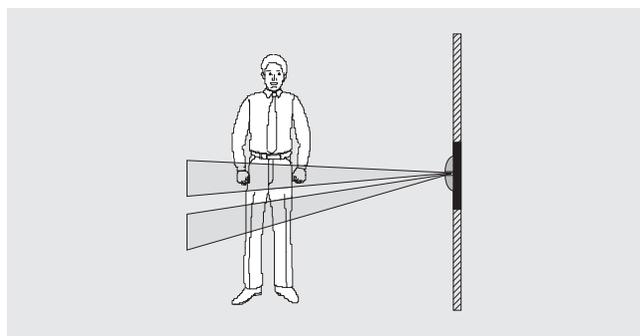
The motion detector insert ① is mounted in a DIN 49073-compliant device box.

The terminals of the insert must be directed downwards (wall mounting) as otherwise malfunctions may result.

Together with the motion detector top ③, the frame ② is plugged onto the insert.

An optimum detection is attained by mounting the top laterally to the walking direction. Otherwise, a delayed detection must be taken into account.

The 1.10 m lens



Mode of operation of the 1.10 m lens

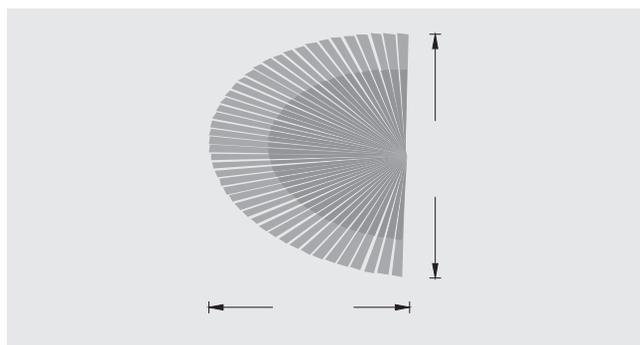
The assembly height generally amounts to 1.10 m.

The lens has a sensing range with an opening angle of 180° in two levels.

The size of the sensing range amounts to approx. 10 x 12 m related to an assembly height of 1.10 m. With other assembly heights, the detection radius varies.

As a result of the rectangular adjustment of the upper lens area, the sensing range is not subject to spatial limitations. Therefore, even motions outside the defined sensing range may initiate switching operations under certain circumstances (overreach).

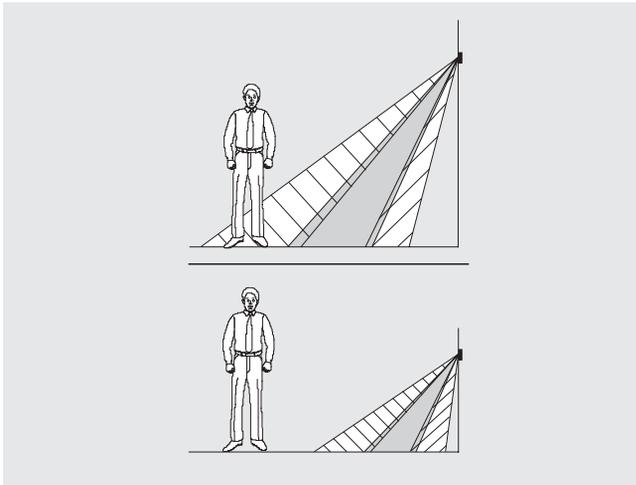
Note: due to the almost horizontal adjustment of the upper sensing level, the motion detector tops equipped with the 1.10 m lens are basically suitable for indoor use only.



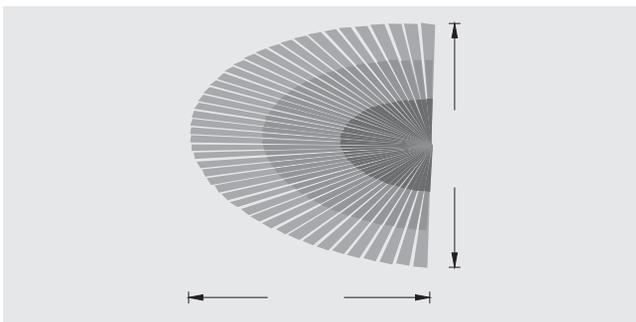
Sensing range of the 1.10 m lens

Design

The 2.20 m lens



Mode of operation of the 2.20 m lens



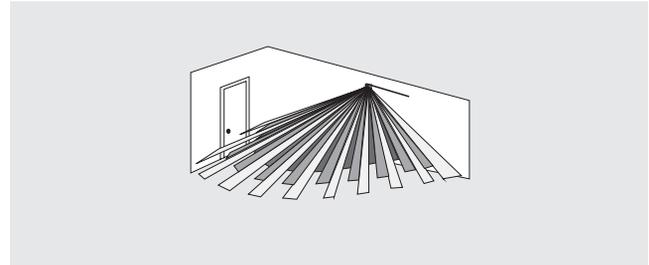
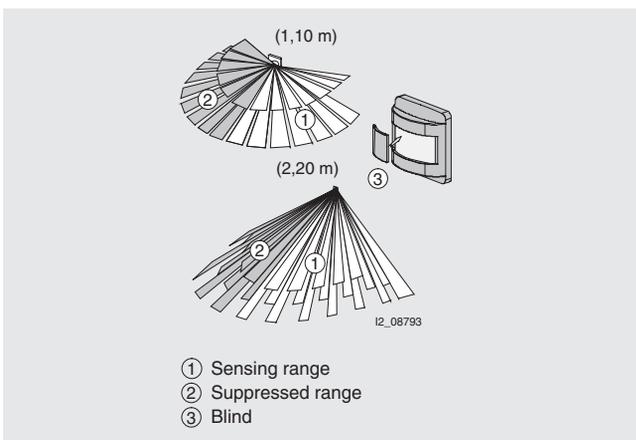
Sensing range of the 2.20 m lens

Avoidance of sources of interference

In order to avoid unintended switching operations, the following instructions should be complied with during installation:

- As a result of the heat radiation from the lighting or an insufficient distance between the motion detector and the lamp, an undefined switch-on operation may be initiated.

Use of the plug-on blind



The sensing levels of the 2.20 m lens arranged from the top to the bottom.

The assembly height generally amounts to 2.20 or 1.10 m.

If an assembly height higher than 2.20 m is selected, please note that under certain circumstances the energy radiated by a more distant heat signal source is not sufficient in order to release the motion detector top.

The lens has a sensing range with an opening angle of 180° in three levels. The three levels are directed from top to bottom.

The radius of the sensing range

- for an assembly height of 2.20 m: approx. 12 m x 12 m
- for an assembly height of 1.10 m: approx. 6 m x 6 m

- When selecting the mounting location, it should be ensured that no sources of interference, e.g. lamps or heaters are positioned within the sensing field. If this is not possible, a plug-on blind should be used.

Using the plug-on blind, sources of interference can be suppressed by narrowing the sensing range. The blind covers 90° of the left or right sensing range.

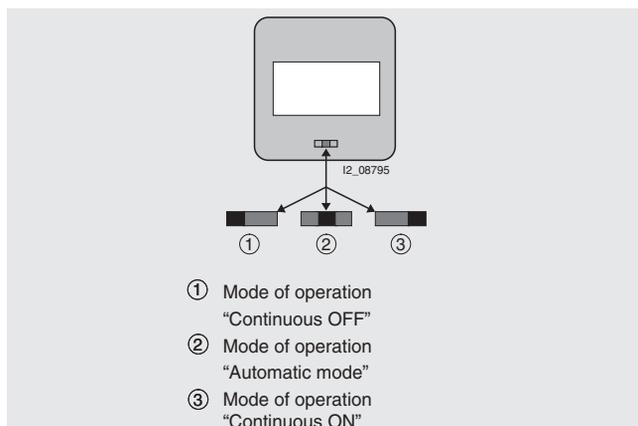
Technical Information

Motion Detectors

Comfort motion detector top

More information

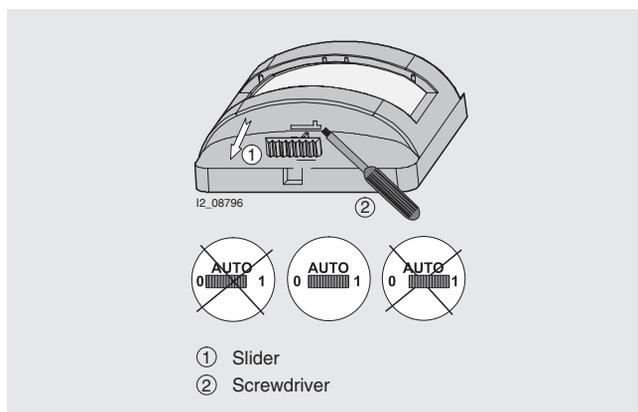
Operating modes



At the Comfort motion detector top, three different operating modes can be set by means of a switch:

- **Continuous OFF**
For this mode, the switch must be moved to the ① position. The lighting is continuously switched off. Switching is not possible by means of extension units.
- **Automatic mode of operation**
For this mode, the switch must be moved to the ② position. If a motion is detected, the Comfort motion detector top switches on in dependence of brightness and if the motion is no longer detected, it is switched off after the set delay time has expired. Switching is possible by means of extension units.
- **Continuous ON**
For this mode, the switch must be moved to the ③ position. The lighting is continuously switched on. Switching is not possible by means of extension units.

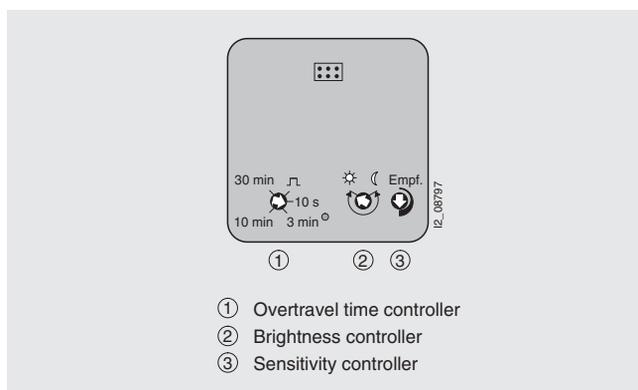
Interlocking of the switch



By means of an interlocking clip, the switch can be interlocked in the automatic mode of operation switching position:

- Setting the automatic mode of operation
- Carefully remove the slider ① with a screwdriver.
- Inserting the interlocking clip

Adjusting the delay time



The delay time determines how long the lighting remains switched on if a motion is no longer detected. The delay time can be set within a range of 10 sec to approx. 30 min. The setting is carried out non-linearly, longer times can only be specified within a relatively rough grid.

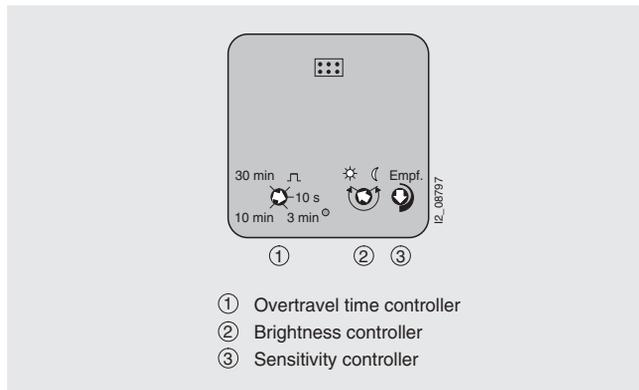
To modify the delay time, turn the ① controller to the desired direction.

If the Comfort motion detector top is switched on, each further detected motion results in a retriggering of the delay time. This means, the delay time starts anew.

The Comfort motion detector top does not provide for a forcibly actuated shutdown. This means, continuous motion within the sensing field results in continuous light.

More information

Setting of short-time operation

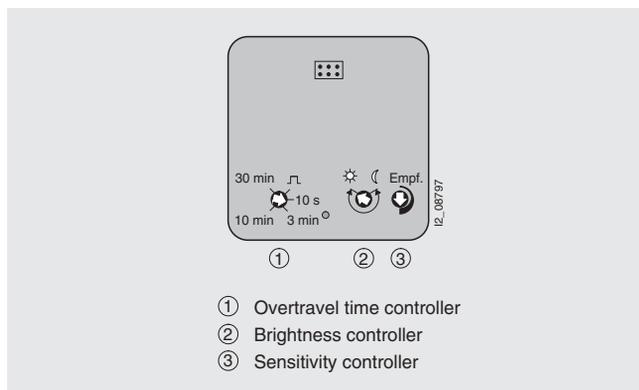


Within the scope of a special operating mode, the Comfort motion detector top can also be set to short-time duty. The short-time duty operates independent of brightness and can be used, e.g. for controlling a bell.

For this mode, the delay time controller ① is set to the shortest time (symbol similar to Ω).

If a motion is detected, the Comfort motion detector top switches on for 0.5 sec. If the detector continues to detect motions, the lighting is not switched on again until an interlocking time of 3 sec has expired.

Setting of the brightness threshold



The brightness threshold is the threshold of the brightness at which a detected movement releases a switching operation. The brightness threshold can be set within a range of approx. 0 to 80 lux.

To modify the brightness threshold, the controller ② must be turned to the desired direction.

If the controller ② is set to the "sun" limit stop (> 80 lux), the Comfort motion detector top works in daytime operation and therefore switches independently of brightness.

Releasing the teach function

By means of the teach function, the current ambient brightness can be stored as brightness threshold whereas the brightness threshold set at the controller is no longer evaluated.

To activate the teach function, the Comfort motion detector top must be completely covered within 9 seconds for a short time (approx. 1 sec) at least 3 times, e.g. using the hand.

As soon as the Comfort motion detector top has detected three light changes, the teach function is activated. For acknowledgment,

- The switched on lighting is switched off and subsequently switched on for 3 sec,
- The switched off lighting is switched on for 3 sec.

Note: if the Comfort motion detector top no longer responds to a detected motion at the limit stop "moon" (night setting, 0 lux), the controller ② must be slightly turned in direction of the sun. The Comfort motion detector top is characterized by a high level of external light immunity. For this reason, the Comfort motion detector top

- does not interpret a short-time illumination, e.g. by means of a flashlight, as "brightness threshold exceeded" and therefore does not switch on in case of motions. Thus, it is not possible to prevent the motion detector from switching on by illuminating it shortly,
- does not interpret the unintended short-time shadowing, e.g. by a person, as "brightness threshold undergone" and does not switch on in case of motions.

The external light immunity is attained by a time delay.

When brightness turns into darkness, the set brightness threshold must be undergone by at least 10 sec, before detected motions initiate a switching operation.

The same applies to the changeover from darkness to brightness. Only if the set threshold value has been exceeded by at least 10 sec, detected motions no longer initiate a switching operation.

Exception: If the Comfort motion detector top has just switched off, the 10 sec time delay is no longer active.

During the next minute you have to step back from the Comfort motion detector top to ensure that it is able to correctly measure and store the brightness.

To acknowledge the storage, the lighting is switched on for 3 sec.

Then, the Comfort motion detector top switches to the operating mode set.

If the brightness threshold set at the controller is to be reactivated, the Comfort motion detector top must be pulled off the insert and plugged on again.

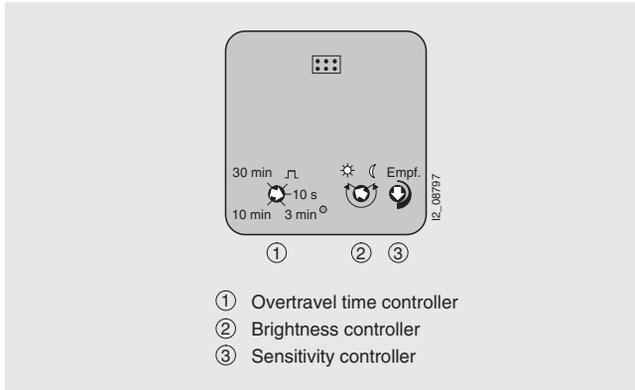
Technical Information

Motion Detectors

Comfort motion detector top

More information

Setting the sensitivity

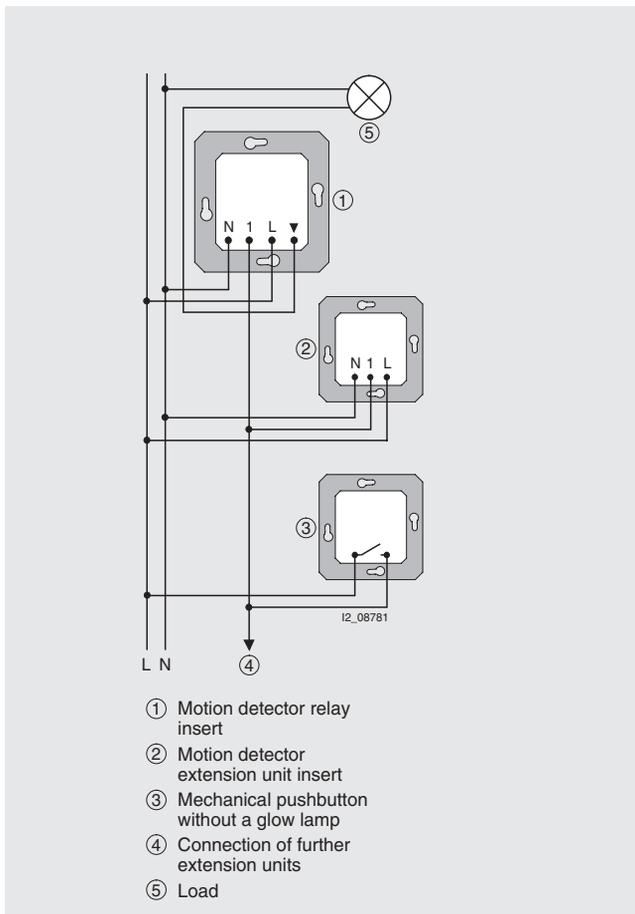


The Comfort motion detector top has an internal algorithm which carries out an automatic adjustment to the ambient conditions. This way, unintended switching operations are nearly eliminated.

Under normal circumstances, the controller should be set to maximum sensitivity.

If, in exceptional cases, it is necessary to determine a different sensitivity level, this can be done using the controller ③.

Schematics



Extension units

The sensing range of a center unit can be increased by extension units. This can be achieved by combining, for example, a Comfort motion detector top with a motion detector extension unit insert and connecting it to the center unit.

Caution:

- motion detector extension units are not directly suitable for the direct switching of loads and solely issue brightness-independent motion signals to the center unit.
- The brightness threshold, the operating mode and the delay time are set and evaluated at the center unit only.
- The operating mode switch and the controllers for brightness and delay time of the Comfort motion detector top on the extension unit have no function.
- The sensitivity of the Comfort motion detector top, which is plugged on the extension unit, may be adjusted, if required, by means of the respective controller (see chapter "More information").
- When combining the Comfort motion detector top with the motion detector extension unit insert, it must be observed that after the lighting has been switched off, an interlocking time of approx. 3 sec expires, before the extension unit can be switched on again.

Mechanical pushbuttons

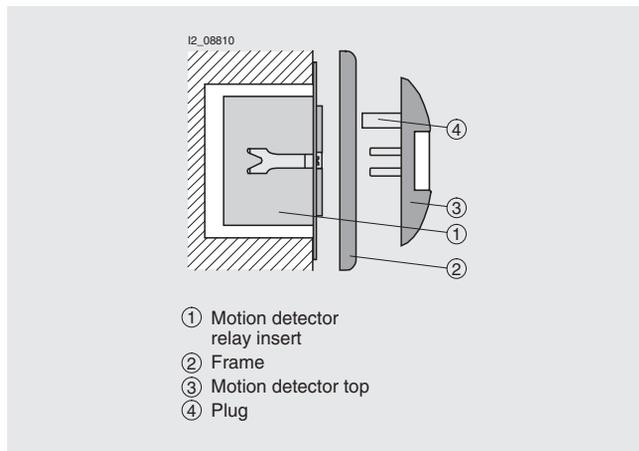
Using mechanical pushbuttons without a glow lamp (NO contact) ③ and with the automatic mode of operation activated, the Comfort motion detector top can be operated from several sides.

In case of a short operation in the switched off state, the lighting is switched on independently of brightness.

It is not possible to switch off the lighting.

Caution: it is not permissible to connect motion detector center units in parallel.

Design



The motion detector insert ① is mounted in a DIN 49073 compliant device box.

The terminals of the motion detector relay insert must be directed downwards (for wall mounting).

Only use the motion detector relay insert in combination with a motion detector top. Plug the motion detector top ③ together with the frame ② onto the insert. The electrical contacting is realized by a plug ④.

Plug on the motion detector top prior to applying the supply voltage. Do not replace the motion detector top with the power supply applied as otherwise a malfunction is caused.

Power losses > 1 sec lead to a switch-off of the motion detector relay insert.

Connect an upstream miniature circuit-breaker 10 A for device protection.

Observe the maximum connected load and the load specifications contained in the Technical specifications.

Depending on the mounting type, the max. connected load must be reduced:

- by –10 % each time the ambient temperature of 25 °C is exceeded by 5 °C,
- by –15 % for mounting on wood, Rigips or hollow walls,
- by –20 % for mounting in multiple combinations.

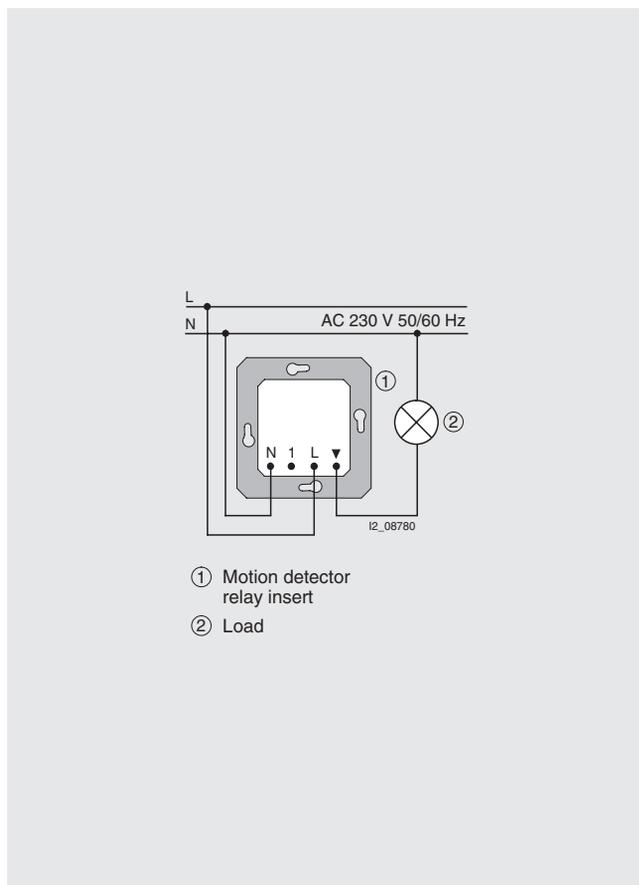
Use of extension units

The sensing field of the center unit can be extended by means of the motion detector extension unit insert.

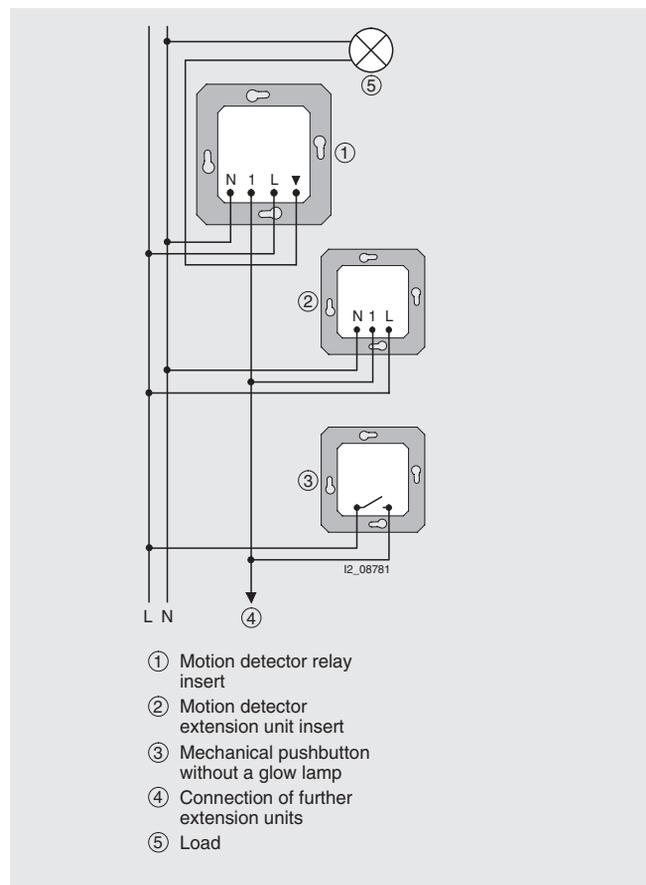
If mechanical pushbuttons are used (NO contacts), the lighting can be switched on from several sides independent of brightness.

Note: for operation with extension units, a motion detector has to be mounted on top of the center unit. Otherwise, there will be no function. A motion detector extension unit insert and a mechanical pushbutton without a glow lamp can be connected to a center unit in combination.

Schematics



Connection of the motion detector relay insert.



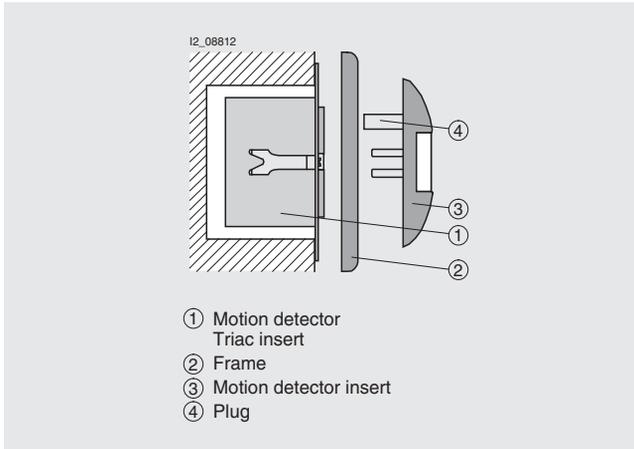
Connection of all possible inserts

Technical Information

Motion Detectors

Motion detector triac insert

Design



The motion detector triac insert ① is mounted in a DIN 49073 compliant device box.

The terminals of the motion detector triac insert must be directed downwards (for wall mounting).

Use the motion detector triac insert only in combination with a motion detector top ③. The top is plugged together with the frame ② onto the insert ①. The electrical contacting is realized by a plug ④.

Load conventional transformers with at least 85 % of the rated load with lamps.

The total load including the transformer power loss must not exceed 400 W/VA.

Depending on the mounting type, the max. connected load must be reduced:

- by -10 % each time the ambient temperature of 25 °C is exceeded by 5 °C,
- by -15 % for mounting on wood, Rigips or hollow walls,
- by -20 % for mounting in multiple combinations.

Use of extension units

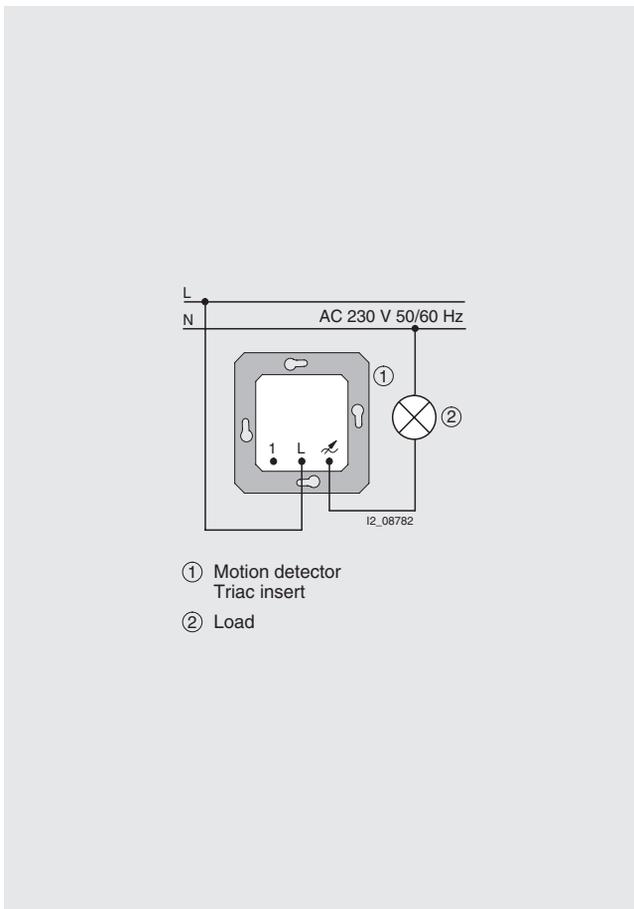
The sensing field of the center unit can be extended by means of the motion detector extension unit insert.

If mechanical pushbuttons are used (NO contacts), the lighting can be switched on from several sides independent of brightness.

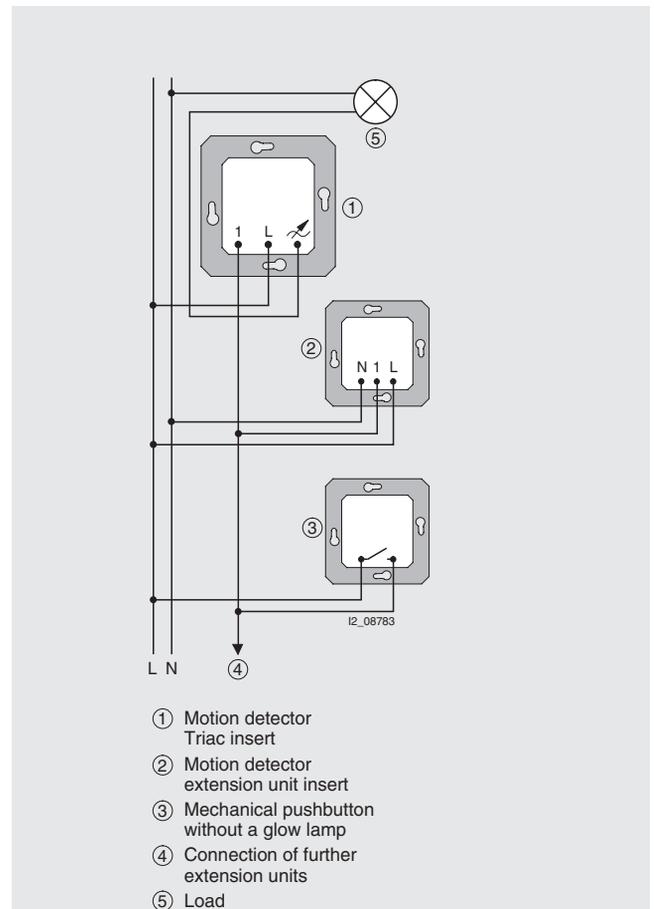
Note: for operation with extension units, it is compulsory to mount a motion detector top on the center unit. Otherwise, there will be no function.

A mechanical pushbutton insert without a glow lamp and a motion detector extension unit insert may also be combined.

Dimensional drawings

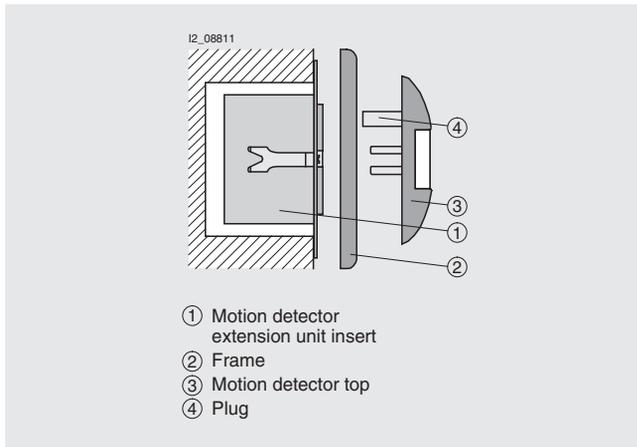


Connection of the motion detector triac insert.



Connection of all possible inserts

Design

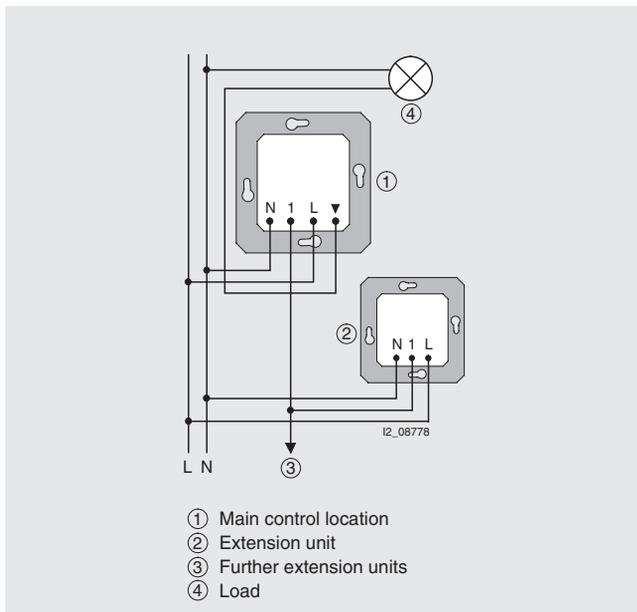


The motion detector extension unit insert ① is mounted on a DIN 49073 compliant device box. The terminals of the insert must be directed downwards (for wall mounting).

The top ③ is plugged together with the frame ② onto the insert.

The electrical contacting is realized by a plug ④.

Schematics



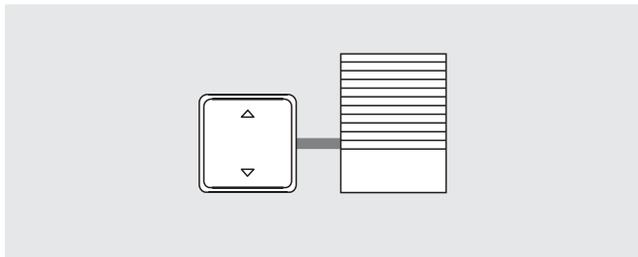
Technical Information

Shutter/Blind Control

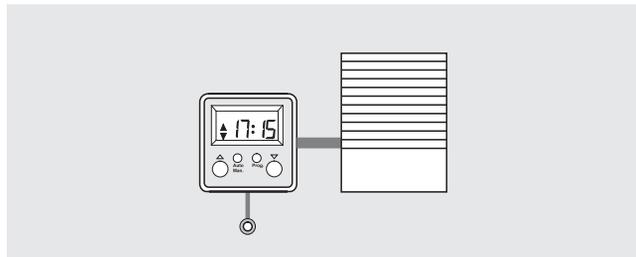
General information

Overview

Individual control, e.g. demonstrated using DELTA i-system titanium white

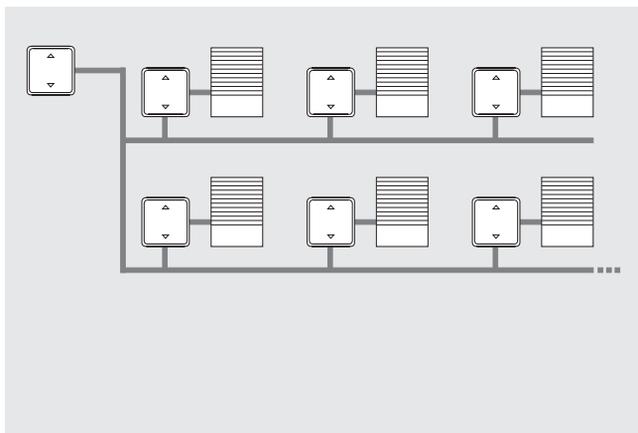


Shutter/blind control with Shutter/blind sys contact unit (5TC1 231) and Shutter/blind sys pushbutton (5TC1 321)

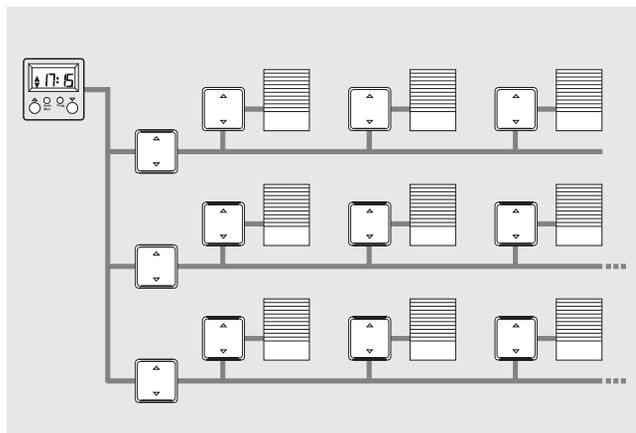


Shutter/blind control with complete assembly Comfort shutter/blind control (5TC1 521) and sun sensor (5TC1 526)

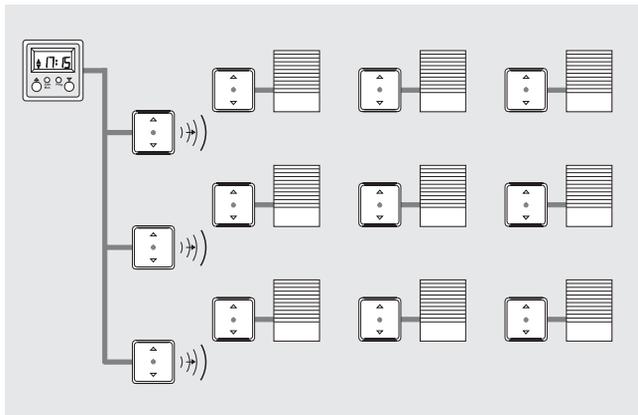
Group and central controls, demonstrated using DELTA i-system titanium white



Shutter/blind control with Shutter/blind sys contact units (5TC1 231) and Shutter/blind sys pushbuttons (5TC1 321)



Shutter/blind control with Shutter/blind sys contact units (5TC1 231) and Shutter/blind sys pushbuttons (5TC1 321) and Shutter/blind control complete assembly (5TC1 520) or Comfort shutter/blind control ¹⁾ (5TC1 521)



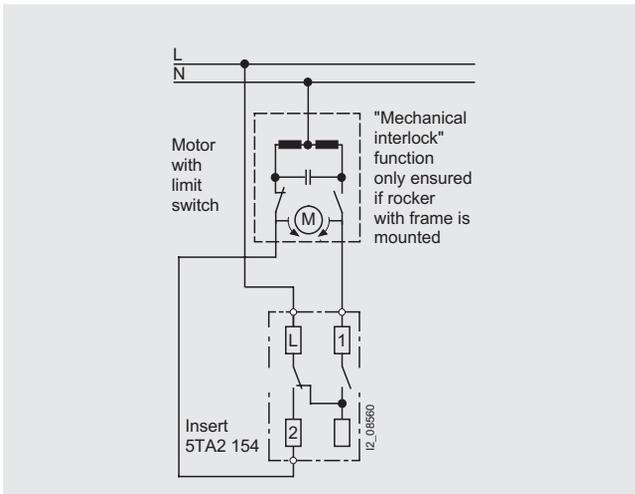
Shutter/blind control with Shutter/blind sys contact units (5TC1 231) and UP 211 shutter/blind wave pushbuttons (5WG3 211-2HB11) and shutter/blind control complete assembly (5TC1 520) or Comfort shutter/blind control ¹⁾ (5TC1 521)

1) The sun sensor (5TC1 526) cannot be used in this configuration

Technical Information Shutter/Blind Control

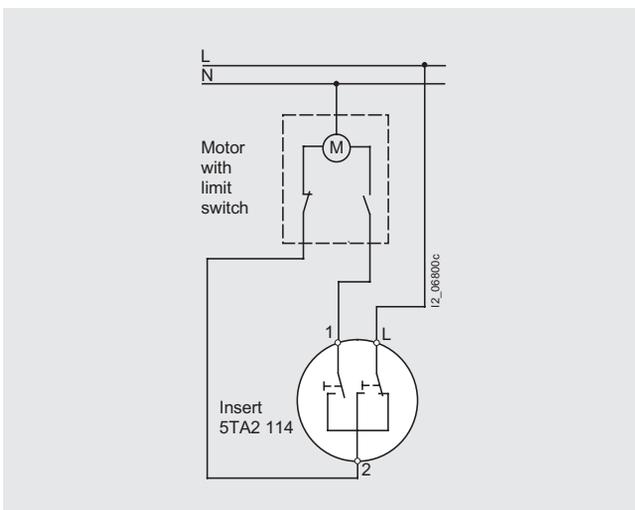
Shutter/blind switch, with electrical and mechanical interlock

Schematics



Shutter/blind pushbutton, with electrical interlock

Schematics

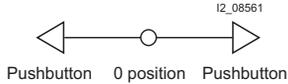
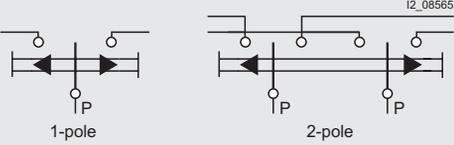
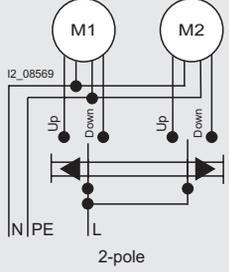
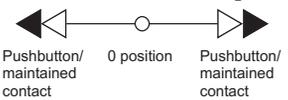
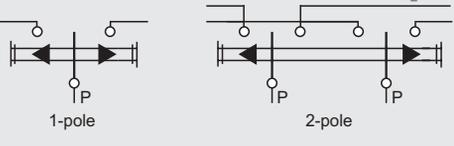
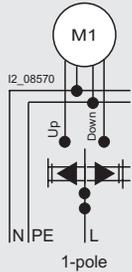


Technical Information

Shutter/Blind Control

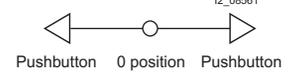
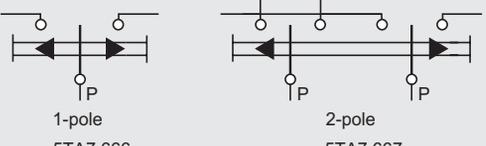
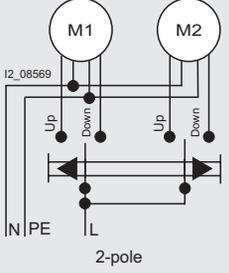
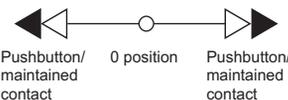
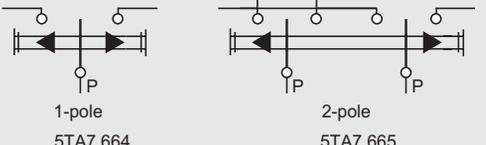
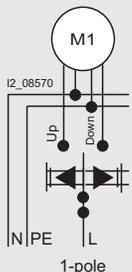
Shutter/blind knob-operated switch

Schematics

Symbols	Circuit diagram	Application example
 <p>I2_08561 Pushbutton 0 position Pushbutton</p>	 <p>I2_08565 1-pole 2-pole</p>	 <p>I2_08569 N/PE L Up Down Up Down 2-pole</p>
 <p>I2_08562 Pushbutton/maintained contact 0 position Pushbutton/maintained contact</p>	 <p>I2_08566 1-pole 2-pole</p>	 <p>I2_08570 N/PE L Up Down 1-pole</p>

Shutter/blind key-operated switch

Schematics

Symbols	Circuit diagram	Application example
 <p>I2_08561 Pushbutton 0 position Pushbutton</p>	 <p>I2_11956 1-pole 2-pole 5TA7 666 5TA7 677 5TA7 667 5TA7 678</p>	 <p>I2_08569 N/PE L Up Down Up Down 2-pole</p>
 <p>I2_08562 Pushbutton/maintained contact 0 position Pushbutton/maintained contact</p>	 <p>I2_11957 1-pole 2-pole 5TA7 664 5TA7 675 5TA7 665 5TA7 676</p>	 <p>I2_08570 N/PE L Up Down 1-pole</p>

Technical Information Shutter/Blind Control

Shutter/blind key-operated switch, for master-key systems

Overview

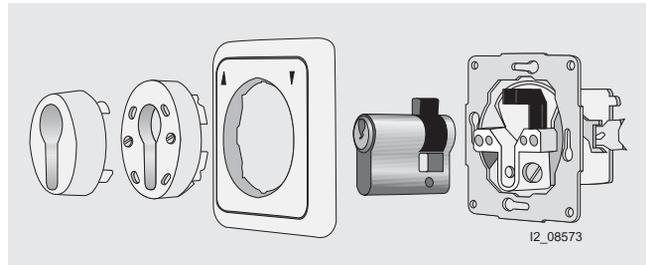
All profile semicylinders must comply with DIN 18252 with approx. 40 mm overall length. Examples:

Make	Name
CEC	No. 8511 / 2 (as PH 22)
BKS	No. 3101
Wilka	No. Z 1411 12h
Zeiss Ikon	No. 1600044 = mv

Bit is in neutral position.

The key-operated switch is particularly suited to use in main and general master key systems.

In the case of special requirements and existing systems or custom-made tumbler arrangements for master key systems, the lock barrels must be obtained from a specialist dealer.



Schematics

Symbols	Circuit diagram	Application example
<p>Maintained contact 0 position Maintained contact</p> <p>I2_08564</p>	<p>1-pole 5TA7 668 5TA7 680</p> <p>I2_08568</p>	<p>1-pole</p> <p>I2_08572</p>
<p>Maintained contact — Maintained contact</p> <p>I2_08563</p>	<p>2-pole 5TA7 670 5TA7 681</p> <p>I2_08567</p>	<p>2-pole</p> <p>I2_08571</p>

Technical Information

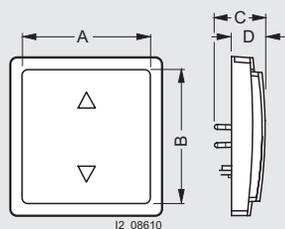
Shutter/Blind Control

Shutter/blind sys pushbutton

Technical specifications

Power supply	over 230-V user interface (230-V PEI) of the shutter/blind control sys insert	
Connections	10-pole pin connector (230-V PEI) for connection of Shutter/blind control sys insert	
Mechanical specifications		
• Enclosure	plastic	
• Dimensions (L x W x D)	DELTA i-system DELTA profil DELTA style	55 x 55 x 24 mm (incl. spring) 65 x 65 x 25 mm (incl. spring) 68 x 68 x 27 mm (incl. spring)
• Weight	approx. 30 g	
• Fire load	approx. 950 kJ	
• Mounting	mounted on the shutter/blind control sys insert	
Electrical safety		
• Degree of soiling (in compliance with IEC 60664-1)	2	
• Degree of protection (in compliance with EN 60529)	IP20	
• Overvoltage category (in compliance with IEC 60664-1)	III	
• Standard	complies with EN 50090-2-2 and IEC 60664-1	
EMC requirements	complies with EN 50090-2-2, EN 61000-6-3, EN 61000-6-1	
Environmental conditions		
• Resistance to climate	EN 50090-2-2	
• Ambient temperature in operation	– 5 ... +45 °C	
• Storage temperature	–25 ... +70 °C	
• Relative humidity (not condensing)	5 ... 93 %	
CE marking	complies with EMC Directive (residential buildings), Low Voltage Directive	

Dimensional drawing

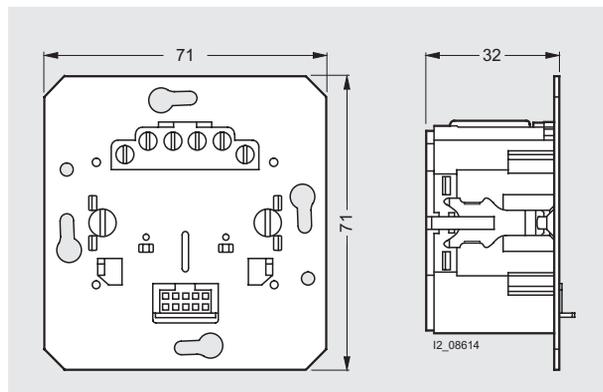


	A	B	C	D
DELTA i-system	55	55	24	13
DELTA profil	65	65	25	14
DELTA style	68	68	27	16,5

Technical specifications

Power supply	mains connection 230 V rated voltage: 230 V AC, 50 Hz
Outputs	
• Output channel (UP/DOWN)	1
• Rated voltage	230 V AC, 50 Hz
• Rated current	8 A resistive load
• Switching capacity	1 motor, 1000 VA
• Max. on period of the relay	120 s
• Switchover interval between UP and DOWN operation	1 s
• Relay ON period for STEP command	100 ms
• System interruptions	< 0.2 s are bridged
Connections	the connections for the DELTA shutter/blind control sys insert comprise six screw-type terminals, the following conductor/cross-sections are permissible: <ul style="list-style-type: none"> • 0.5 ... 2.5 mm² solid • 0.5 ... 1.5 mm² finely stranded with end sleeve without insulating collar (gas-tight crimp connection) Caution: if the conductors are to be looped through, only conductors with max. 1.5 mm ² must be used
Mechanical specifications	
• Enclosure	plastic
• Dimensions	modular width: 71 mm x 71 mm mounting depth: 32 mm
• Weight	approx. 75 g
• Fire load	approx. 1000 kJ
• Mounting	installation in switch and socket boxes 60 mm Ø, at least 40 mm deep complies with DIN 49073-1
Electrical safety	
• Degree of soiling (in compliance with IEC 60664-1)	2
• Degree of protection (in compliance with EN 60529)	IP20
• Overvoltage category (in compliance with IEC 60664-1)	III
• Relay	μ contact
EMC requirements	complies with EN 50090-2-2, EN 60669-2-1, EN 61000-6-3, EN 61000-6-1
Environmental conditions	
• Resistance to climate	EN 50090-2-2
• Ambient temperature in operation	- 5 ... +45 °C
• Storage temperature	-25 ... +70 °C
• Relative humidity (not condensing)	5 ... 93 %
Certification	VDE approved
CE marking	complies with EMC Directive (residential buildings), Low Voltage Directive

Dimensional drawings¹



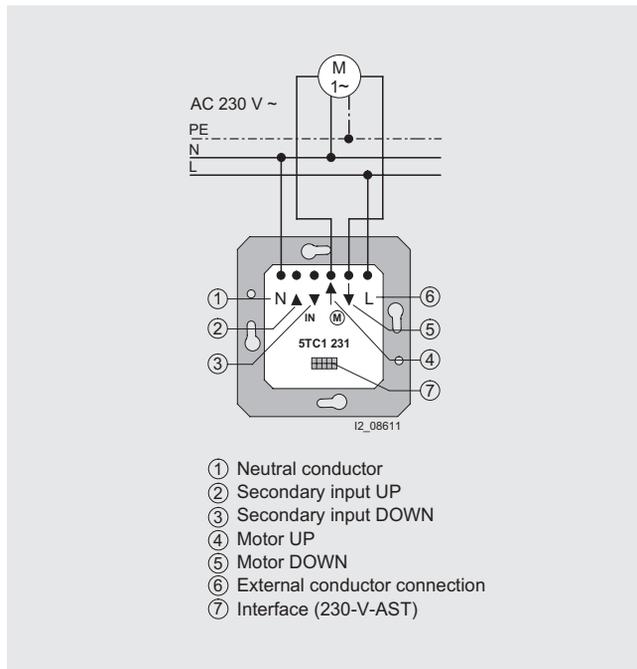
Technical Information

Shutter/Blind Control

Shutter/blind control sys insert

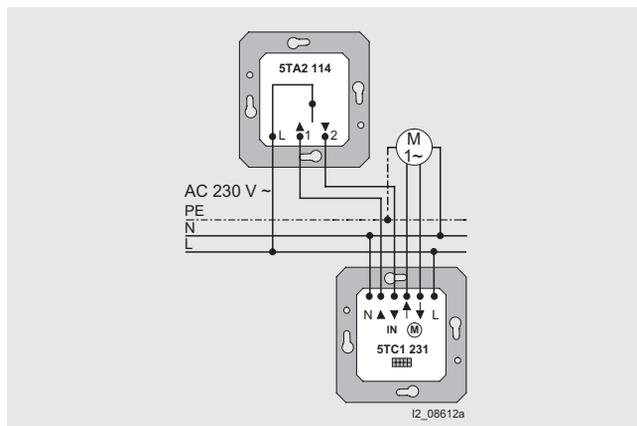
Schematics

Sample connection



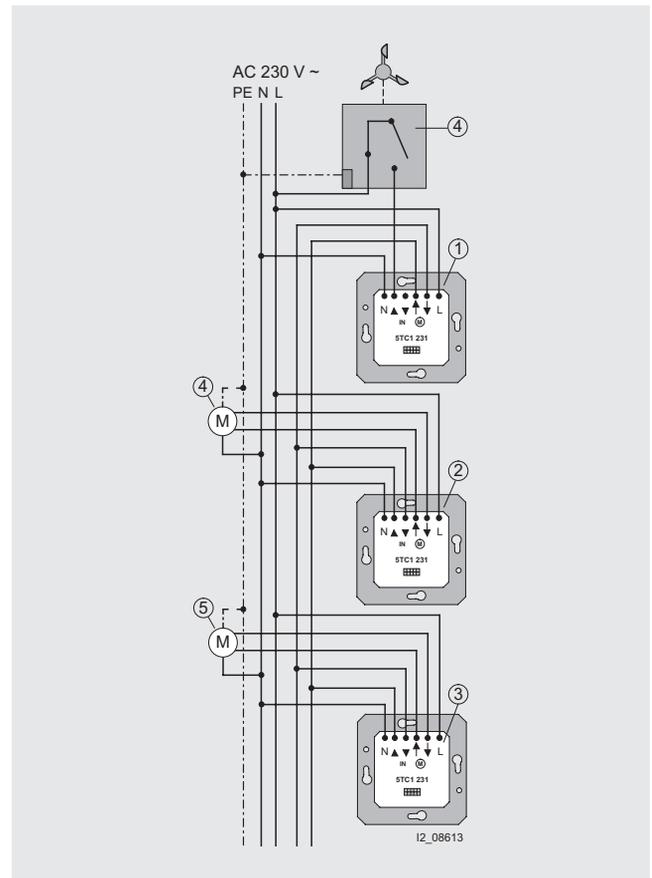
Application options

Example 1: Shutter/blind control with conventional secondary branches



When using the shutter/blind pushbutton (STA2 114), the shutter/blind can be manually moved to the required position (UP/DOWN or STEP command). The number of connectable conventional secondary branches is unlimited.

Example 2: Group control with 2 motors and central operating point



Together with the UP 211 wave pushbutton shutter inserts, the shutter/blind control sys insert (①) is implemented as a central operating point. The inserts (②) and (③) individually control the respective shutter/blind motors M (④ and ⑤). The time values stored in the UP 211 wave shutter/blind pushbutton (e.g. 8:00 UP and 20:00 DOWN command) allow the time-controlled stopping and starting of all connected motors.

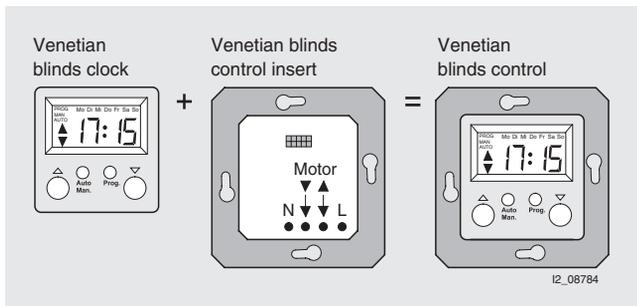
Caution:

- it is not permissible to use a shutter/blind control sys insert as the central operating point and directly operate a shutter/blind motor.
- when protecting the central operating point against short-circuit using a separate residual-current-operated circuit-breaker, both circuits must be isolated in order to prevent inadvertent tripping of the circuit-breaker.

Example 3: Integrating a wind alarm

The detector for the wind alarm is integrated in the shutter/blind control over the "UP" secondary input. In the event of a wind alarm, the shutters/blinds are raised and are locked in that position until the wind alarm is reset over the detector. As long as the interlock is enabled, neither manual nor automatic operation of the shutters/blinds is possible.

Overview

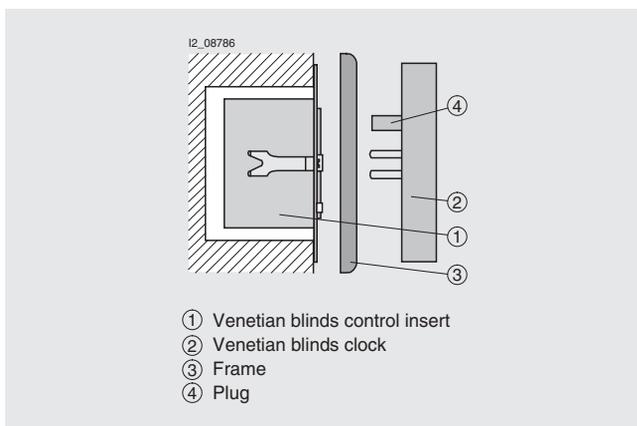


Form of delivery for the shutter/blind control

Product features:

- Easy operation via a 4-button field
- Switching time block Mon. to Fr.: 1 x UP, 1 x DOWN
- Switching time block Sat. to Sun.: 1 x UP, 1 x DOWN
- Quick configuration function
- Factory-configured switching times
- Power reserve > 6 h over storage capacitor
- Also configurable with an unlocked shutter/blind control insert without extension unit input
- After approx. 30 min, the storage capacitor for the power reserve is completely recharged.

Design



- ① Venetian blinds control insert
- ② Venetian blinds clock
- ③ Frame
- ④ Plug

The shutter/blind control insert ① is mounted in a DIN 49073-compliant device box (recommendation: deep box).

The terminals of the insert must be directed downwards.

The shutter/blind clock is plugged with the frame ③ onto the insert.

The electrical contacting is realized by a plug ④.

More information

With a charged storage capacitor, the control remains configurable for approx. 6 h even with the insert released.

The following factory-preset switching times are stored in the memory:

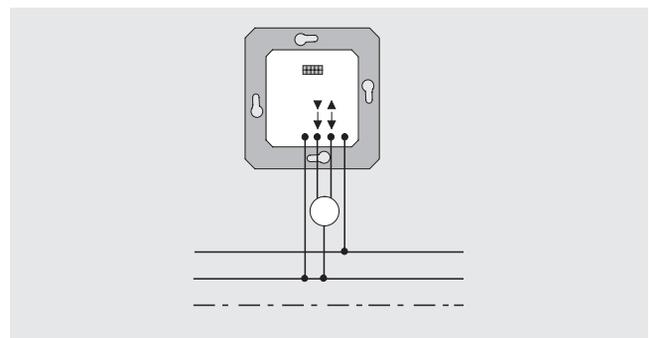
- Switching time 1: ↑ 07:00, Mon. to Fr.
- Switching time 2: ↓ 20:00, Mon. to Fr.
- Switching time 3: ↑ 09:00, Sat. to Sun.
- Switching time 4: ↓ 20:00, Sat. to Sun.

The time can be accepted as switching time for the memory by pressing the desired direction of travel (↑ or ↓) and then activating the "Prog" button. The present switching time is overwritten in this case.

Effect of the length of the button stroke:

- short keystroke (< 1 s): jog mode for adjusting the slats on blinds
- long keystroke (> 1 s): 2 min continuous operation, can be stopped with pushbutton ↑ or ↓.

Schematics

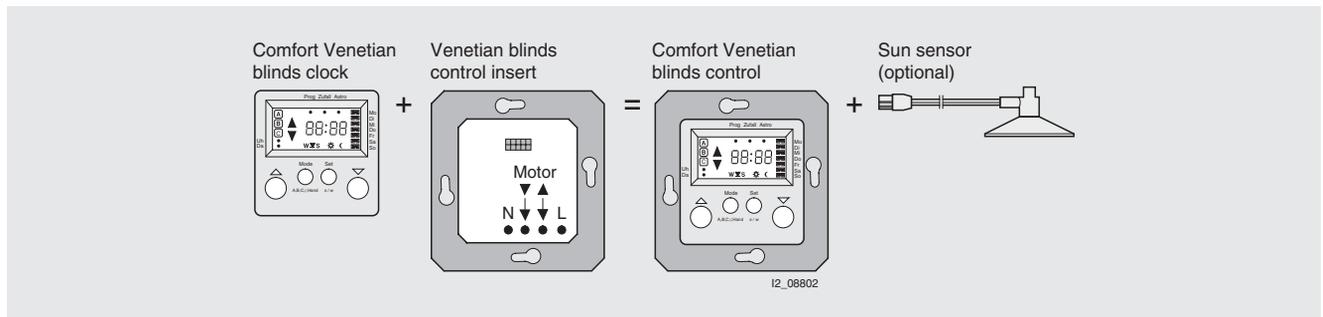


Technical Information

Shutter/Blind Control

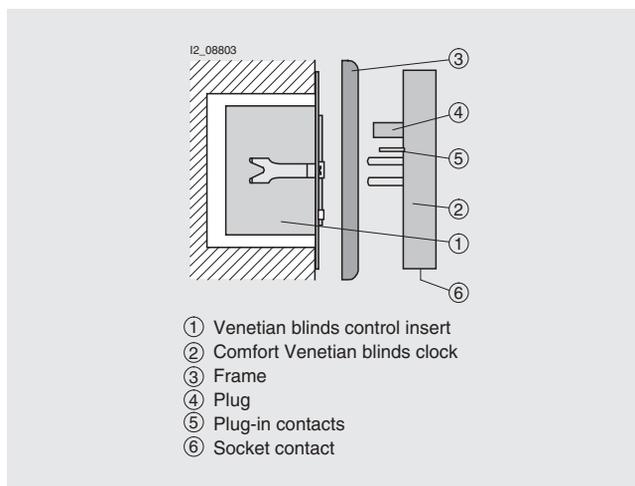
Comfort shutter/blind control

Overview



Form of delivery for the Comfort shutter/blind control

Design



- ① Venetian blinds control insert
- ② Comfort Venetian blinds clock
- ③ Frame
- ④ Plug
- ⑤ Plug-in contacts
- ⑥ Socket contact

The shutter/blind control insert ① is mounted in a DIN 49073 compliant device box (recommendation: deep box).

The terminals of the insert must be directed downwards.

The Comfort shutter/blind clock ② is plugged with the frame ③ onto the insert.

The electrical contacting is realized by a plug ④.

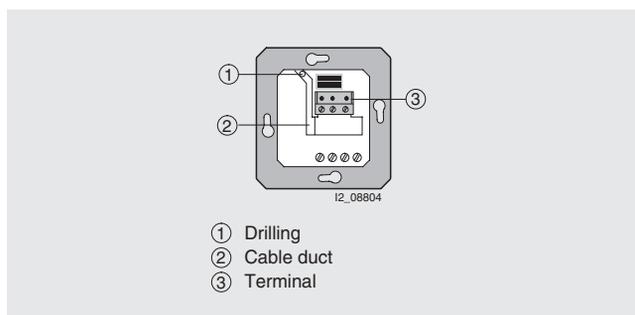
The additional plug-in contacts ⑤ or the socket contact ⑥ of the Comfort shutter/blind clock are used for the adaptation of the sensor cable.

Connection possibilities for the sun sensor cable

There are three possibilities to connect the sun sensor cable to the Comfort shutter/blind control:

- Flush mounting routing of the sun sensor cable
- Surface mounting routing of the sun sensor cable
- Connection of the sun sensor cable by plugs

Flush mounting routing of the sun sensor cable



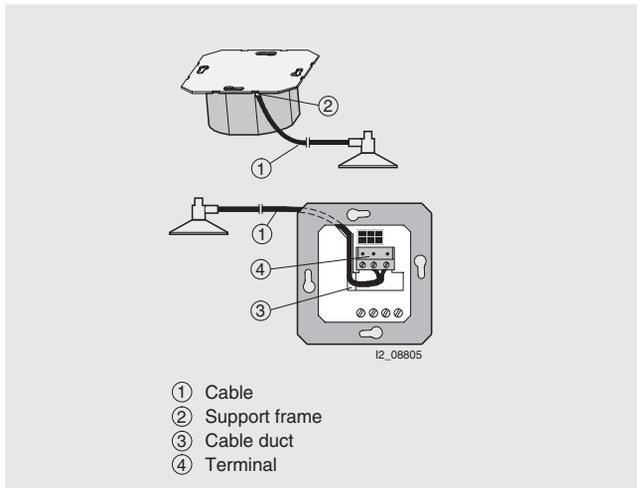
- ① Drilling
- ② Cable duct
- ③ Terminal

When choosing the flush mounting routing of the sun sensor cable, a suitable cable must be selected. Recommendation: J-Y(ST)Y 2 x 2 x 0.6 mm (telephone cable). The plug at the sun sensor must be removed. The individual wires of the sensor cable are isolated and connected with the selected cable in a suitable manner (soldering, screw terminal or the like).

In this context, it must be observed that the insulating tube (supplied together with the sun sensor) encloses the individual wires from the external cable insulation to the terminal. The cable, together with the insulating tube, is plugged through the bore hole ① of the insert and lead through the cable duct ② to the terminal ③. The terminal (supplied with the sun sensor) is put in the insert as shown in the illustration.

Design

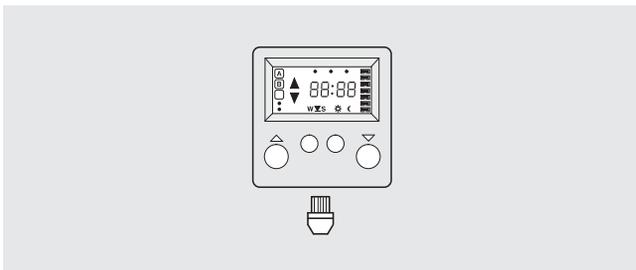
Surface mounting routing of the sun sensor cable



The plug of the sun sensor must be removed. The individual wires of the sensor cable are stripped and lead through the insulating tube (supplied with the sun sensor).

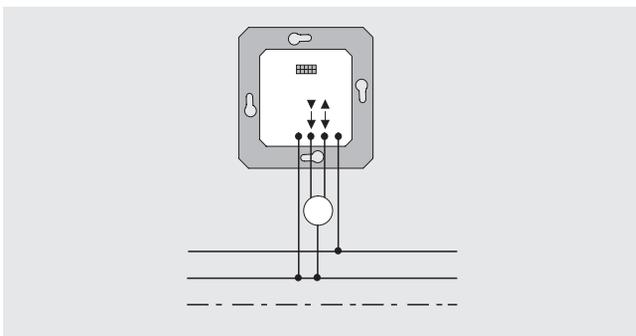
The cable ①, together with the insulating tube, is then led directly underneath the support frame ② through the cable duct ③ to the terminal ④.

Connection of the sun sensor cable by plugs



The sun sensor cable is connected by plugging the plug of the sensor into the socket of the Comfort shutter/blind clock.

Schematics



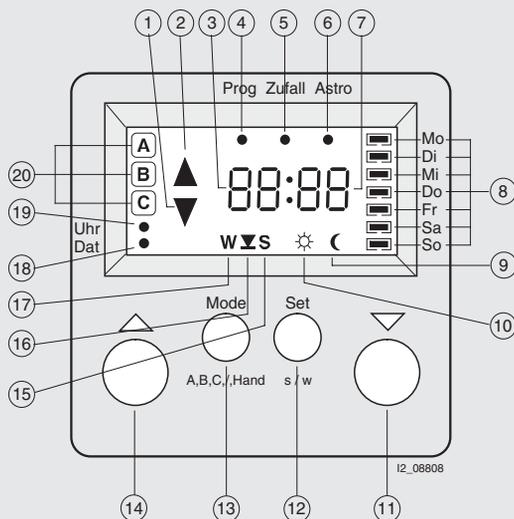
Technical Information

Shutter/Blind Control

Comfort shutter/blind control

More information

Operating and display elements



- ① Lowering of shutter/blind activated
- ② Raising of shutter/blind activated
- ③ Time display
- ④ Configuration mode activated
- ⑤ Random function activated
- ⑥ Astro function activated
- ⑦ Minute display
- ⑧ Set day of week
- ⑨ Twilight value underrun
- ⑩ Brightness value exceeded
- ⑪ Manually execute lowering of shutter/blind
- ⑫ Set values
- ⑬ Select mode
- ⑭ Manually execute raising of shutter/blind
- ⑮ Mode of operation daylight saving time
- ⑯ Learn function activated
- ⑰ Mode of operation winter time
- ⑱ Set date
- ⑲ Set time
- ⑳ Program memories A/B/C are activated

Factory settings

The program memories A and B are factory-assigned, though, you may overwrite them by reconfiguration. Switching times that are no longer required must be deleted.

Factory-assignment:

- Memory A
 - Switching time 1: 07:00, Mo to Fr, astro function active
 - Switching time 2: 09:00, Sa to Su, astro function active
 - Switching time 3: 20:00, Mo to Fr, astro function active
 - Switching time 4: 21:00, Sa to Su, astro function active
- Memory B
 - Switching time 1: 07:00, Mo to Fr, astro function not active
 - Switching time 2: 09:00, Sa to Su, astro function not active
 - Switching time 3: 20:00, Mo to Fr, astro function not active
 - Switching time 4: 21:00, Sa to Su, astro function not active
- Memory C
 - Not predefined.

In the three program memories A, B and C, independent programs can be stored (e.g. for workdays, weekend, vacations etc.).

In all three program memories, a total of maximum 18 switching times can be used.

The factory settings can be reset at any time.

Changeover winter/summer time

The changeover of summer and winter time is carried out by shortly pressing the "Set" button on the respective dates in spring and fall.

Additionally, it can be set whether any configured individual motor runtimes are to be executed or not.

Operating modes

The Comfort shutter/blind clock can be set to the "automatic" and "manual" mode of operation. It has three program memories (A, B, C), which can be alternatively selected in the automatic mode of operation.

- Automatic operation
 - The set switching times of the program memory A, B or C are executed. A manual operation by means of the ⑪ and ⑭ buttons is also possible. A, B or C is shown on the display.
- Manual operation
 - Manual operation is only possible by means of the ⑪ and ⑭ buttons. The set switching times of the program memories A, B or C are not executed. A, B or C are not shown on the display.

Automatic mode of operation with the program memories A, B, C

In the three program memories, three individual switching time programs can be generated. By selecting the A, B or C program memory, the desired switching time program is activated.

By pressing the "Mode" button, it is possible to change between the program memories (A, B, C) and manual operation.

Manual operation

A manual operation is possible with any operating mode. With button ⑭, the shutters/blinds are moved up and with button ⑪ moved down.

For the operation, a differentiation is made between short and long button strokes:

- Short button stroke (< 1 sec)
 - A pulse is generated in accordance with the duration of the key operation. This function serves to adjust the blind slats.
- Long button stroke (> 1 sec)
 - The shutter/blind control is set to maintained function (continuous operation). If no other motor runtimes are programmed, a runtime of approx. 2 min is executed.

More information

Adjusting the astro time for sunrise and sunset

Astro times reflect the sunrise and sunset times in the course of a calendar year. The modification of the astro time facilitates an individual adjustment of the factory-calculated sunrise and sunset times to local conditions.

The adjustment is executed for all days of the year.

The maximum adjustment of the astro times equals +/- 1 h 59 min for both the sunrise and sunset times. Note: it is therefore possible to compensate "brighter" and "darker" sites of installation.

• Example 1

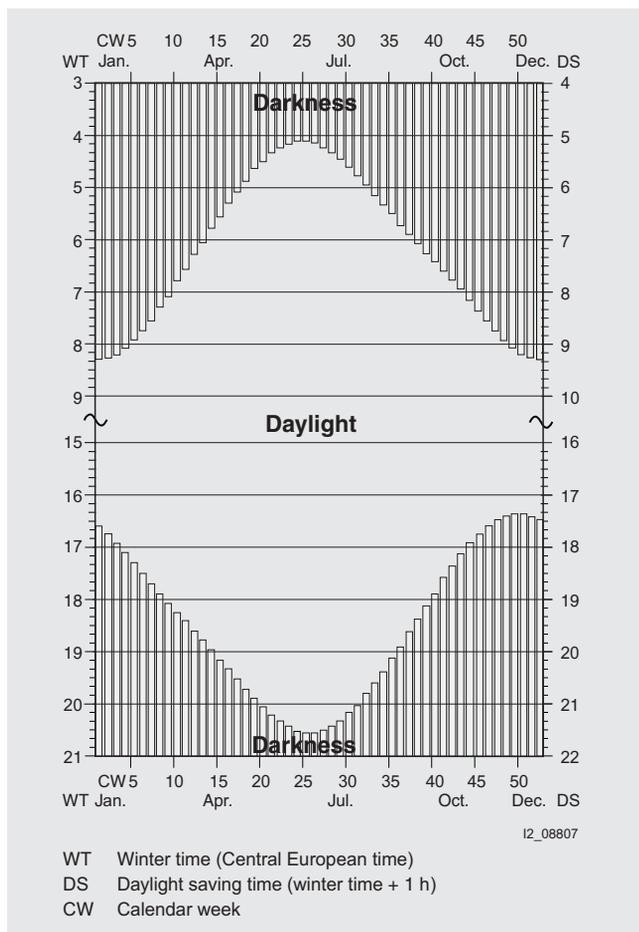
The patio is located at the southwest side of the house. You can benefit longer from daylight as the sun sets in the west. The astro time for the sunset can therefore be delayed (e.g. +0:25 -> the shutters/blinds move down 25 min later).

• Example 2

With a hillside located in the east, it gets earlier dark than specified in the astro curve. Therefore, the astro time for the sunset can be set to an earlier time. (e.g. -0:20 -> the shutters/blinds move down 20 min earlier).

• Example 3

In the morning, you would like to enjoy the sunrise in the kitchen. To ensure that the shutters/blinds in the kitchen have already moved up at this time, set the astro time for the sunset to an earlier time. (e.g. -0:30 -> the shutters/blinds move up 30 min earlier).



Astro curve

The astro curve displays the approximate sunrise and sunset time in the course of a calendar year. The astro time does not change within a calendar week. The times stated in the graphics refer to the Wuerzburg (Germany) location.

Example: Astro time in calendar week 10 for

- Sunrise approx. 6:50 am
- Sunset approx. 6:15 pm

Setting the individual motor runtime

A motor runtime of about 2 min. is predefined. It can be reduced (only for the down direction) or increased to maximally 12 min (up and down direction).

An individual motor runtime of less than 2 min is only executed with down commands if the shutters/blinds have been automatically or manually moved to their top position before.

If the Venetian blinds are not in their top position, the standard runtime of 2 min is executed instead of the individual runtime of less than 2 min.

An individual runtime of more than 2 min is in any case executed both in the Down and Up direction.

An individual runtime of less than 2 min is only executed in the Down direction.

The upward travel time amounts in any case to at least 2 min.

Sun protection and twilight function

Note: a sun sensor (5TC1 526), which must be ordered separately, is also required to execute this function.

The sun protection function

The sun protection function is only executed if the shutters/blinds are in the top position.

The sun protection function automatically moves the shutters/blinds down if it is getting too bright. As soon as the predefined brightness value is exceeded, the sun symbol starts to flash and the shutter/blind is moved down after 2 min. The sensor position on the window pane determines the stop position of the shutters/blinds:

- When the sensor position is reached, the shutters/blinds stop.
- Then, they move a short way upwards to uncover the sun sensor.
- Thereafter, shortly before the sun sensor, the move downwards again.

This ensures that the sun sensor is not covered and brightness changes can be detected. For an optimum sun protection, the position of the shutters/blinds are readjusted hourly.

If the programmed brightness value is undergone for 15 min, the shutters/blinds move upwards again.

Note: the delay times of 2 or 15 min are necessary in order to prevent premature movement of the shutter/blind when there are brief fluctuations of brightness.

The sun protection function is deactivated by shortly pressing the $\text{\textcircled{I}}$ key.

The twilight function

The twilight protection function automatically moves the shutters/blinds down if it is getting too dark. As soon as the predefined brightness value is undergone, the moon symbol starts to flash and after 4 minutes the shutters/blinds are moved down to the lower limit stop.

The twilight function is not activated until 2 h before the sunset astro time. This avoids that a sun sensor which is shaded during the day unintentionally moves the shutters/blinds down.

If the twilight function is to be executed for switching times, these times must be programmed with astro. Here, the twilight function replaces the sunset astro time.

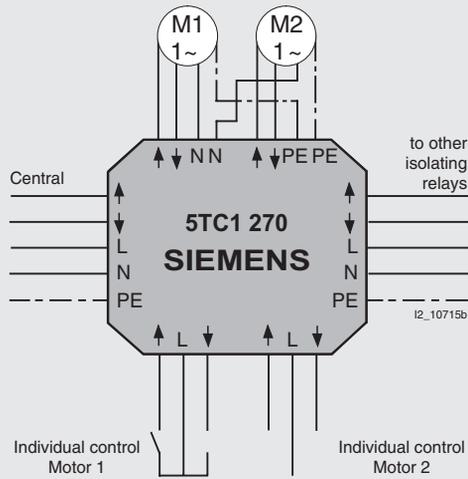
Independent from brightness, switching times without astro are executed at the programmed point of time.

Technical Information

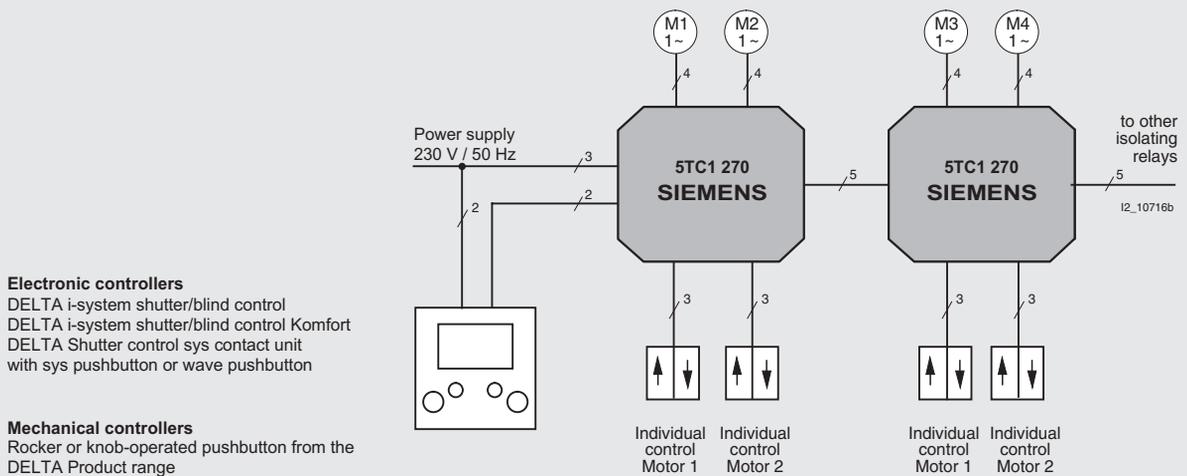
Shutter/Blind Control

Flush-mounting isolating relays for shutter/blind control

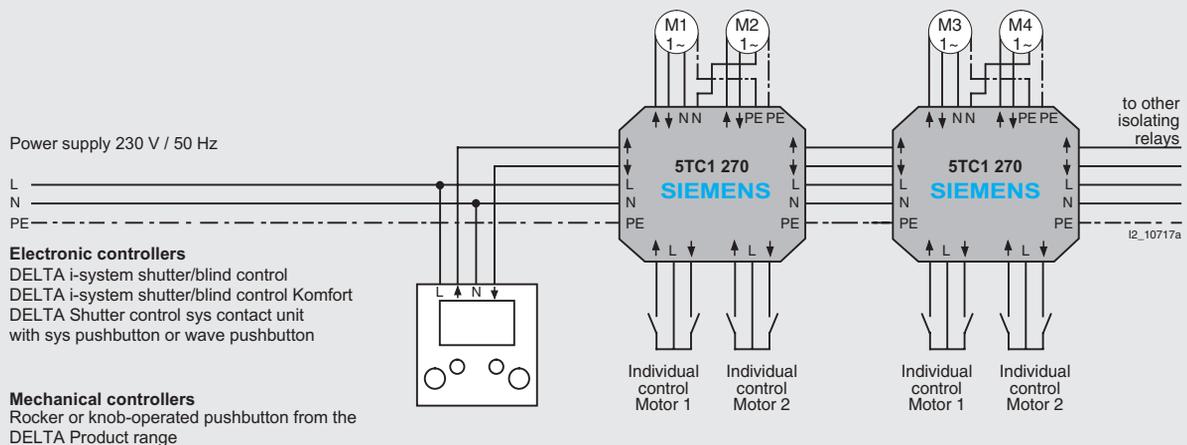
Schematics



Sample connection

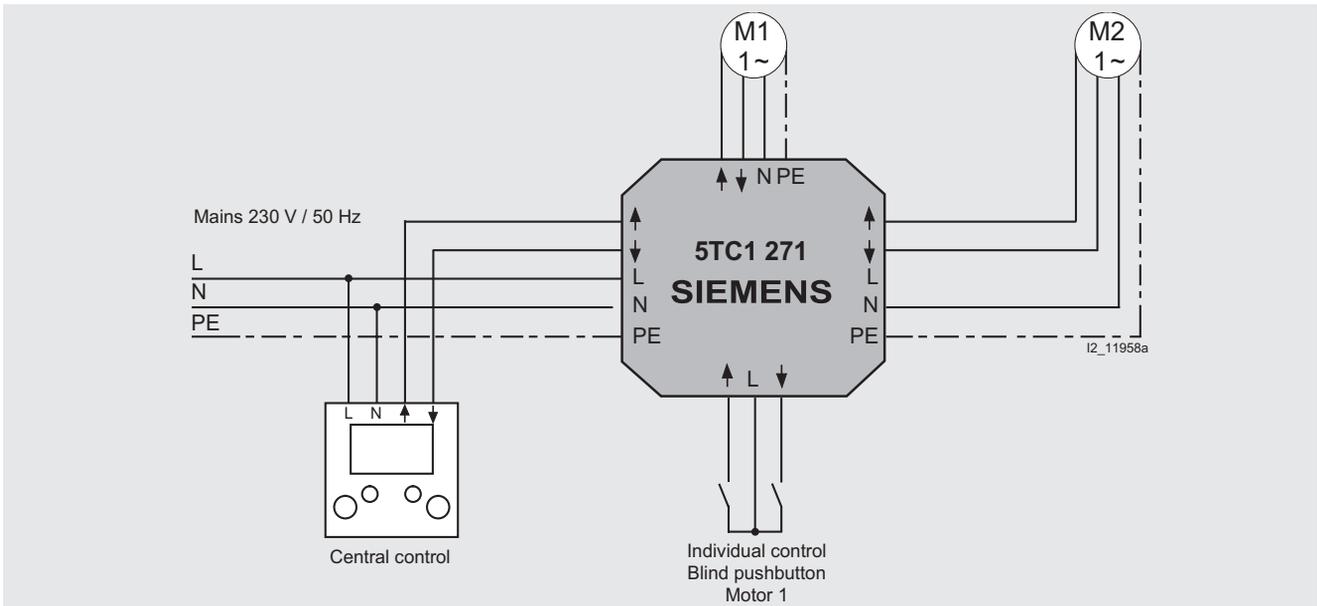


Wiring diagram

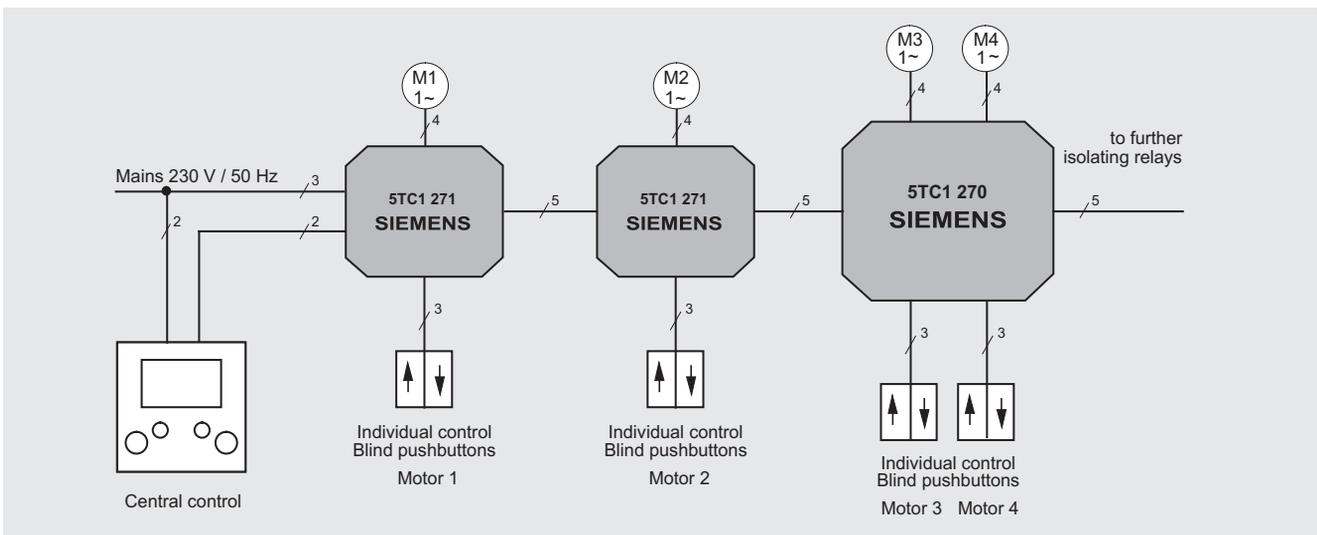


Wiring diagram

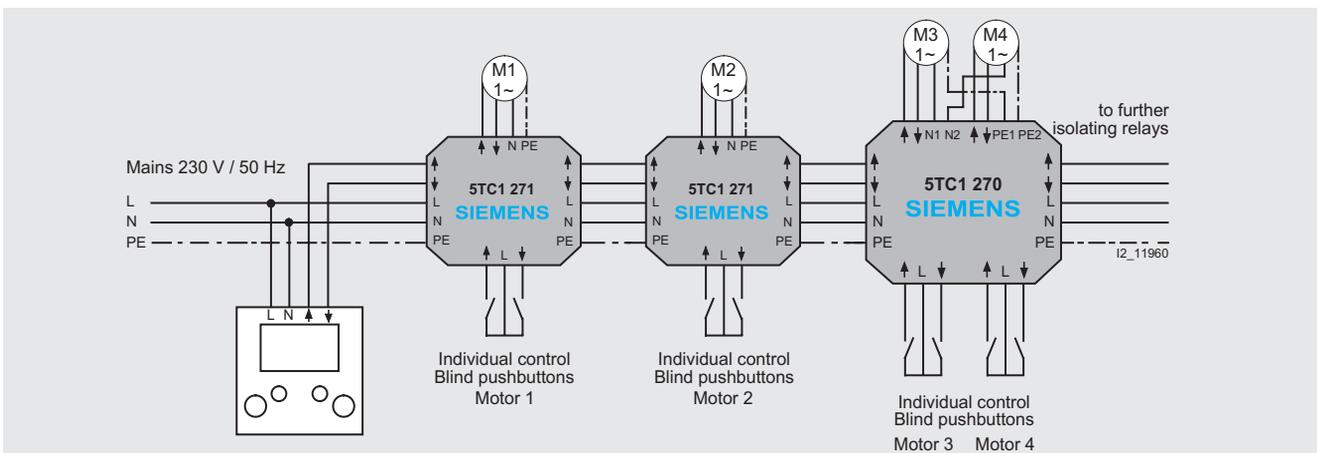
Schematics



Sample connection



Wiring diagram



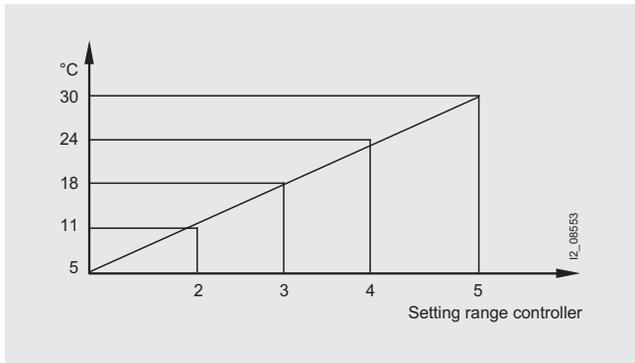
Wiring diagram

Technical Information

Room Temperature Controller

Room temperature controller, 1 NC contact

Mode of operation

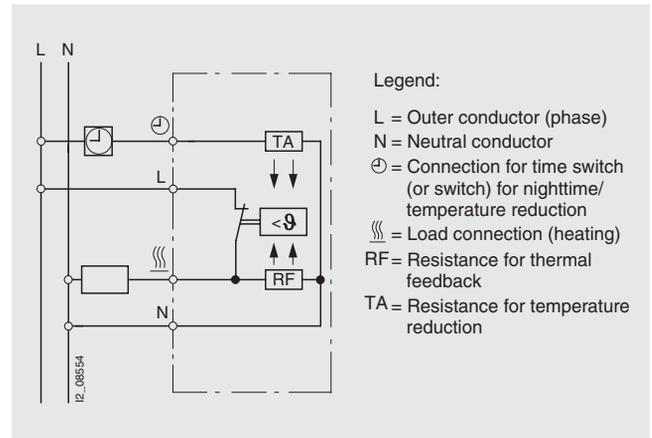


Range restriction in the setting button

Technical specifications

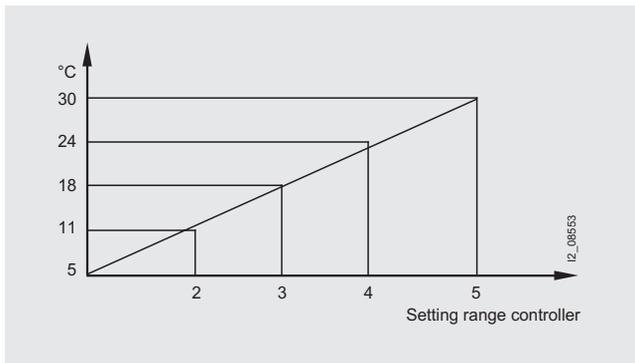
Temperature range	5 ... 30 °C
Operating voltage	230 V AC, 50/60 Hz
Switch contact	1 NC contact
Rated current	10 (4) A
Switching temperature difference	approx. 0.5 K
Temperature reduction	approx. 4 K
Degree of protection / safety class	IP30 / totally insulated

Schematics



Room temperature controller, 1 CO contact

Mode of operation

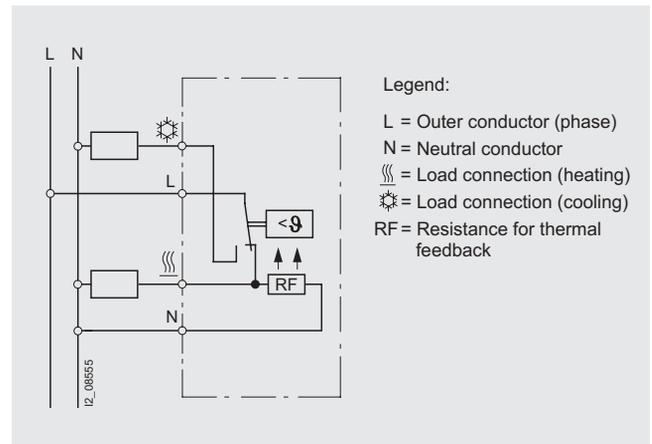


Range restriction in the setting button

Technical specifications

Temperature range	5 ... 30 °C
Operating voltage	230 V AC, 50/60 Hz
Switch contact	1 CO contact
Rated current	10 (4) A (heating) 5 (2) A (cooling)
Switching temperature difference	approx. 0.5 K
Temperature reduction	approx. 4 K
Degree of protection / safety class	IP30 / totally insulated

Schematics



Technical Information Room Temperature Controller

Room temperature controller, 3-position switch

Mode of operation

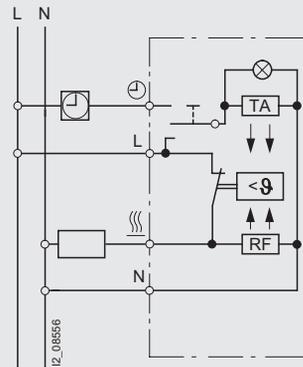


Range restriction in the setting button

Technical specifications

Temperature range	5 ... 30 °C
Operating voltage	230 V AC, 50/60 Hz
Switch contact	1 NC contact
Rated current	10 (4) A (heating)
Switching temperature difference	approx. 0.5 K
Temperature reduction	approx. 5 K
Degree of protection / safety class	IP30 / totally insulated

Schematics



Legend:

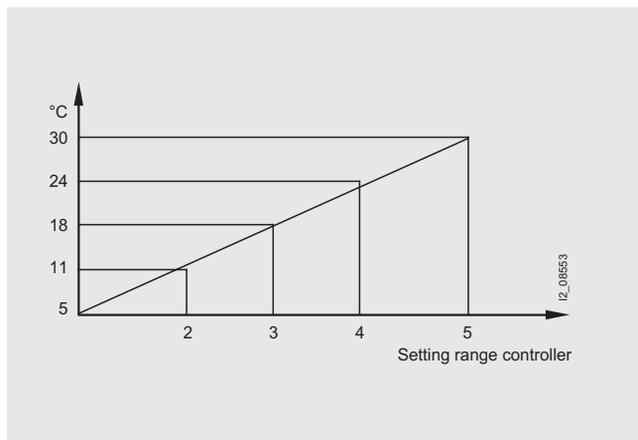
- L = Outer conductor (phase)
- N = Neutral conductor
- ⊖ = Connection for time switch (or switch) for nighttime/temperature reduction
- ⊞ = Load connection (heating)
- RF = Resistance for thermal feedback
- TA = Resistance for temperature reduction

Technical Information

Room Temperature Controller

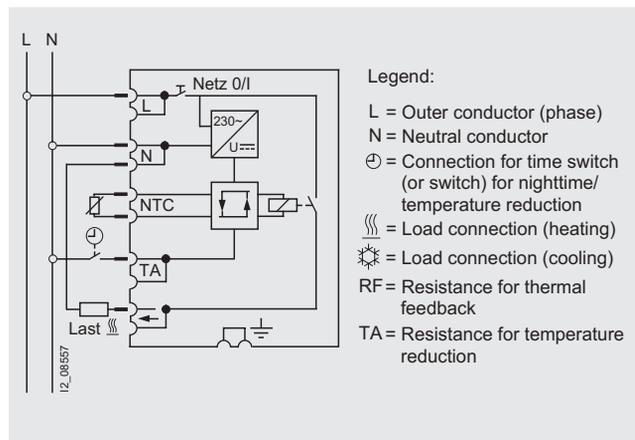
Room temperature controller, direct floor heating

Mode of operation



Range restriction in the setting button

Schematics



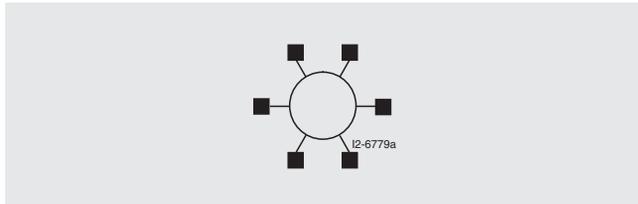
Technical specifications

Control device	
Temperature range	5 ... 50 °C
Operating voltage	230 V AC, 50/60 Hz
Tolerance range	195 ... 253 V AC, 50 Hz
Switch contact	1 NO contact
Rated current (AC 250)	10 A for $\cos \varphi 1$ (heating)
Switching capacity	2.3 kW
Switch	power supply "On/Off"
Display LED	red: control device demands heat (heating mode) green: temperature reduction "On"
Switching temperature difference	approx. 1 K
Temperature reduction	approx. 5 K
Degree of protection / safety class	IP30 / totally insulated
Remote sensor	
Sensor element	NTC in compliance with DIN 44 574
Sensor cable	PVC, 2 x 0.50 mm ² , length 4m
Degree of protection	IP68 (in compliance with DIN VDE 0470T1)
Ambient temperature	-25 ... +70 °C
Sensor characteristics of measuring device $R_i > 1M$	
Temperatures in °C	Resistance in kΩ
5	4.527
10	3.657
15	2.974
20	2.432
25	2.000
30	1.655
35	1.379
40	1.151
45	0.968
50	0.816

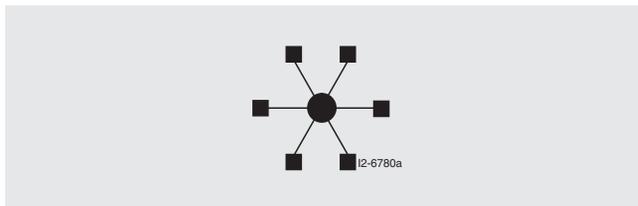
Overview

Data networks

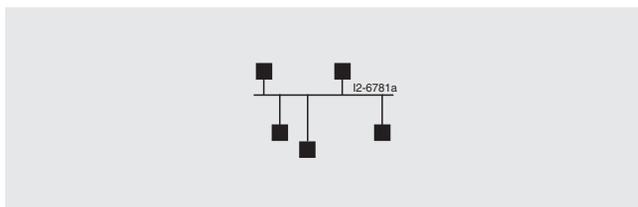
The following three versions are used primarily for the data network:



Ring network



Star-type network



Bus network

Ring network

In a ring network, the users (network nodes) are connected in a closed loop. The data are transmitted from network node to network node in one direction. To expand the system, simply open the ring and add another user.

Star-type network

When a star structure is used, all users are linked to a control room, which also operates as the system control. It relays the data to all required devices. This network structure enables multichannel operation, which supports the simultaneous linking of many connections. Further users can be simply connected to the central operating point if required.

Bus network

In a bus network, all users are directly connected to a bus cable. The data transmitted from one network node are initially received by all other nodes. However, all the network nodes ignore this data – with of course the exception of the targeted node. An expansion of the power supply is achieved by directly tapping the bus and thus connect new users to the supply.

Plug-in connectors, distribution boards and outlet boxes

For the connection and distribution of cables and the connection of terminals, there are a range of system-specific plug-in connectors, distribution boards and outlet boxes available.

1) BNC: Standard bayonet connector

2) TNC: Threaded standard connector

3) Two twisted cables

4) ISDN: Integrated Services Digital Network

Flush mounting devices

These components for data processing and data communication, as well as telecommunication and electro-acoustical systems, are available in the surface mounting product range of installation switch/outlet systems DELTA i-system, DELTA profil, DELTA style, DELTA natur, DELTA ambiente, DELTA fläche surface mounting, as well as for installation in flush mounting switch and socket boxes with 60 mm diameter and in sill-type trunkings with either vertical or 30° inclined outlets.

Examples

The following describes just a few examples from the great number of connection components available in the field of data processing and telecommunications technology. Covers and frames (80 mm) of the installation switch/outlets product ranges DELTA i-system, DELTA profil, DELTA style, DELTA natur, DELTA ambiente, DELTA fläche surface mounting can be used with all outlet boxes.

D-subminiature plug-in connectors

D-subminiature plug-in connectors are primarily used for the plug-gable connection of computer terminals and data transmission devices, as well as for measuring and control equipment. The outlet box has a 9, 15 or 25-pole trapezoid plug-in pin or socket connector for connection of one device, or two pin/socket connectors each, if two devices are to be connected.

BNC/TNC plug-in connectors

BNC ¹⁾ /TNC ²⁾ plug-in connectors are used for high-frequency applications in coaxial cable networks. The standard version is used for frequencies up to 4 GHz and is available for coaxial cable impedances of 50 W and 70 W. For BNC plug-in connectors, the connector is linked to the socket of the outlet box over a bayonet lock and, in the case of vibration-resistant TNC plug-in connectors, over a screw plug.

Western (WE) plug-in connectors

Western (WE) plug-in connectors are used in both data processing technology (e.g. as twisted pair connection ³⁾) and telecommunication technology (e.g. as ISDN ⁴⁾ basic connection).

The WE outlet boxes are equipped with one or two 6 or 8-pole WE sockets, which if partially equipped with contacts provide 4, 6 or 8-pole outlet versions.

Twinax plug-in connectors

Twinax plug-in connectors are primarily used in local data networks (LAN) with IBM data terminal equipment. Both primary conductors of the Twinax cable are soldered to the Twinax installation socket of the outlet box, the metal braiding is securely clamped. After contacting with the outlet box, the connector is screwed securely into place by a cap nut.

TAE connection units

TAE telecommunication connection units are intended solely for the connection of telecommunication devices, such as telephones, fax machines, telex systems. The adapter (connector) is available on its own and preassembled with connecting cable in various lengths. The outlet boxes with one to three sockets and the adapters are prepared for telephone connection (F coding) or for connection of additional devices (fax, etc.) and data terminal devices (Btx) (N coding).

Fiber-optic outlet box

Fiber-optic outlet boxes in the DELTA profil product range meet the requirements of a modern cabling system with glass-fiber cables.

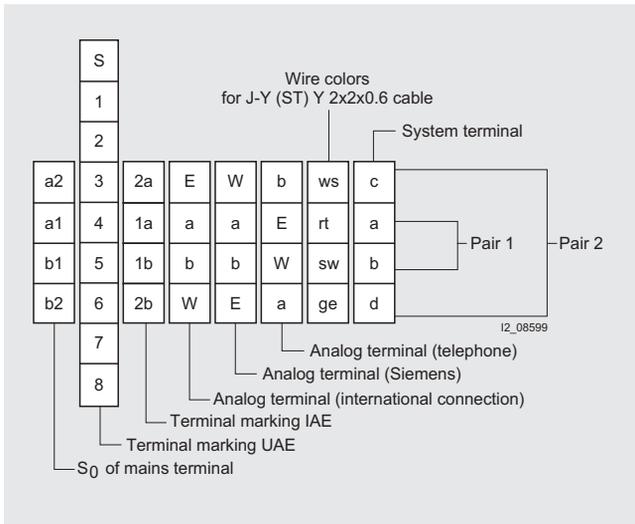
These systems are equipped to cope with future communication requirements and ensure fast and reliable transmission for many applications, such as:

- Telephone (voice, fax),
- Data transmission (client/server, computing, mail, Internet, virtual LAN),
- Multimedia (integration of voice, data and video).

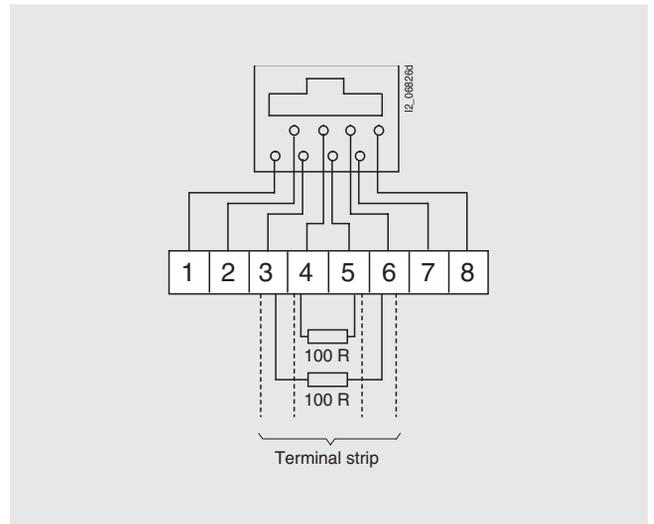
Technical Information Communication

UAE outlet boxes

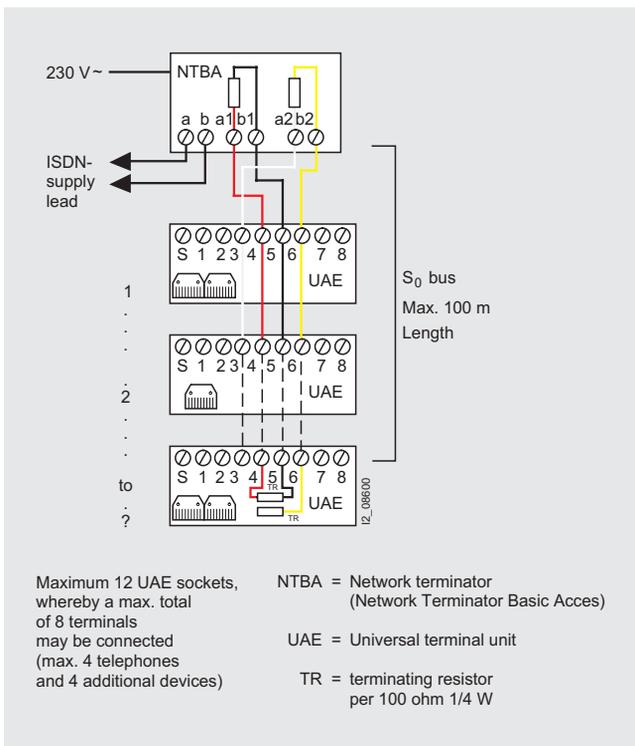
Overview



Color coding for analog and ISDN telephone

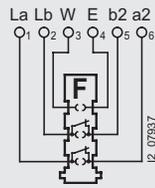


ISDN-telephone-outlet box
point-to-point with WE 8 or UAE 8

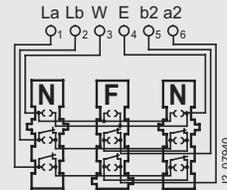


Connection to the ISDN-S0 bus

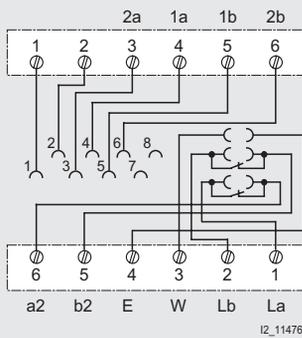
Overview



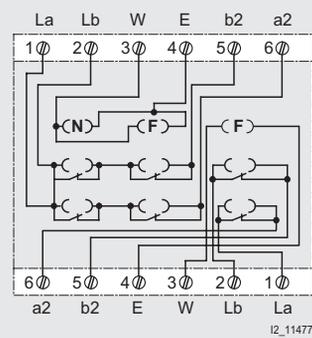
TAE outlet box, for one telephone



TAE outlet box, for one telephone and two additional devices



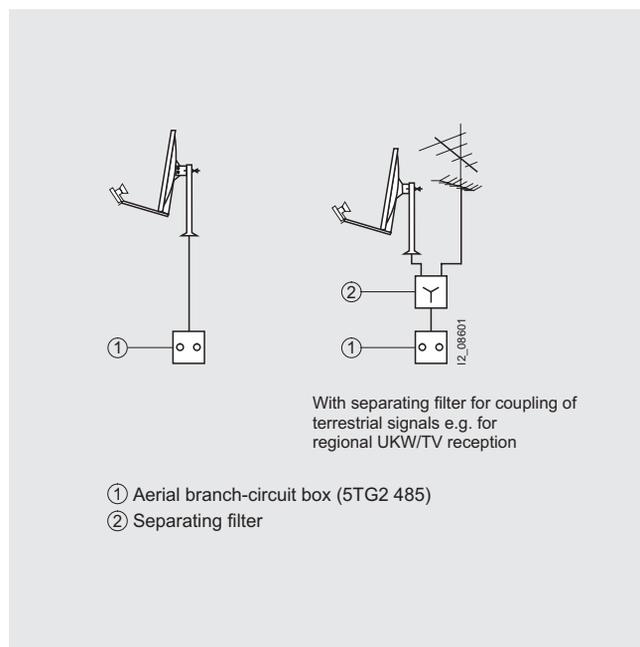
UAE/TAE outlet box for one telephone and/or an additional device



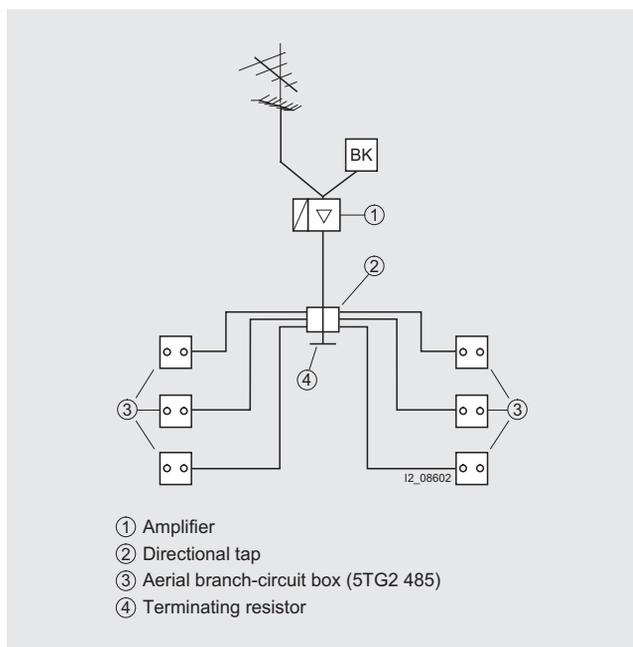
TAE outlet box, for two telephones and two additional devices

Aerial branch-circuit box

Schematics



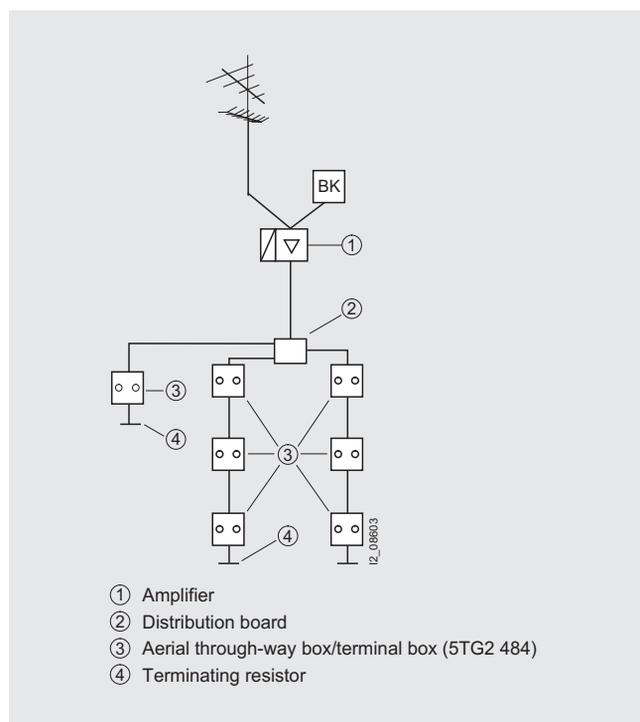
SAT aerial system with universal single LNB for analog and digital reception



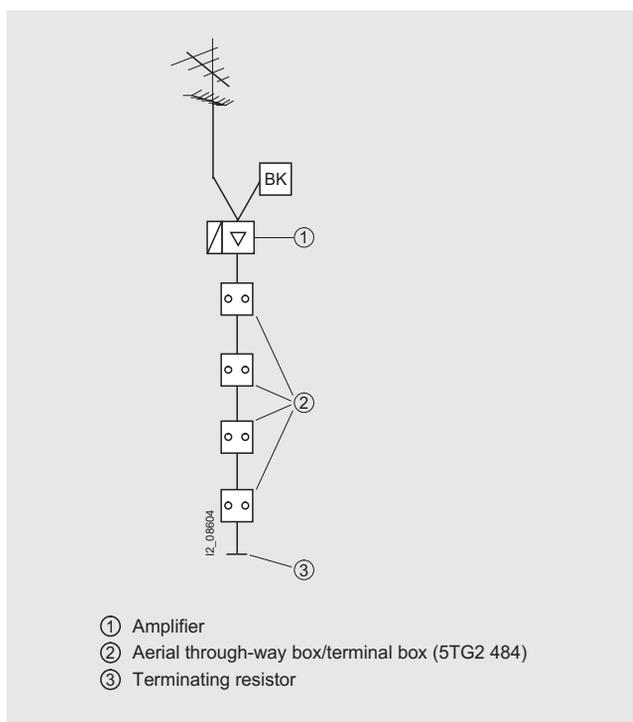
Aerial system, terrestrial and/or broadband cable in star structure

Aerial through-way box / terminal box

Schematics

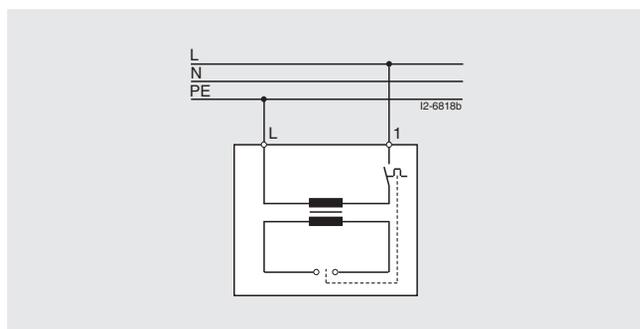


Aerial system, terrestrial and/or broadband cable in tree/star structure



Aerial system, terrestrial and/or broadband cable in tree structure

Schematics



Shaver outlet

Technical Information

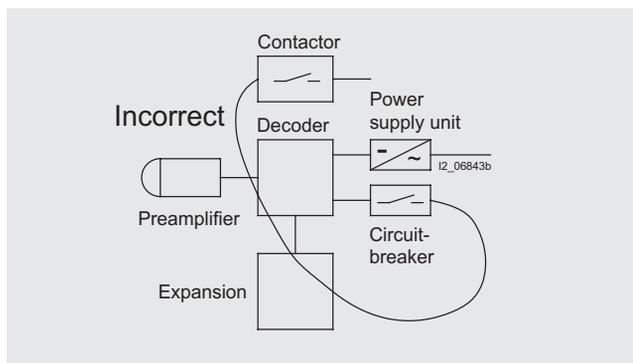
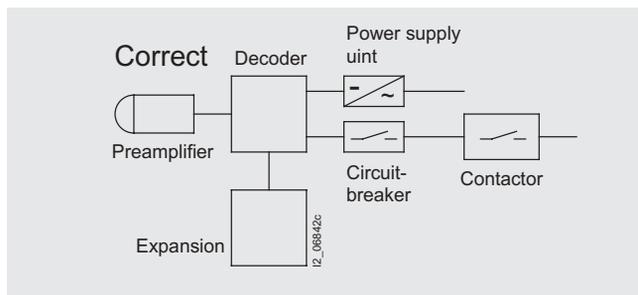
Remote Control

IR-64K

Design

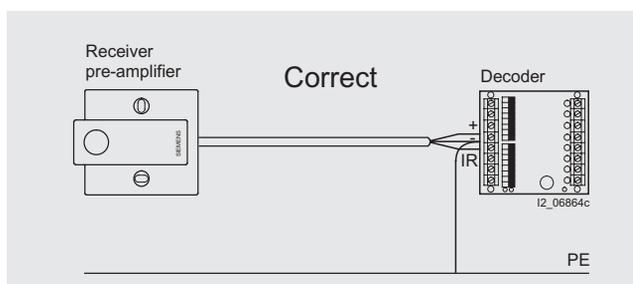
Mounting instructions

When mounting the modules, the wiring must always be disconnected and laid in a straight line.



Optimum cable routing

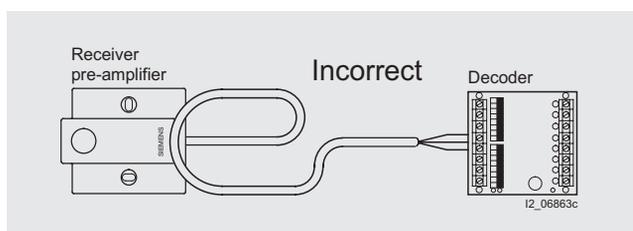
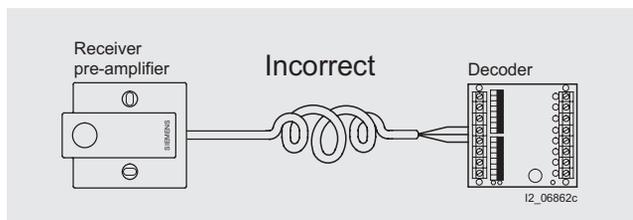
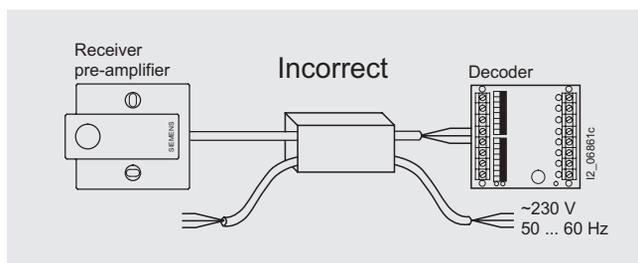
In the event of faults in the decoder (self-switching), connect the minus input of the receiver preamplifier to the PE.



Disadvantageous cable routing

In case of insufficient receiving range, the following criteria must be paid attention to:

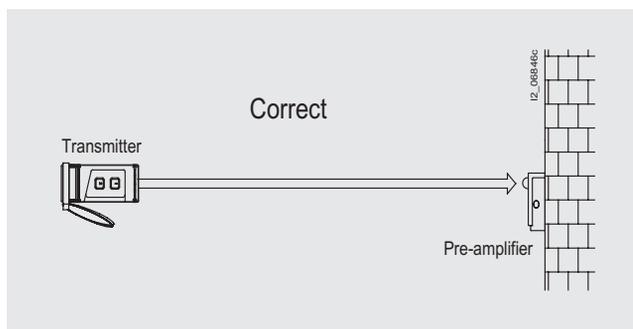
- Preamplifier cable must not be laid parallel to power lines
- Avoid coils and loops



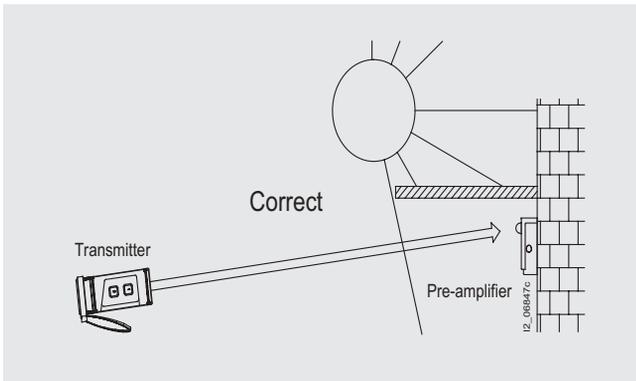
Conditions of reception

Optimum reception conditions are achieved if the following points are observed:

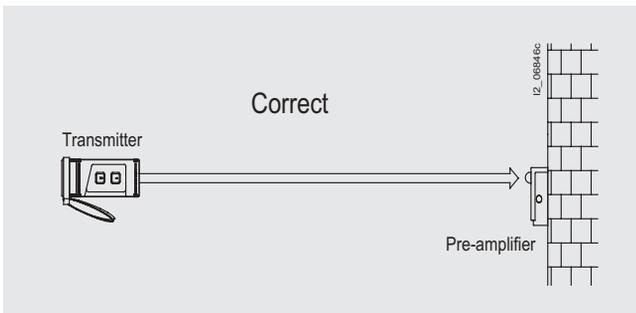
- Transmitter and receiver preamplifiers must lie on an optical axis.
- No direct sunlight or artificial light on the photodiode or focussing lens of the receiver preamplifier.
- It is not permitted to transmit simultaneously with two or more transmitters in a single room, even if different commands are encoded



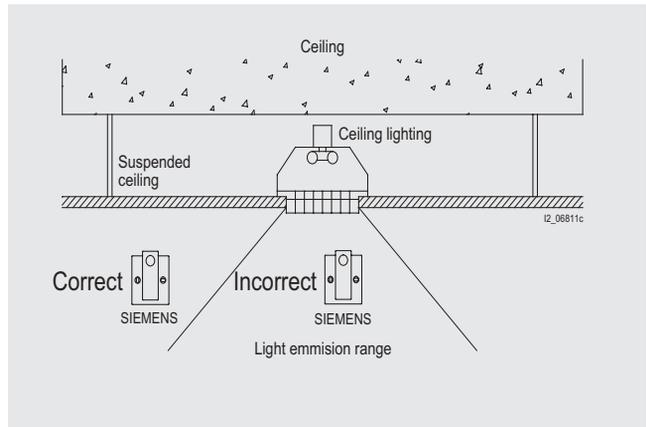
Range impairment, fault types



Avoid direct sunlight, e.g. by using a mechanical shutter



Prevent reception through reflections, it is essential to ensure visual contact to the receiver preamplifier



Receiver preamplifiers must not be mounted directly in the emission range of lights

Technical Information

Notes

