

Devices raised mounting

Illuminated actuator pushbutton



	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 29 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing			
Illuminated actuator pushbutton	IP 67	LL	1 NC	-	MA	UT	14-476.036	1	4	17	12	0.015		
					M	UT	14-436.036	1	4	17	39	0.015		
			1 NC + 1 NO	-	MA	UT	14-473.036	1	4	17	15	0.015		
					M	UT	14-433.036	1	4	17	42	0.015		
			1 NO	-	MA	UT	14-475.036	1	4	17	14	0.015		
					M	UT	14-435.036	1	4	17	41	0.015		
			2 NC	-	MA	UT	14-472.036	1	4	17	13	0.015		
					M	UT	14-432.036	1	4	17	40	0.015		
			2 NO	-	MA	UT	14-471.036	1	4	17	16	0.015		
					M	UT	14-431.036	1	4	17	43	0.015		
			SA	1 NC + 1 NO	1 D		MA	UT	14-747.0292	1	4	26	9	0.014
							M	UT	14-743.0292	1	4	26	36	0.014
					2 D		MA	UT	14-748.0292	1	4	26	10	0.014
							M	UT	14-744.0292	1	4	26	37	0.014
					-		MA	S	14-271.0252		4	24	11	0.013
									14-271.022		4	24	11	0.013
							M	S	14-131.0252		4	24	38	0.013
									14-131.022		4	24	38	0.013
		2 NC + 2 NO			1 D		MA	UT	14-749.0292	1	4	26	6	0.016
							M	UT	14-745.0292	1	4	26	33	0.016
					2 D		MA	UT	14-750.0292	1	4	26	7	0.016
							M	UT	14-746.0292	1	4	26	34	0.016
					-		MA	S	14-272.0252		4	24	8	0.015
									14-132.0252		4	24	35	0.015
		3 NC + 3 NO			-		MA	S	14-273.0252		4	24	5	0.017
							M	S	14-133.0252		4	24	32	0.017
		4 NC + 4 NO			-		MA	S	14-274.0252		4	24	4	0.019
							M	S	14-134.0252		4	24	31	0.019

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

Diode (1N 4007): - = without, D = Diode

Switching action: MA = Maintained action, M = Momentary action

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Component layout from page 33, Mounting dimensions from page 34, Technical drawing from page 35, Circuit drawing from page 45

Devices raised mounting

Mushroom-head actuator pushbutton



	Front protection	Switching system	Contacts	Switching action	Terminals	Ø 40 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing		
Mushroom-head actuator pushbutton	IP 67	LL	1 NC	MA	UT	14-476.036	1	2	16	12	0.015	
				M	UT	14-436.036	1	2	16	39	0.015	
			1 NC + 1 NO	MA	UT	14-473.036	1	2	16	15	0.015	
				M	UT	14-433.036	1	2	16	42	0.015	
			1 NO	MA	UT	14-475.036	1	2	16	14	0.015	
				M	UT	14-435.036	1	2	16	41	0.015	
			2 NC	MA	UT	14-472.036	1	2	16	13	0.015	
				M	UT	14-432.036	1	2	16	40	0.015	
			2 NO	MA	UT	14-471.036	1	2	16	16	0.015	
				M	UT	14-431.036	1	2	16	43	0.015	
			SA	1 NC + 1 NO	MA	S	14-271.0252		2	23	11	0.013
						S1	14-271.022		2	23	11	0.013
		M			S	14-131.0252		2	23	38	0.013	
					S1	14-131.022		2	23	38	0.013	
		2 NC + 2 NO		MA	S	14-272.0252		2	23	8	0.015	
				M	S	14-132.0252		2	23	35	0.015	
		3 NC + 3 NO		MA	S	14-273.0252		2	23	5	0.017	
				M	S	14-133.0252		2	23	32	0.017	
		4 NC + 4 NO	MA	S	14-274.0252		2	23	4	0.019		
			M	S	14-134.0252		2	23	31	0.019		

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

Switching action: MA = Maintained action, M = Momentary action

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Component layout from page 33, Mounting dimensions from page 34, Technical drawing from page 35, Circuit drawing from page 45

Devices raised mounting

Illuminated mushroom-head actuator pushbutton



	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 40 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing		
Illuminated mushroom-head actuator pushbutton	IP 67	LL	1 NC	-	MA	UT	14-476.036	1	2	16	12	0.015	
					M	UT	14-436.036	1	2	16	39	0.015	
			1 NC + 1 NO	-	MA	UT	14-473.036	1	2	16	15	0.015	
					M	UT	14-433.036	1	2	16	42	0.015	
			1 NO	-	MA	UT	14-475.036	1	2	16	14	0.015	
					M	UT	14-435.036	1	2	16	41	0.015	
			2 NC	-	MA	UT	14-472.036	1	2	16	13	0.015	
					M	UT	14-432.036	1	2	16	40	0.015	
			2 NO	-	MA	UT	14-471.036	1	2	16	16	0.015	
					M	UT	14-431.036	1	2	16	43	0.015	
			SA	1 NC + 1 NO	1 D	MA	UT	14-747.0292	1	2	25	9	0.014
						M	UT	14-743.0292	1	2	25	36	0.014
		2 D			MA	UT	14-748.0292	1	2	25	10	0.014	
					M	UT	14-744.0292	1	2	25	37	0.014	
		-			MA	S	14-271.0252		2	23	11	0.013	
					S1	14-271.022		2	23	11	0.013		
		2 NC + 2 NO		1 D	MA	UT	14-749.0292	1	2	25	6	0.016	
					M	UT	14-745.0292	1	2	25	33	0.016	
				2 D	MA	UT	14-750.0292	1	2	25	7	0.016	
					M	UT	14-746.0292	1	2	25	34	0.016	
				-	MA	S	14-272.0252		2	23	8	0.015	
					M	S	14-132.0252		2	23	35	0.015	
		3 NC + 3 NO	-	MA	S	14-273.0252		2	23	5	0.017		
				M	S	14-133.0252		2	23	32	0.017		
4 NC + 4 NO	-	MA	S	14-274.0252		2	23	4	0.019				
		M	S	14-134.0252		2	23	31	0.019				

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

Diode (1N 4007): - = without, D = Diode

Switching action: MA = Maintained action, M = Momentary action

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Component layout from page 33, Mounting dimensions from page 34, Technical drawing from page 35, Circuit drawing from page 45

Devices flush mounting

Illuminated pushbutton actuator, flush mounting



	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 35 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing			
Illuminated pushbutton actuator, flush mounting	IP 67	LL	1 NC	-	MA	UT	14-476.036	1	1	32	12	0.015		
					M	UT	14-436.036	1	1	32	39	0.015		
			1 NC + 1 NO	-	MA	UT	14-473.036	1	1	32	15	0.015		
					M	UT	14-433.036	1	1	32	42	0.015		
			1 NO	-	MA	UT	14-475.036	1	1	32	14	0.015		
					M	UT	14-435.036	1	1	32	41	0.015		
			2 NC	-	MA	UT	14-472.036	1	1	32	13	0.015		
					M	UT	14-432.036	1	1	32	40	0.015		
			2 NO	-	MA	UT	14-471.036	1	1	32	16	0.015		
					M	UT	14-431.036	1	1	32	43	0.015		
			SA	1 NC + 1 NO	1 D	MA	UT	14-747.0292	1	1	31	9	0.014	
						M	UT	14-743.0292	1	1	31	36	0.014	
					2 D	MA	UT	14-748.0292	1	1	31	10	0.014	
						M	UT	14-744.0292	1	1	31	37	0.014	
					-	MA	S	14-271.0252		1	32	11	0.013	
		S1				14-271.022		1	32	11	0.013			
		M				S	14-131.0252		1	32	38	0.013		
		-			S1	14-131.022		1	32	38	0.013			
					2 NC + 2 NO	1 D	MA	UT	14-749.0292	1	1	31	6	0.016
							M	UT	14-745.0292	1	1	31	33	0.016
		2 D			MA	UT	14-750.0292	1	1	31	7	0.016		
					M	UT	14-746.0292	1	1	31	34	0.016		
		-			MA	S	14-272.0252		1	32	8	0.015		
					M	S	14-132.0252		1	32	35	0.015		
		3 NC + 3 NO			-	MA	S	14-273.0252		1	32	5	0.017	
			M	S		14-133.0252		1	32	32	0.017			
		4 NC + 4 NO	-	MA	S	14-274.0252		1	32	4	0.019			
				M	S	14-134.0252		1	32	31	0.019			

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

Diode (1N 4007): - = without, D = Diode

Switching action: MA = Maintained action, M = Momentary action

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Component layout from page 33, Mounting dimensions from page 34, Technical drawing from page 35, Circuit drawing from page 45

Technical Data

Actuator with snap-action switching element

Switching system

Self-cleaning, double-break, snap action switching system (with contact gap 2 x 0.5 mm).
1 normally closed or 1 normally open contact per element.
Snap-action switching elements with soldering terminals at the sides: up to 4 switching element can be on a pushbutton (max. 4 normally closed and 4 normally open contacts).
Snap-action switching element with axial plug-in terminals 2.8 mm stackable, only 1 switching element can be on a pushbutton.

Material

Material of contact
Gold plated silver

Switch housing
Plug-in-/soldering terminal
Diallylphthalate DAP, Polyamide 66, Polysulfone, heat-resistant and self-extinguishing
Soldering terminal: PA 6.6 Ultramide

Actuator housing
Polyamide

Mechanical characteristics

Terminals

Snap-action switching element with tinned soldering terminals at the sides:
Max. wire diameter 2 wires à 1.2 mm
max. wire cross-section of stranded cable 1 x 1 mm²

Snap-action switching element with axial plug-in terminals, which can also be used as soldering terminals: Plug-in terminal 2.8 x 0.5 mm

Soldering terminal:
Max. wire diameter 2 wires of 1 mm
Max. wire cross-section of stranded cable 2 x 0.75 mm² or 1 x 1.0 mm²

Actuating torque

Measured at the key or lever of the keylock- or selector switch
2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements

Actuating force

3.5 ... 5.5 N, depending on the number of switching elements

Actuating travel

Illuminated pushbutton: 3 mm
Switch actuator 2 positions:
Momentary action 1 x ca. 42° deflection momentary action
Maintained action 1 x ca. 90° deflection maintained action

Rebound time

≤5ms

Mechanical lifetime

Momentary action 2 million Cycles of operation
Maintained action 1 million Cycles of operation

Electrical characteristics

Standards

The devices comply with : EN IEC 61058-1

Rated voltage

250 VAC/DC as per EN IEC 61058-1-15

Contact resistance

New state ≤50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge

Keylock switch 15 kV

Rated current

5 A

Conventional free air thermal current I_{th}

5 A

The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

Switch rating

250 VAC, 5 A (cosφ 1)
250 VAC, 3 A (cosφ 0,3)

Switch rating AC (cosφ 0,7)

Voltage	125 VAC	250 VAC
Current	3 A	2 A

Switch rating DC (inductive) L:R = 30 ms

Voltage	24 VDC	60 VDC	110 VDC	220 VDC
Current	2 A	0.7 A	0.2 A	0.1 A

Electric strength

3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Isolation resistance

>7 MΩ between the open contacts at 500 VDC, as per EN IEC 61058-1-15 (reinforced insulation)

Protection class

II

Environmental conditions

Storage temperature

-40 °C ... +85 °C

Service temperature

-25 °C ... +55 °C

For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Protection degree

as per EN IEC 60529
front side IP 67

Shock resistance

(semi-sinusoidal)
max. 150 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Vibration resistance

(sinusoidal)
max. 100 m/s² at 10 Hz ... 500 Hz, as per EN IEC 60068-2-6

Technical Data

Climate resistance

Damp heat state as per EN IEC 60068-2-30
Damp heat cyclic as per EN IEC 60068-2-78

Approvals

Approbations

CB (IEC 61058)
CSA
ENEC (EN 61058)
Germanischer Lloyd
UL

Declaration of conformity

CE
RoHS

Actuating travel

Illuminated pushbutton : 3 mm
Switch actuator 2 positions:
Momentary action 1 x ca. 42° deflection
momentary action
Maintained action 1 x ca. 90° deflection
maintained action

Rebound time

typical <100 µs

Mechanical lifetime

Momentary action 5 million cycles of operation
Maintained action 1 million cycles of operation

Electrical characteristics

Contact resistance

New state ≤50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge

Keylock switch 15 kV

Switch rating

10 µA, 100 µV to 100 mA at 42 VAC/VDC

Electric strength

3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Protection class

II

Environmental conditions

Storage temperature

-40 °C ... +85 °C

Service temperature

-25 °C ... +55 °C

For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Protection degree

as per EN IEC 60529
front side IP 67

Shock resistance

(semi-sinusoidal)
max. 150 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Buzzer

Buzzer system

System
Piezo disc

Material

Alarm buzzer case
Polyamide

Front cap
Plastic Polyamide
Metal Nickel-plated brass (sea-water proof)

Actuator with low level switching element

Switching system

This low level switching element was designed for switching low powers in electronic circuits. The mechanism assures reliable switching of loads ranging from a few µA/µV up to 100 mA/42 VAC/DC.

Single-break momentary contact, as normally open or normally closed with 4 independent points of contact. 2 momentary contacts per switching element; combination of normally open and normally closed is possible.

Special features are the long life, extremely short rebound time and stable contact resistance.

Material

Material of contact

Gold plated

Switch housing

Polysulfone, heat-resistant and self-extinguishing

Actuator housing

Polyamide

Mechanical characteristics

Terminals

The universal terminals permit these units to be mounted on printed circuit boards (PCB). These terminals can also be used as soldering or plug-in terminals.

For these terminals we can also supply a plug-in base which, when soldered on to the board, enables the switch to be plugged in.

Soldering terminal:

Max. wire diameter 2 wires of 1 mm

Max. wire cross-section of stranded cable 2 x 0.75 mm²

Plug-in terminal: 2.0 x 0.5 mm.

Actuating torque

Measured at the key or lever of the keylock- or selector switch
2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements

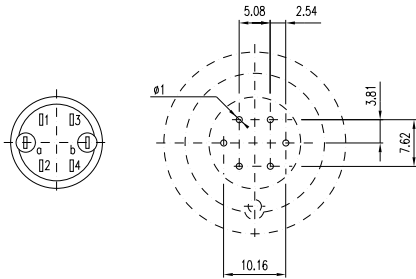
Actuating force

3 ... 4 N, depending on the number of switching elements

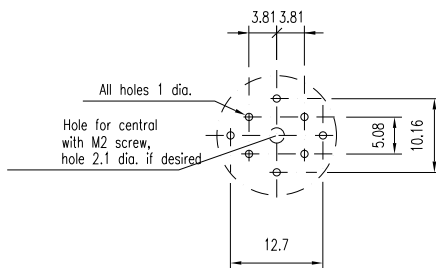
Drawings

Component layout

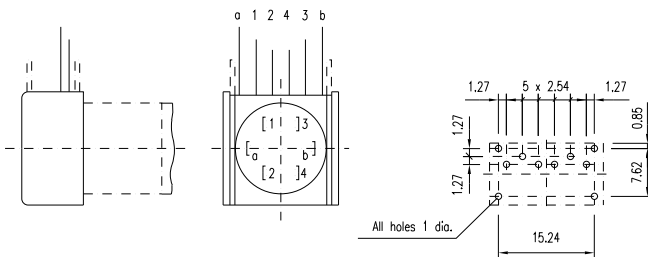
1 Indicator actuator full face illumination page 5 | Indicator actuator front illumination page 5 | Illuminated actuator pushbutton page 7 | Mushroom-head actuator pushbutton page 8 | Illuminated mushroom-head actuator pushbutton page 9 | Keylock switch 2 positions page 10 | Selector switch 2 positions page 11 | Indicator actuator, flush mounting page 12 | Illuminated pushbutton actuator, flush mounting page 13 | Keylock switch actuator 2 positions, flush mounting page 14 | Selector switch actuator 2 positions, flush mounting page 15



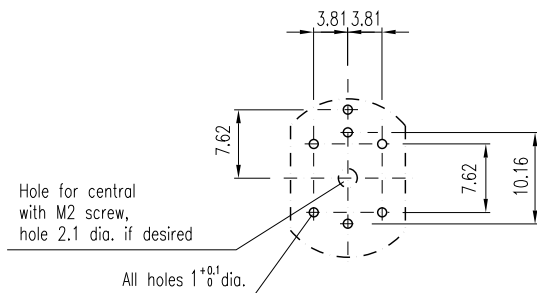
2 PCB plug-in base page 21



3 PCB plug-in base page 21



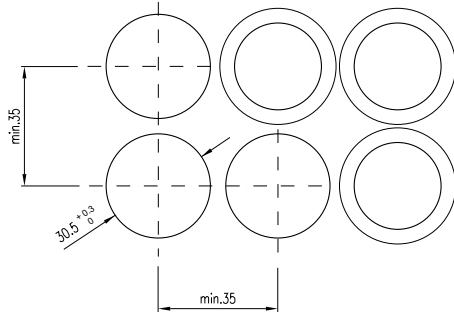
4 PCB plug-in base page 21



Drawings

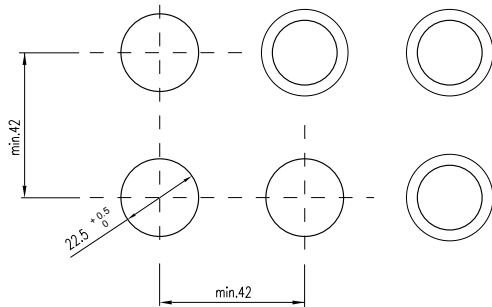
Mounting dimensions

1 Indicator actuator, flush mounting page 12 | Buzzer, flush mounting page 12 | Illuminated pushbutton actuator, flush mounting page 13 | Keylock switch actuator 2 positions, flush mounting page 14 | Selector switch actuator 2 positions, flush mounting page 15 | Front bezel set, flush mounting page 18

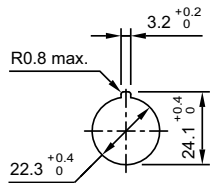


Hole spacing 37 mm min. by using blind plug 704.960.8

2 Mushroom-head actuator pushbutton page 8 | Illuminated mushroom-head actuator pushbutton page 9



3 Positioning insert page 23

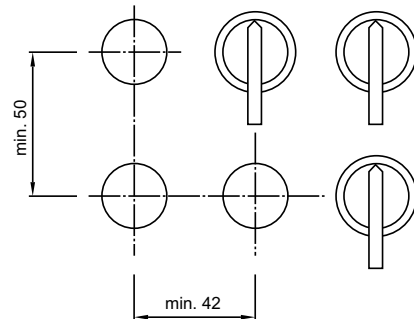
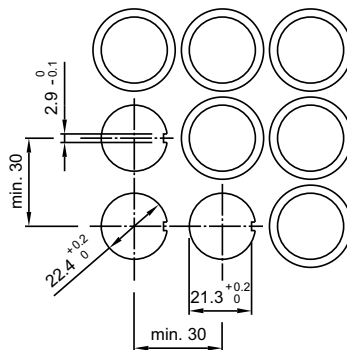
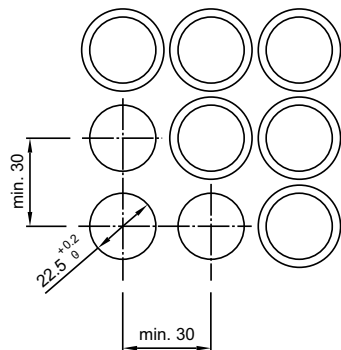


4 Indicator actuator full face illumination page 5 | Indicator actuator front illumination page 5 | Buzzer page 6 | Illuminated actuator pushbutton page 7 | Keylock switch 2 positions page 10 | Selector switch 2 positions page 11

for devices
without anti-twist device

for devices
with anti-twist device (rotary)
(recommended for keylock switch)

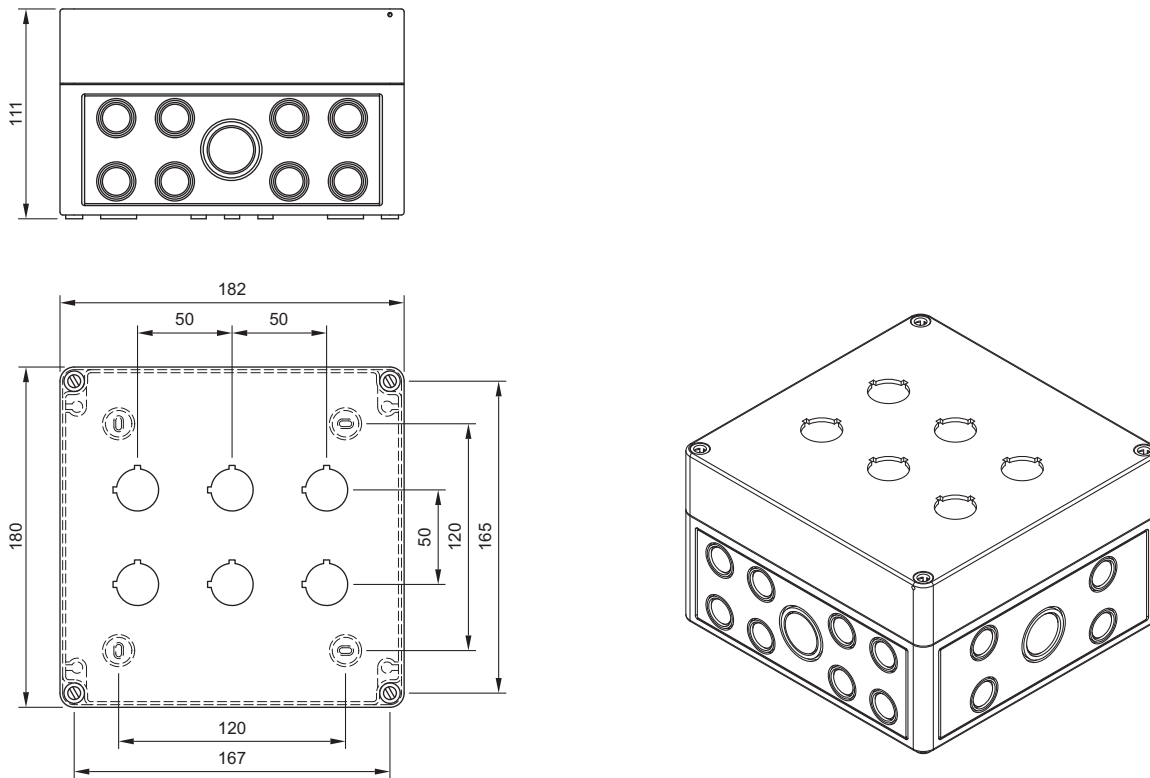
for devices
Selector switch long lever



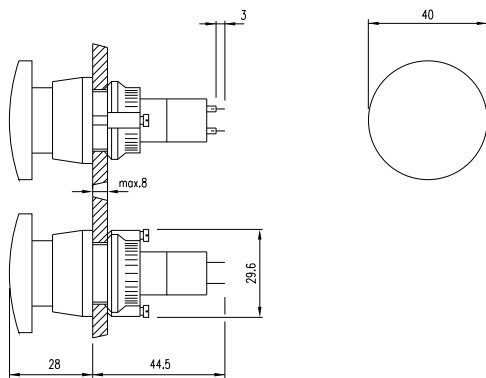
Hole spacing 31 mm min. by using blind plug 704.960.4

Drawings

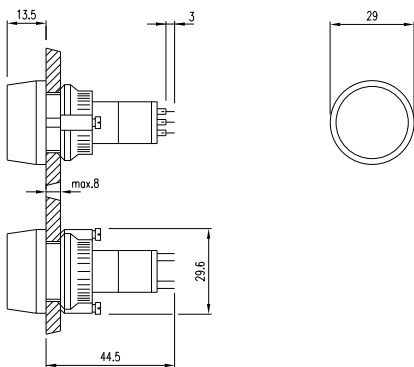
15 Enclosure page 24



16 Mushroom-head actuator pushbutton page 8 | Illuminated mushroom-head actuator pushbutton page 9

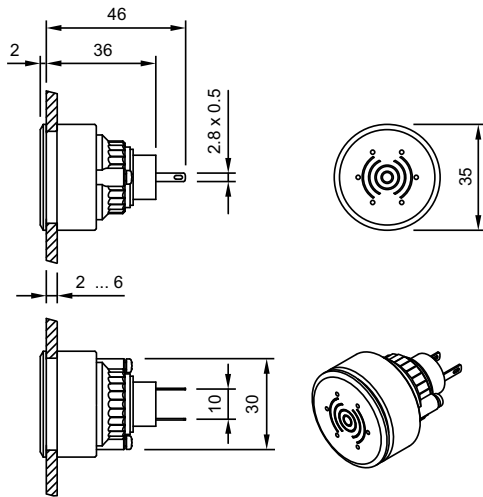


17 Indicator actuator full face illumination page 5 | Illuminated actuator pushbutton page 7

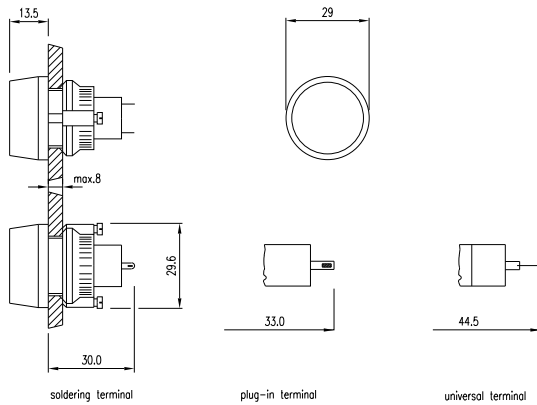


Drawings

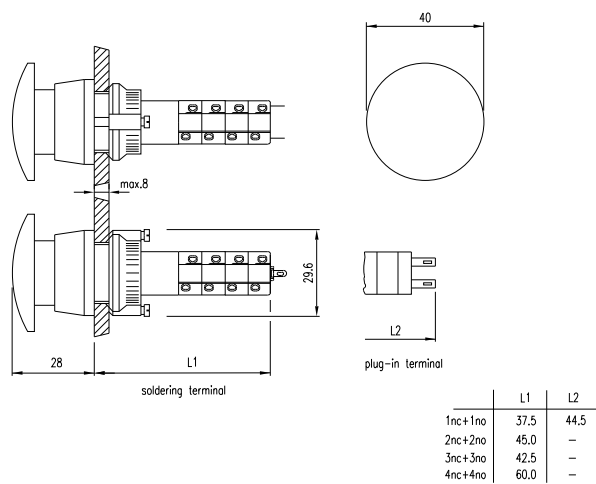
21 Buzzer, flush mounting page 12



22 Indicator actuator full face illumination page 5 | Indicator actuator front illumination page 5

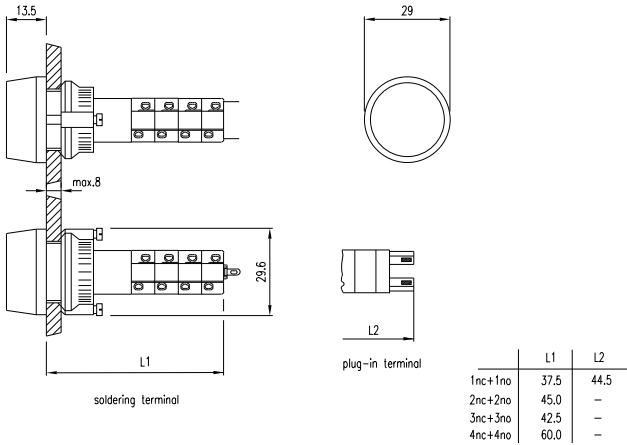


23 Mushroom-head actuator pushbutton page 8 | Illuminated mushroom-head actuator pushbutton page 9

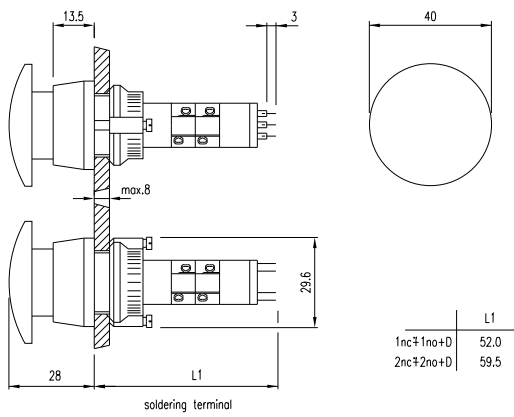


Drawings

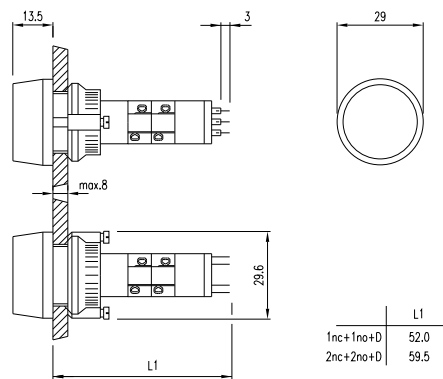
24 Illuminated actuator pushbutton page 7



25 Illuminated mushroom-head actuator pushbutton page 9

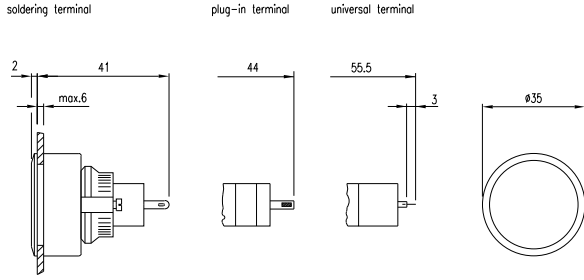


26 Illuminated actuator pushbutton page 7

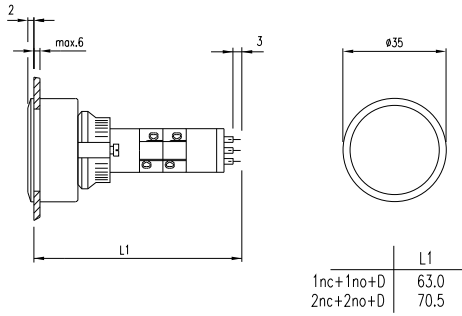


Drawings

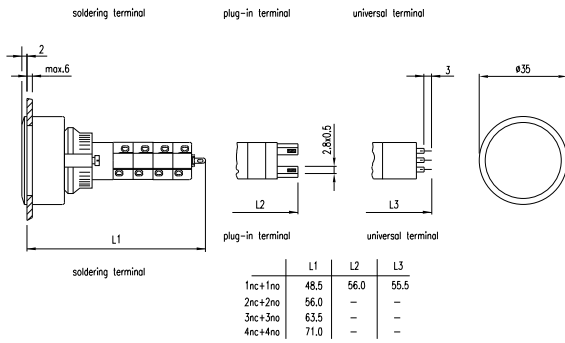
30 Indicator actuator, flush mounting page 12



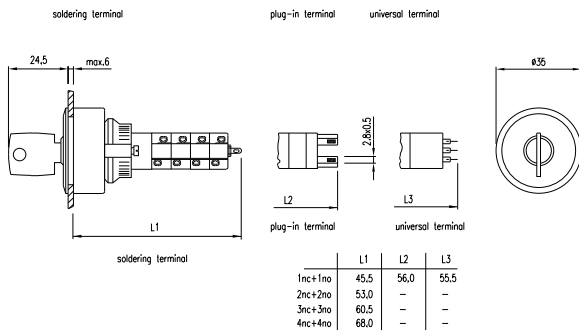
31 Illuminated pushbutton actuator, flush mounting page 13



32 Illuminated pushbutton actuator, flush mounting page 13

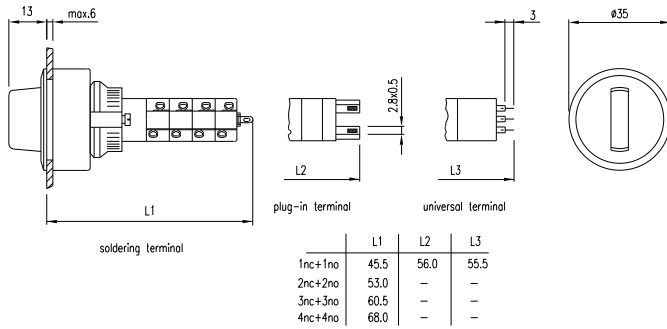


33 Keylock switch actuator 2 positions, flush mounting page 14



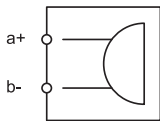
Drawings

34 Selector switch actuator 2 positions, flush mounting page 15



Circuit drawing

1 Buzzer page 6 | Buzzer, flush mounting page 12



2 Indicator actuator full face illumination page 5 | Indicator actuator front illumination page 5

a-(x1)

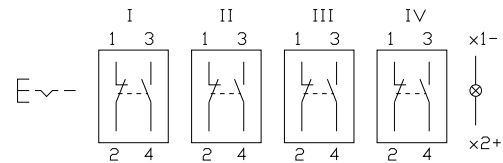


b+(x2)

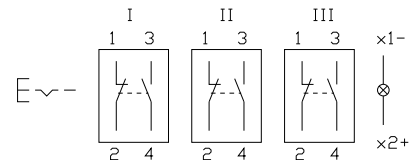
3 Indicator actuator full face illumination page 5 | Indicator actuator front illumination page 5 | Indicator actuator, flush mounting page 12



4 Illuminated actuator pushbutton page 7 | Mushroom-head actuator pushbutton page 8 | Illuminated mushroom-head actuator pushbutton page 9 | Illuminated pushbutton actuator, flush mounting page 13



5 Illuminated actuator pushbutton page 7 | Mushroom-head actuator pushbutton page 8 | Illuminated mushroom-head actuator pushbutton page 9 | Illuminated pushbutton actuator, flush mounting page 13



6 Illuminated actuator pushbutton page 7 | Illuminated mushroom-head actuator pushbutton page 9 | Illuminated pushbutton actuator, flush mounting page 13

