

Technical Data

Conventional free air thermal current I_{th}
10A, as per EN IEC 60947-5-1

Switch rating
Switch rating AC with silver contact
600 VAC, 1A, services category AC-15, as per EN IEC 60947-5-1

Environmental conditions

Switching system
Self cleaning, double-break rolling action silver contact with raked surface. The slow-make elements are constructed as per EN IEC 60947-5-1

Electrical characteristics

Conventional free air thermal current I_{th}
10A, as per EN IEC 60947-5-1
the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating
Switch rating AC (inductive) with silver contact
service category AC-13, as per EN IEC 60947-5-1

Switch rating AC (inductive) with silver contact
service category AC-14, as per EN IEC 60947-5-1

Switch rating AC (non-inductive) with silver contact

Switch rating DC with silver contact service
category DC-13, as per EN IEC 60947-5-1

Material
Silver contact

Short-circuit protection
Series-connected blow-out fuse 10A gL

Overtoltage category
III, as per EN IEC 60947-5-1

Degree of pollution
3, as per EN IEC 60947-1

Contact Ratings (Contact Block)

Operating Voltage (AC/DC)		12V	24V	110V	230/240V
AC 50/60 Hz	Resistive Load	10A	10A	10A	6A
	Inductive Load	10A	10A	5A	3A
DC	Resistive Load	16A	8A	2.2A	1.1A
	Inductive Load	8A	4A	1.1A	0.6A
Contact Material		Silver			
Rated Insulation Voltage		600V			
Rated Thermal Current		10A			

• Minimum applicable load: 3V AC/DC, 5mA
(applicable range may vary with operating conditions and load types)



Material

Mushroom-head cap
Polyamide (PA)

Actuator housing
Polyetherimide (PEI), Self-extinguishing

Switching element
Polyamide (PA), Polysulfon (PSU)

Material of contact
Silver (Ag)

Approvals
Approbations and Declarations of conformity
CE CE

Mechanical characteristics

Terminals
Housing in different colors for NO and NC contacts
Spring Lift terminal helps easy wiring.

Unlock torque
25 Ncm approx.

Actuating travel
8.5 mm

Rebound time
≤2 ms

Specifications

Operating Temperature		-25 to +60°C (No freezing)
Storage Temperature		-40 to +80°C
Operating Humidity		45 to 85% RH (No condensation)
Contact Resistance		50 mΩ maximum (Initial value)
Insulation Resistance		100 MΩ minimum (500V DC megger)
Dielectric Strength		Between live and dead metal parts: 2,800V AC, 1 minute Between terminals: 2,800V AC, 1 minute Indicators: 2,200 for 1 minute
Vibration Resistance	Pushbuttons, Indicators, Selector Switches and Key Selector Switches	Operating extremes: 5 to 65 Hz, amplitude 1mm Damage limits: 30Hz, amplitude 1.5mm
	E-Stop Switches	Operating extremes: 10 to 550 Hz, amplitude 0.35mm Damage limits: 50m/s ² (5G)
Shock Resistance	Pushbuttons, Indicators, Selector Switches and Key Selector Switches	Operating extremes: 100m/s ² (15G) Damage limits: 1000m/s ² (100G)
	E-Stop Switches	Operating extremes: 100m/s ² (15G) Damage limits: 1000m/s ² (100G)
Mechanical Durability (minimum operations)	Push buttons and Illuminated push buttons	1,000,000
	Selector switch and Key selector switch	
	E-Stop Switches	
Electrical Durability (minimum operations)	Push buttons, Selector switch and key selector switch	1,000,000
	E-Stop Switches	
Degree of Protection		Enclosed (IP20) Waterproof, dust-tight (IP65)

LED lamp Ratings

Type	12V	24V	110V	230/240V
Voltage Range	12V AC/DC ±10	24V AC/DC ±10%	110V AC/DC ±10%	230/240V AC/DC ±10%
Rated Voltage	12V AC/DC	24V AC/DC	110V AC/DC	230/240V AC/DC
Current Draw AC/DC	14 mA	10 mA	5.5 mA	2.7 mA
Colour	Red			■
	Amber			■
	Yellow			■
	Green			■
	Blue			■
	White			■
Life (reference value)	Approx. 100,000 hours (The luminance is reduced to 50% the initial intensity when used on complete DC.)			
Internal Circuit				<ul style="list-style-type: none"> LED Chip Protection Diode Zener Diode

Model Number Structure - Indicators



45.90.00.02.12

Series	
45	45 Series Switches and Indicators $\varnothing 22$

Operation Type	
90	Indicator (Dome)
91	Indicator (Flat) - Flush
92	Indicator (Flat) - Flush marking type
93	Indicator (Flat) - Extended

Voltage	
12	12V AC/DC
24	24V AC/DC
11	110VAC/DC
23	230/240V AC/DC

Colour	
02	Red
03	Amber
04	Yellow
05	Green
06	Blue
09	White
00	Black

Contact	
00	No Contacts

Model Number Structure - Unibody Indicators



45.95.02.24.01

Series	
45 Series Switches and Indicators ø22	

Operation Type Unibody	
95	Flush
96	Dome
97	Flush (With Marked)
98	Extended (Flat)
09	Flush with Buzzer

Colour	
02	Red
03	Amber
04	Yellow
05	Green
06	Blue
09	White

Lens Colour for Buzzer	
02B	Red
04B	Yellow
05B	Green
00B	Black

Buzzer	
00	Without Buzzer
01	24V AC/DC (only)

Voltage	
12	12V AC/DC
24	24V AC/DC
110	110V AC
230	230/240V AC

Model Number Structure - Pushbutton



45.10.11.02.12

Series
45 Series Switches and Indicators ø22

Operation Type		
10	Non-Illuminated Flush	Momentary
11	Non-Illuminated Extended	Momentary
12	Non-Illuminated Extended with full shroud	Momentary
13	Non-Illuminated Mushroom	Momentary
14	Illuminated Flush	Momentary
15	Illuminated Extended	Momentary
16	Illuminated Extended with Full Shroud	Momentary
17	Illuminated Mushroom	Momentary
20	Non-Illuminated Flush	Maintained
21	Non-Illuminated Extended	Maintained
22	Non-Illuminated Extended with full shroud	Maintained
23	Non-Illuminated Mushroom	Maintained
24	Illuminated Flush	Maintained
25	Illuminated Extended	Maintained
26	Illuminated Extended with Full Shroud	Maintained
27	Illuminated Mushroom	Maintained

Voltage (Illuminated Types Only)	
12	12V AC/DC
24	24V AC/DC
11	110V AC/DC
23	230/240V AC/DC

Colour	
02	Red
03	Amber
04	Yellow
05	Green
06	Blue
09	White
00	Black *

Contact	
00	No Contacts
10	1NO
01	1NC
11	1NO-1NC
20	2NO
02	2NC
22	2NO-2NC
30	3NO
03	3NC
40	4NO
04	4NC
12	1NO-2NC
21	2NO-1NC
13	1NO-3NC
31	3NO-1NC

Please contact your **WERNER** representative for more contact arrangement.

Model Number Structure - Pushbutton



45.18.11.02.12

Series	
45 Series Switches and Indicators ø22	

Operation Type	
18	Non-Illuminated Dual Head
28	Illuminated Dual Head

Voltage (Illuminated Types Only)	
12	12V AC/DC
24	24V AC/DC
11	110V AC/DC
23	230/240V AC/DC
00	Without LED

Colour	
02	Red - Green
03	Black - Blue
04	Green - Green

Contact	
00	No Contacts
10	1NO
01	1NC
11	1NO-1NC
20	2NO
02	2NC
22	2NO-2NC
30	3NO
03	3NC
40	4NO
04	4NC
12	1NO-2NC
21	2NO-1NC
13	1NO-3NC
31	3NO-1NC
Please contact your WERNER representative for more contact arrangement.	

Model Number Structure - Illuminated & Non-Illuminated Selector Switch



45.36.21.09.12

Series
45 Series Switches and Indicators ø22

Non-Illuminated Selector Switch Type		Position
30	Maintained	90° 2 Positions
31	Spring Return from Right	
32	Maintained	45° 3 Positions
33	Spring Return from Right	
34	Spring Return from Left	
35	Spring Return from 2 ways	

Illuminated Selector Switch Type		Position
36	Maintained	90° 2 Positions
37	Spring Return from Right	
38	Maintained	45° 3 Positions
39	Spring Return from Right	
40	Spring Return from Left	
41	Spring Return from 2 ways	

Voltage	
12	12V AC/DC
24	24V AC/DC
11	110V AC/DC
23	230/240V AC/DC

Colour	
00	Red
02	Amber
03	Yellow
04	Green
05	Blue
06	White
09	Black *

Contact	
00	No Contacts
10	1NO
01	1NC
11	1NO-1NC
20	2NO
02	2NC
22	2NO-2NC
30	3NO
03	3NC
40	4NO
04	4NC
12	1NO-2NC
21	2NO-1NC
13	1NO-3NC
31	3NO-1NC

Please contact your WERNER representative for more contact arrangement.

Non-Illuminated Selector Switches are in black only.

Model Number Structure - Key Selector Switch



45.42.11.00

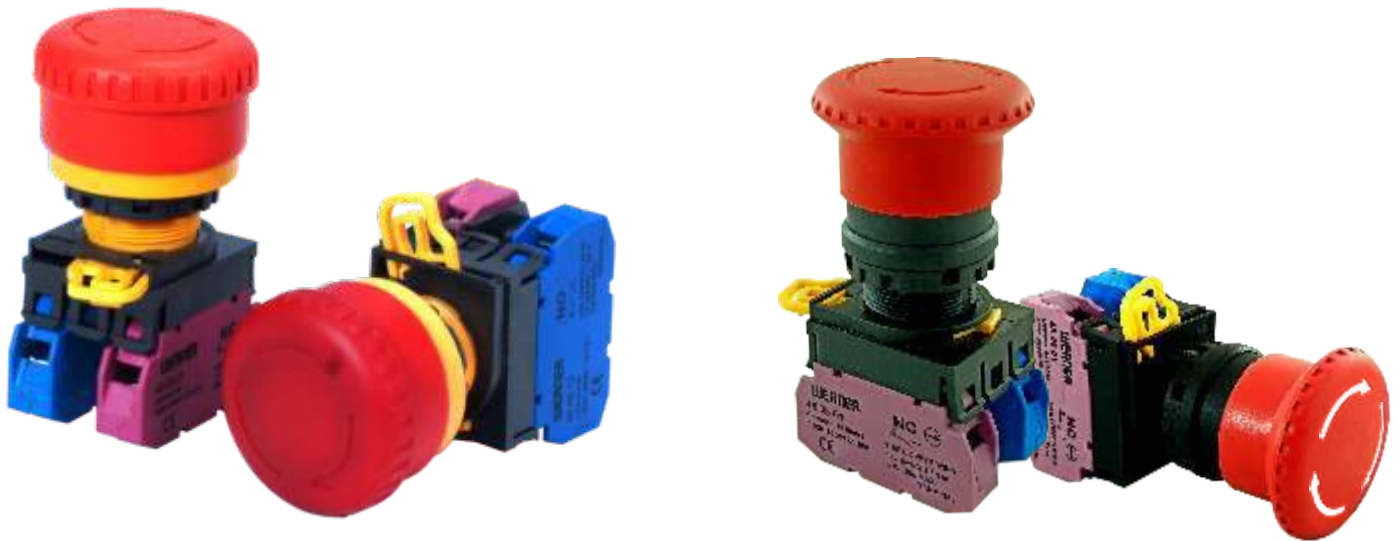
Series
45 Series Switches and Indicators $\varnothing 22$

Colour
00 Black

Key Selector Switch Type	Retained at	Pos.
42 Maintained	N.A	90° - 2 Pos.
43 Maintained	R	
44 Maintained	L	
45 Spring Return from Right	R & L	
46 Maintained	N.A	
47 Maintained	R	45° - 3 Pos.
48 Maintained	L	
49 Maintained	R & L	
50 Maintained	C	
51 Maintained	C & R	
52 Maintained	C & L	
53 Spring Return from Right	R	
54 Spring Return from Right	R & L	
55 Spring Return from Right	R & C	
56 Spring Return from Left	L	
57 Spring Return from Left	L & R	
58 Spring Return from Left	L & C	
59 Spring Return from 2 ways	R & L	

Contact	
00 No Contacts	
10 1NO	
01 1NC	
11 1NO-1NC	
20 2NO	
02 2NC	
22 2NO-2NC	
30 3NO	
03 3NC	
40 4NO	
04 4NC	
12 1NO-2NC	
21 2NO-1NC	
13 1NO-3NC	
31 3NO-1NC	
Please contact your WERNER representative for more contact arrangement.	

Model Number Structure - Illuminated & Non-Illuminated Emergency Stop Switch



45.86.21.02.12

Series
45 Series Switches and Indicators ø22

Voltage	
12	12V AC/DC
24	24V AC/DC
11	110V AC/DC
23	230V AC

Emergency Stop Switch	Operation
86 Illuminated ø40 mm Mushroom	Pushlock Turn Reset + Push Pull
87 Non-Illuminated ø40 mm Mushroom	Pushlock Turn Reset + Push Pull
88 Non-Illuminated ø40 mm Pushlock Turn Rest	Pushlock Turn Reset
89 Non-Illuminated ø40 mm Pushlock Printed Turn Rest	Pushlock Turn Reset

Colour	
02	Red

Contact	
00	No Contacts
10	1NO
01	1NC
11	1NO-1NC
20	2NO
02	2NC
22	2NO-2NC
30	3NO
03	3NC
40	4NO
04	4NC
12	1NO-2NC
21	2NO-1NC
13	1NO-3NC
31	3NO-1NC

Please contact your WERNER representative for more contact arrangement.