

Pilot devices - Modular range

Technical data



Approvals

The pushbuttons, selector switches and pilot lights are approved by:

- National approval agencies: UL, China Compulsory Product Certification, GOST and GOST Ukraine.
- Marine classifications: Det Norske Veritas, Germanischer Lloyd, Russian Maritime Register of Shipping and Russian River Register.

For detailed information please contact ABB

Standards

IEC 60947-1 EN 60947-1	Low-voltage switchgear and controlgear - Part 1: General rules
IEC 60947-5-1 EN 60947-5-1	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices
IEC 60947-5-5 EN 60947-5-5	Low-voltage switchgear and controlgear - Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function
IEC 60073 EN 60073	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators
IEC 60529 EN 60529	Degrees of protection provided by enclosures (IP Code)
EN 50013	Low-voltage switchgear and controlgear for industrial use - Terminal marking and distinctive number for particular control switches
UL 508	Industrial Control Equipment
CSA C22.2 No 14	Industrial Control Equipment

Material

No ozone depleting substances in the products.

All front parts are made of polycarbonate

Material	Characteristics
PC Polycarbonate	High impact strength, good outdoor resistance. Can withstand light acid solutions, aliphatic hydrocarbons, paraffin, alcohols, animal and vegetable greases.
PSU Polysulphone	Can withstand high temperatures, acids, basic solutions, alkaline compounds, oils, alcohols.
PA Polyamide	Can withstand high temperatures, aliphatic, aromatic and chlorinated hydrocarbons, esters, ketone-aldehydes, alcohols and basic solutions.
PBT	Can withstand high temperature, aliphatic and aromatic hydrocarbons, acids, basic solutions, alcohols, grease and oils
Zinc	Good corrosion resistance in inland-, sea and industrial atmosphere.
Light-alloy	Good corrosion resistance in inland-, sea and industrial atmosphere.

Degrees of protection

Operators	IEC/EN	UL/CSA
Pushbutton with flush or extended button, MP ^{*)}	IP 66	Type 1, 3R, 4, 4X, 12, 13
Double pushbutton, MPD ^{*)}	IP 66	Type 1, 3R, 4, 4X, 12, 13
Mushroom pushbutton, momentary, MPM ^{*)}	IP 66	Type 1, 3R, 4, 4X, 12, 13
Emergency stop pushbutton, MPMT/P ^{*)}	IP 66	Type 1, 3R, 4, 4X, 12, 13
Selector switch, M2SS/M3SS ^{*)}	IP 66	Type 1, 3R, 4, 4X, 12, 13
Key operated selector switch, M2SSK/M3SSK ^{*)}	IP 66	Type 1, 3R, 4, 4X, 12
Toggle switch, MTS2/MTS3	IP 66	Type 1, 3R, 4, 4X, 12, 13
Definite purpose pushbutton, 30 mm, KP6	IP 66	–
Reset button, KPR	IP 66	Type 1, 3R, 4, 4X, 12, 13
Pilot lights, ML	IP 66	Type 1, 3R, 4, 4X, 12, 13
Buzzer, KB	IP 65	Type 4X
Potentiometer, KT	IP 66	Type 1, 3R, 4, 4X, 12, 13
Contact block and transformer block	IP 20	
Enclosures		
Plastic enclosures	IP 66	Type 1, 3R, 4, 4X, 12, 13
Metallic enclosures	IP 67	Type 1, 3R, 4, 4X, 12, 13

^{*)} With chrome plastic bezel IP 66 Type 1, 12, 13

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Mechanical life

Operators

Pushbuttons with flush or extended button, momentary mushroom pushbutton	2 million operations
Selector switch, maintained mushroom pushbutton, key operated selector switch and double pushbutton	0.5 million operations
Emergency stop pushbutton	0.1 million operations
Toggle switch	1 million operations

Temperature

Ambient temperature during operation	-25 to +70 °C
Storage temperature	-30 to +85 °C

Terminals

Plus-minus Pozidriv No.2 screw with DIN-washer.	
Connectable area	min. 1 x 0.5 mm ² /AWG 20 max. 2 x 2.5 mm ² /2 x AWG14
Recommended torque	0.9 Nm

Tightening torque

Locking nut, M22	Min. 2 Nm Max. 2.3 Nm
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Contact blocks

Mechanical endurance	10 million operations
Self cleaning contacts of silver, NC contact with positive opening. At voltages and currents below 24 V and 5.6 mA two contact blocks in parallel are recommended. As an alternative, gold plated contacts can be used.	

Ratings as per UL, CSA, NEMA	A600		Q600	
	AC		DC	
Rated insulation voltage	600 V		600 V	
Rated thermal current	10 A		2.5 A	
Rated operational current	at 120 V	6 A	at 125 V	0.55 A
	240 V	3 A	250 V	0.27 A
	480 V	1.5 A	480 V	0.10 A
	600 V	1.2 A	600 V	0.10 A

Ratings as per IEC 60 947-5-1		A600		Q600	
Rated insulation voltage, U_i		690 V		690 V	
Rated thermal current, I_{th}		10 A		10 A	
Rated operational current, I_e utilisation category AC 15,	at 120 V	8 A		8 A	
	230 V	6 A		6 A	
	400 V	4 A		4 A	
	690 V	2 A		2 A	
Rated operational current, I_e utilisation category DC 13,	at 24 V	5 A		5 A	
	125 V	1.1 A		1.1 A	
	250 V	0.55 A		0.55 A	

Contact resistance	< 25 mΩ
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Compulsory function test	at 5V, 16 mA
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Max. number of contact blocks per operator ¹⁾	
Pushbutton, toggle switch and mushroom pushbutton	6
Maintained pushbutton	4
Double pushbutton, selector switch, key operated selector switch and emergency stop pushbutton	4

Short circuit protection	
Max. fuse at 1 kA	16 A ordinary 10 A delayed

¹⁾ The contact blocks can be stacked in max. two levels on the 3- block holder. Only one level is accepted on the 5-block holder.

Lamp block

Ratings as per IEC 60 947-5-1

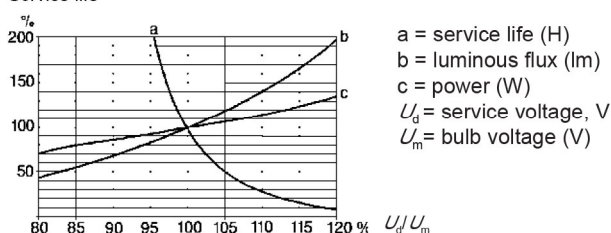
Rated insulation voltage	230 V
Base	BA 9s
Permissible power, up to	2 W

Service life of filament bulb

Relative service life, luminous flux and power consumption at different service voltages.

It is generally true to say that bulbs for lower voltages give more light and have better vibration-withstand capability than bulbs for higher voltages.

Service life



Lamp comparison

Bulb type	Approx. service life (hours)	Shock and vibration immunity	High operating temperature	Low power consumption	Brightness
Filament	5000 - 10 000	+	+	+	+++
LED	25 000 - 50 000	+++	++	++	++

Very good +++
 Good ++
 Less good +

Transformer block

Suitable for filament bulb 6 or 24 V AC, 1.2 W and LED 24 V.

Rated power	1.5 W
Rated voltage	Ratio, see Accessories page 29
Rated insulation voltage acc. to IEC 70 °C (DT)	Class E