

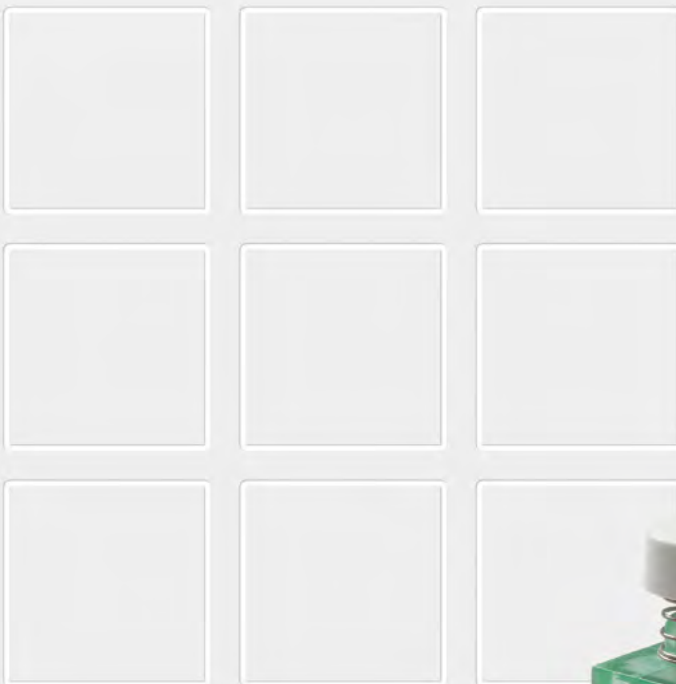
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Snap-action switches

S834 Series

Enabling switches with
positive opening operation
and wiping contacts

Catalogue D34.en



S834 Enabling switch with positive opening operation and wiping contacts

Enabling switches for manual control units of industrial robots

The S834 enabling switch is typically used in manual control actuators for automatic handling machines and robotics. When installed in such devices, the S834 greatly increases safety for the operator in the working area.

Operation:

- **Mid position (ON) – circuit closed:** The manual control actuator is continuously held by the operator in the detented mid position.
- **Emergency cutout – the machine stops:** The manual control actuator is either released or further depressed - past the midpoint detent of the switch - by a panicking operator.

Features

Series S834



Positive opening operation: Reliable breaking of the normally closed (NC) circuit even if the contacts have become welded together, in compliance with IEC 60947-5-1, Annex K.

IP rating: Protection against dust, hazardous substances and direct contact with live parts in compliance with IEC 60529: contacts IP50 / terminals IP00.



3-position switch: Three distinct OFF-ON-OFF actuator positions and mid position detent. Single and double pole versions available.

Wiping contacts: Continuous low contact resistance ensures high contact reliability over the entire design life of the switch.



Precision switch: High switching accuracy and resistance to shock and vibration.

Contact material: silver



Switch design and function

Series S834

▶ Actuator

▶ Contacts

▶ IP rating

▶ Terminals



• Standard: push button

- Double-break contacts
- Positive opening operation
- Contact material: silver

- Contacts IP50
- Terminals IP00

• Solder pins for PCB assembly

Competence

Application

Series S834

The success of a product is owed to its quality

The Schaltbau product line is clearly defined and keeps up with the technological requirements of today's markets. Behind every individual snap-action switch you will find decades of experience in engineering and manufacturing.

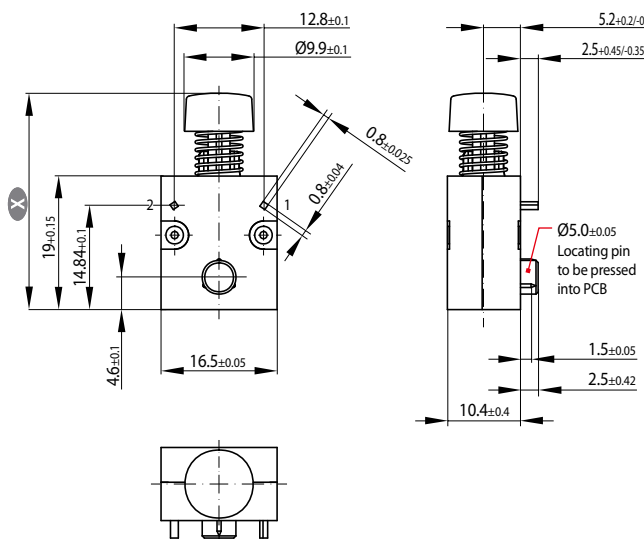
With their well known transparent-green housing, the safety function in Schaltbau switches is visible.

Typical applications are systems and components that require a high degree of safety and reliability.

Schaltbau enabling switches are designed especially for manual control units of industrial robots.

S834 T1G2a 090, S834 T1G2a 100 Dimension diagrams

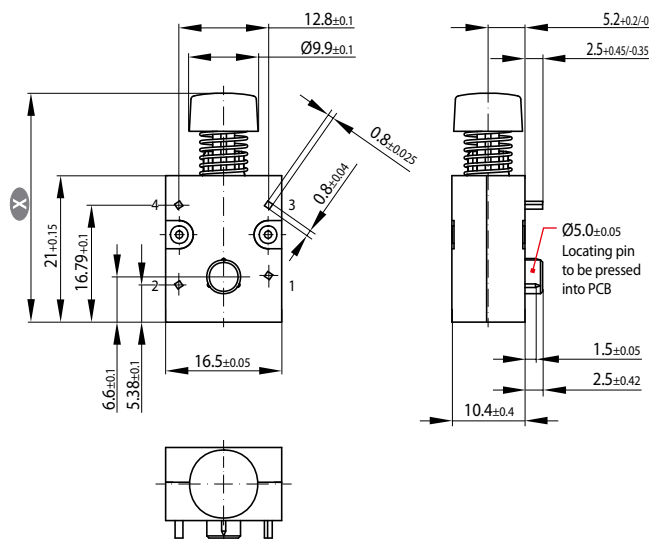
Series S834

• S834 T1G2a 090: Single pole enabling switch


Actuator position	Pushbutton Dim. \varnothing in mm	Contact 1-2
Free position	30.90 \pm 0.20	—
Operating position	28.28 \pm 0.30/-0.12	—
Total travel position	24.90 \pm 0.30/-0.12	— \rightarrow



Note: To ensure proper operation of the positive opening function it is necessary to depress the plunger to the total travel position. However, it must not be pushed beyond total travel position. Data is valid for new switches.

• S834 T1G2a 100: Double pole enabling switch


Actuator position	Pushbutton Dim. \varnothing in mm	Contact 1-2	Contact 3-4
Free position	32.90 \pm 0.20	—	—
Operating position	30.28 \pm 0.30/-0.2	—	—
Total travel position	26.90 \pm 0.30/-0.12	— \rightarrow	— \rightarrow



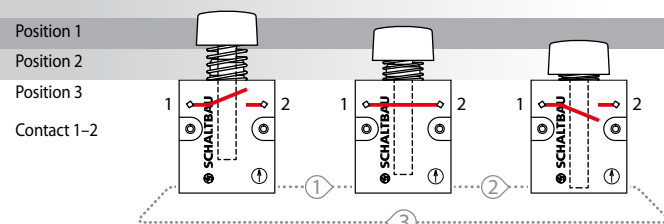
Note: To ensure proper operation of the positive opening function it is necessary to depress the plunger to the total travel position. However, it must not be pushed beyond total travel position. Data is valid for new switches.

Operation of enabling switches

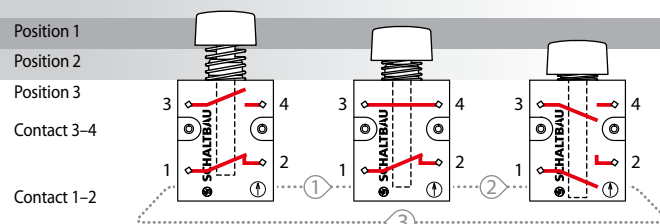
Series S834

Contact is made only in position 2, the detented mid position. In position 1 (actuator not operated) and position 3 (actuator pressed past the detented mid position) the contact is open.

When released to position 1 the contact remains open (OFF) by the force of the return spring. Return to position 1 is guaranteed even in case of a broken spring.

Single pole enabling switch


- Position 1 \rightarrow Position 2 (mid position):** Contact 1-2 closed, when actuator is continuously held in the detented mid position.
- Position 2 \rightarrow Position 3:** Contact 1-2 \rightarrow opened, when actuator is pressed past the midpoint detent of the switch.
- Position 3 \rightarrow Position 1:** Contact 1-2 remains open, when released to position 1 the contact remains open (OFF) by the force of the return spring.

Double pole enabling switch


- Position 1 \rightarrow Position 2 (mid position):** Contact 1-2 and 3-4 closed, when actuator is continuously held in the detented mid position.
- Position 2 \rightarrow Position 3:** Contact 1-2 \rightarrow and 3-4 opened, when actuator is pressed past the midpoint detent of the switch.
- Position 3 \rightarrow Position 1:** When released to position 1, contact 1-2 is closed, whereas contact 3-4 remains open (OFF) by the force of the return spring.


Positive opening operation:

Reliable interruption of the circuit even after contact welding, in compliance with IEC 60947-5-1, Annex K.

Assembly PCB assembly instructions

Series S834

Our S834 is designed for PCB assembly only. After assembly a test is required in accordance with the test principles of GS-ET-22, section 6.

Download at: www.schaltbau.info/s834-en

Hand soldering:

- Soldering apparatus: hand-held soldering iron
- Solder: flux-filled solder wire, lead-free
- Temperature/duration: 350 °C; 6 sec max.
(PCB, 1.6 mm, through-hole plating)

Selective soldering:

- Soldering apparatus: selective soldering station
- Solder: lead-free solder for selective and wave soldering
- Temperature/duration: 300 °C, 2 sec, 3 mm wave distance, flux time 1 sec

Wave soldering:

- Soldering apparatus: wave soldering station, 1 wave (Wörthmann wave)
- Solder: lead-free solder for selective and wave soldering
- Temperature/duration: 260 °C, 4.4 sec, wave width 66 mm; conveyor speed 1.3 m/min, pre-heating approx. 100 sec at 110 ° ... 145 °C typ.

Mounting and safety instructions, environmental conditions

Series S834

Mounting instructions:

- Enabling switches should be mounted by qualified professional staff only.
- Observe the required clearance and creepage distances.
- When installing the switch make sure to provide suitable shock protection!
- It is necessary to use insulating plates when mounting the enabling switch on an uninsulated surface.
- The switches can be mounted in any desired position.
- The actuator may not be pre-tensioned when in the free position. When actuated, the actuator should travel well beyond the operating position.
- To ensure the proper function of the positive opening operation it is necessary to depress the plunger to the total travel position.
- To prevent mechanical destruction of the switch, make sure that actuation of the switch does not exceed the specified total travel position. Avoid using the switch as a mechanical end stop.
- High-impact actuation of the switch can also have a negative effect on its mechanical life.

Non-permissible environmental conditions:

- Cleaning agents, adhesives, solvents, or screw-retaining varnish must be compatible with polycarbonate. Never use chemicals which are not compatible with polycarbonate.
- Using chemicals which are not compatible can result in cracks, deformation, breakage and dissolution of the housing or complete destruction of the switch.

Safety instructions:

- Be sure to make visual inspections regularly.
- Make sure to electrically link the enabling switch to the control circuit in such a way that all safety requirements according to DIN EN 775, DIN EN 60204-1, DIN EN 954-1, DIN EN 1088 and VDI 2854 are met.
- All cables and conductors (except PE) of equipment used in an installation that are either accessible without opening or removing a machine guard or are laid on exposed conductive parts that may become live in the event of a failure must have double insulation or reinforced insulation. Insulation must insulate the wire from the surface on which the conductor is laid. Alternatively conductors can be enclosed in a metal sheathing that should have sufficient current carrying capacity in the event of a short circuit between wire and sheath.
- Our S834 is not a ready-to-use enabling switch, but the necessary switching element for it.
- Make sure that in the case of an actuator malfunction, for instance due to a broken return spring, the safety device as such will continue to function properly.
- No liability is accepted for failure to observe our safety instructions.
- Full observation of the safety instructions is essential for the proper functioning of the switch.
- Improper handling of the switch, e. g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.



Defective parts must be replaced immediately!



Standards

Series S834

- **DIN EN 60947-5-1, Annex K:** Special requirements for control switches with direct opening action
- **DIN EN 60529:** Degrees of protection provided by enclosures (IP code)
- **UL 94V-0:** Flammability Standard
- **DIN 40050-9:** Road vehicles; degrees of protection (IP code); protection against foreign objects; water and contact; electrical equipment

Specifications

Series S834

	Standard	S834 T1G2a 090	S834 T1G2a 100
Contact system	IEC 60947	•	---
Single pole momentary switch		---	•
Double pole momentary switch		•	•
Distinct operating point		•	•
Positive opening operation 		•	•
Wiping contacts		•	•
Conventional thermal current I _{th}	IEC 60947	2.5 A	
Rated insulation voltage U _i	IEC 60947	250 V	
Pollution degree	IEC 60947	PD2	
Overvoltage category	IEC 60947	no data	
Rated impulse withstand voltage U _{imp}	IEC 60947	2.5 kV	
Utilization category	IEC 60947	DC-12: 48 V / 1.0 A DC-13: 48 V / 0.3 A	surge overvoltage 600 V max. surge overvoltage 1.4 kV max.
Contact gap, typ.	IEC 60947	1.2 mm	
Contact force, typ.	IEC 60947	no data	
Contact resistance, typ.	IEC 60947	100 mΩ (no leads)	
Positive opening force *1	IEC 60947	≤ 21 N	
Positive opening travel	IEC 60947	4.5 mm	5.5 mm
Maximum actuator travel *1	IEC 60947	6.0 mm	
Actuating speed	IEC 60947	0.5 m/s max. 1.0 mm/s min.	
Vibration resistance at 0.1 ms opening time max. 10 ... 150 Hz all directions	IEC 60068-2-6	no data	
Shock resistance (no aux. actuator) at 0.1 ms opening time max.	IEC 60068-2-27	no data	
Short-circuit protection	IEC 60269-2	1 A gL	1 A gL
Actuation force *1 up to distinct operating position in operating position up to total travel position (beyond distinct contact point)	IEC 60947	1.75 N ±0.25 N > 3 N > 5 N	
Release force *1	IEC 60947	no data	
IP rating: Contacts Terminals	IEC 60529	IP50 IP00	
Endurance, operating cycles mechanical (operating / total travel position) electrical (at U = 48 V DC I = 1 A; τ = 0 ms)	IEC 60947	> 300,000 / > 70,000 > 200,000	> 200,000 / > 100,000 > 200,000
Temperature range	IEC 60947	-0 °C ... +55 °C	
Material Contacts Terminals Plastic parts Housing	---	Hard silver (AgCu3) Solder pins for PCBs Flammability rated to UL 94-V0 PC, green, transparent	
Mounting orientation	---	any	
Weight	---	4.1 g ±0.5 g	
Approval	---		

*1 Measured directly at push-button

Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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with compliments:



Schaltbau GmbH manufactures in compliance with RoHS.



The production facilities of Schaltbau GmbH have been IRIS certified since 2008.



Certified to DIN EN ISO 14001 since 2002. For the most recent certificate visit our website.



Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

Electrical Components and Systems for Railway Engineering and Industrial Applications

Connectors

- Connectors manufactured to industry standards
- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

Snap-action switches

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Enabling switches
- Special switches to suit customer requirements

Contactors

- Single and multi-pole DC contactors
- High-voltage AC/DC contactors
- Contactors for battery powered vehicles and power supplies
- Contactors for railway applications
- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements

We reserve the right to make technical alterations without prior notice.

For updated product information visit www.schaltbau-gmbh.com.
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