

# SAFETY HINGE SWITCH



**Load Bearing Hinge  
with Integral  
Safety Switch**

# WARNER ELECTRIC

## Integral Safety Hinge Switch, Tamperproof, Reliable Operation, Easy to Install

### IP 67 Metal housing

Hinged machinery guards and covers as well as safety fence doors may be found in every type of industry.

The safety hinge switch SHS is the integration of a safety switch and load bearing hinge for industrial applications.

Designed to facilitate mounting onto extruded aluminum profiles, steel or plastic doors, the slim profile of the SHS even when fully closed, allows the hinge to be readily mounted where space is constrained.

Traditional safety switches with separate actuator keys are often subject to mechanical wear, particularly when mounted on the closing edge of guards where accumulated tolerances can cause misalignment. The SHS removes this problem with the safety contact mounted internally, inaccessible to the user and therefore providing excellent tamper protection. One or more switches may be used dependent on the category of safety protection required. Matching hinges without safety contacts are also available, allowing the style to be standardized for general use. In operation, consideration must be given to the required contact operation angle, which is determined by guard size and the maximum allowable guard opening distance before actuation.



#### Safe:

- 2 SHS hinge switches each with a forced disconnect safety contact allow safety category 4 systems to be configured subject to the required risk analysis and safety contact monitoring.

#### Flexible:

- The hinge operation angle is 0-180°.
- The switch point may similarly be selected through 180°.
- AC/DC to 250 V or 60 V DC versions available.

#### Fast:

- Industry standard M12 x 1 connectors with axial and radial (rear) mounting available as well as fixed cable version.

#### Reliable:

- A cast Zinc alloy body allows the SHS a high degree of mounting freedom.
- In its hinge capacity the SHS can bear up to 750 N axially and over 1000 N radially, when the switching point has been set.
- Ingress protection to IP 67

### SHS Configuration Summary

#### With M12x1 Connector, for 60 V DC Applications, Without Earth Connection

SHS-A1Z-SR	DC	601.9261.010	Radial Plug
SHS-A1Z-SA	DC	601.9261.015	Axial Plug

#### With M12x1 Connector, for AC/DC Applications 250 V, with Earth Connection

SHS-A1Z-SA	AC/DC	601.9261.009	Axial Plug
SHS-A1Z-SR	AC/DC	601.9261.016	Radial Plug

#### With Fixed Cable

SHS-A1Z-KR5	AC/DC	601.9261.014	fixed cable radial
SHS-A1Z-KA5	DC	601.9261.011	fixed cable radial

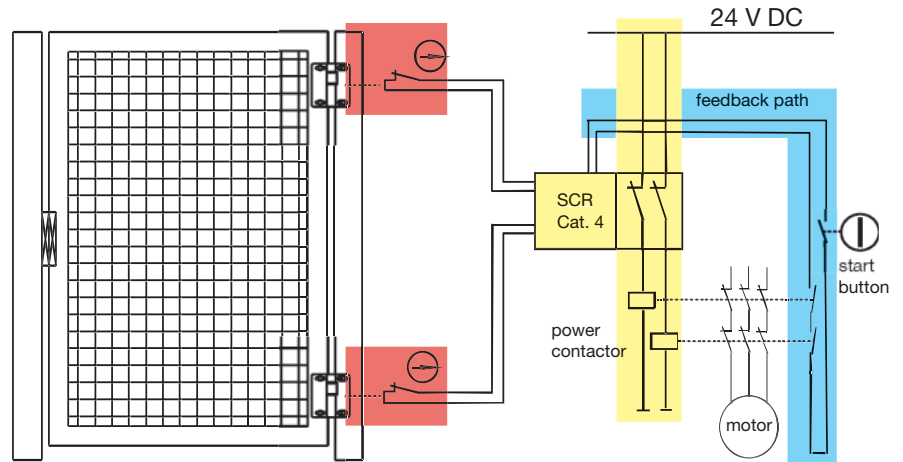
#### Standard Hinge

SHS-OZ		601.9291.013	No connection
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**For Application Assistance Call 1-800-451-8279 or Fax 1-815-389-6678**

## Installation example:

- true electrical redundancy
- true mechanical redundant safety
- avoids mechanical common mode failure



## Plug M 12 x 1

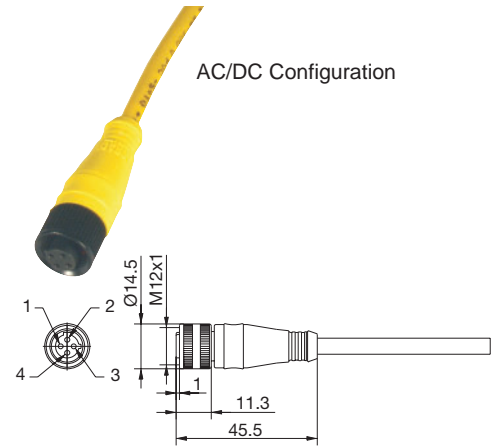
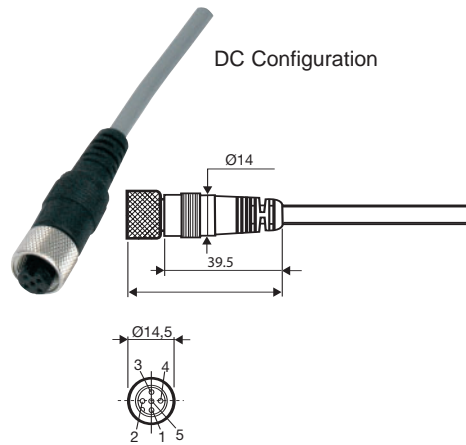
with molded cable

Terminal code, DC configuration

- 1 = brown
- 2 = —
- 3 = blue
- 4 = black

Terminal code, AC/DC configuration

- 1 = brown
- 2 = black
- 3 = blue
- 4 = green-yellow



		Straight line		Right-angled	
Cable length	Designation	AN-KAB.SHS 2M DC	AN-KAB.SHS 2M DC	on request	on request
2 m	Part number	325.1003.221	325.1003.224	AN-KAB.SHS 5 M AC	AN-KAB.SHS 5M AC
Cable length	Designation	AN-KAB.SHS 5M DC	AN-KAB.SHS 5M DC	325.1004.219	325.1004.220
5 m	Part number	325.1003.222	325.1003.225		
Cable length	Designation	AN-KAB.SHS 10M DC	AN-KAB.SHS 10M DC	on request	on request
10 m	Part number	325.1003.223	325.1003.226		
Material of cable sleeve		PVC/PVC	PVC/PVC		
Material body/Contact carrier		PUR/PUR	PUR/Nylon 6.6		
Rated voltage	max.	60 V AC/75 V DC	300 V AC		
Current	max.	1.5 A	4.0 A		
Temperature range	min./max.	-25 °C/+70 °C -13 °F/+158 °F	-5 °C/+70 °C -23 °F/+158 °F		
Cable structure	mm <sup>2</sup>	3 x 0.34	4 x 0.34		
Protection class after installation		IP 67	IP 67		

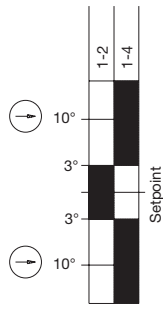
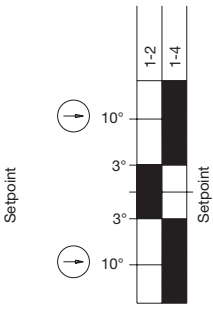
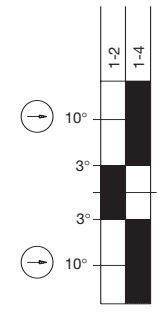
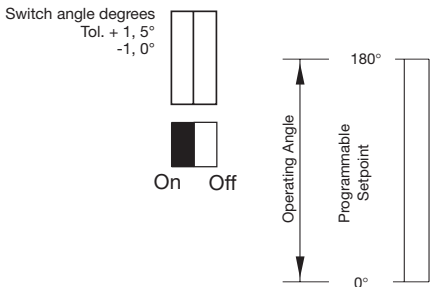
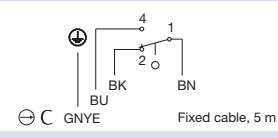
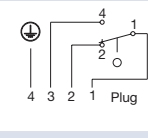
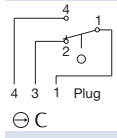
# Safety Hinge Switch SHS



Designation  
 Part number  
 Contact diagram  
 Forced disconnect to IEC 947-5-1 annex k  
 Za: non-galv. separated contact  
 Zb: galv. separated contact  
 Slow make and break/snap action  
 Sealed internally (iw)/externally (w)

SHS-A1Z-SR      SHS-A1Z-SR  
**601.9261.010**    **601.9261.016**

SHS-A1Z-KR 5  
**601.9261.014**



Voltage max. 250 VAC  
 Thermal current max. 3A  
 Utilization category per IEC 947-5-1 AC 15/DC 13 60 V/0.5 A  
 Switching frequency max. 1200/h  
 Mechanical life - switching operations 1 x 10<sup>6</sup>  
 Operating temperature -25 °C/+70 °C  
 -13 °F/+158 °F

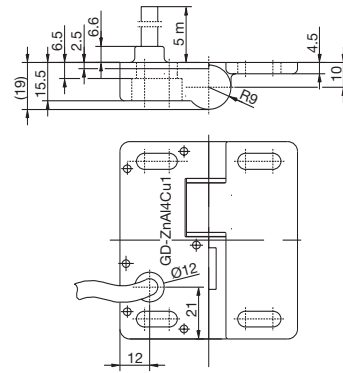
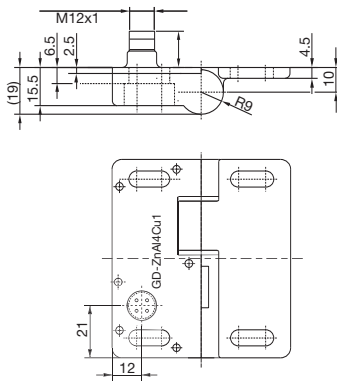
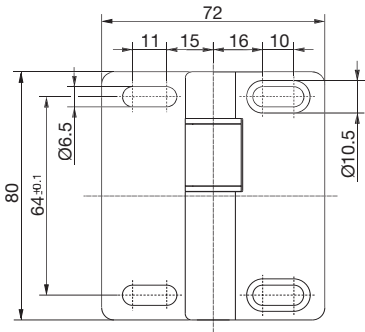
250 VAC      250 VAC  
 3A      3A  
 60 V/0.5 A      60 V/0.5 A      230 V/1.5 A  
 (DC 13)      (DC 13)      (AC 15)  
 1200/h      1200/h  
 1 x 10<sup>6</sup>      1 x 10<sup>6</sup>  
 -25 °C/+70 °C      -25 °C/+70 °C  
 -13 °F/+158 °F      -13 °F/+158 °F

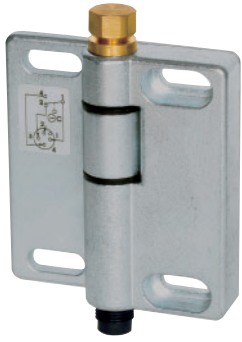
250 VAC  
 3A  
 60 V/0.5 A      230 V/1.5 A  
 (DC 13)      (AC 15)  
 1200/h  
 1 x 10<sup>6</sup>  
 -25 °C/+70 °C  
 -13 °F/+158 °F

Approvals BG  
 Approvals pending UL and CSA  
 Weight 0.4 kg

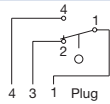
BG      BG      BG  
 UL and CSA      UL and CSA      UL and CSA  
 0.4 kg      0.4 kg      0.4 kg

All dimensions in mm





SHS-A1Z-SA  
601.9261.015

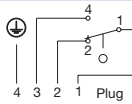


⊖ C

●/-

iw

SHS-A1Z-SA  
601.9261.009

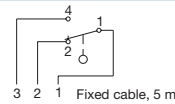


⊖ C

●/-

iw

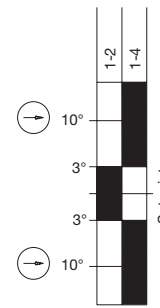
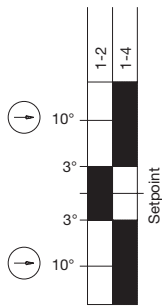
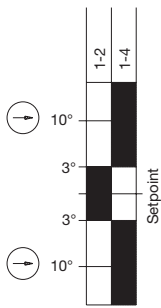
SHS-A1Z-KA 5  
601.9261.011



⊖ C

●/-

iw



250 VAC  
3A  
60 V/0.5 A  
(DC 13)  
1200/h  
1 x 10<sup>6</sup>  
-25 °C/+70 °C  
-13 °F/+158 °F

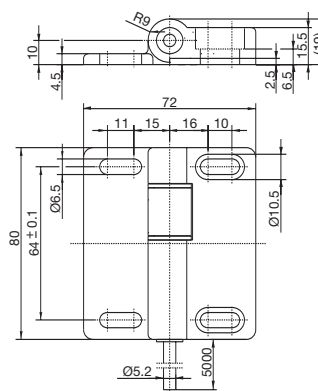
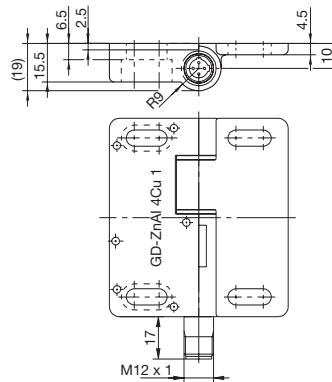
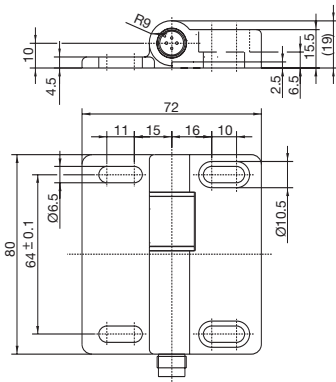
250 VAC  
3A  
60 V/0.5 A  
(DC 13)  
1200/h  
1 x 10<sup>6</sup>  
-25 °C/+70 °C  
-13 °F/+158 °F

250 VAC  
3A  
230 V/1.5 A (AC 15)  
60 V/0.5 A (DC 13)  
1200/h  
1 x 10<sup>6</sup>  
-25 °C/+70 °C  
-13 °F/+158 °F

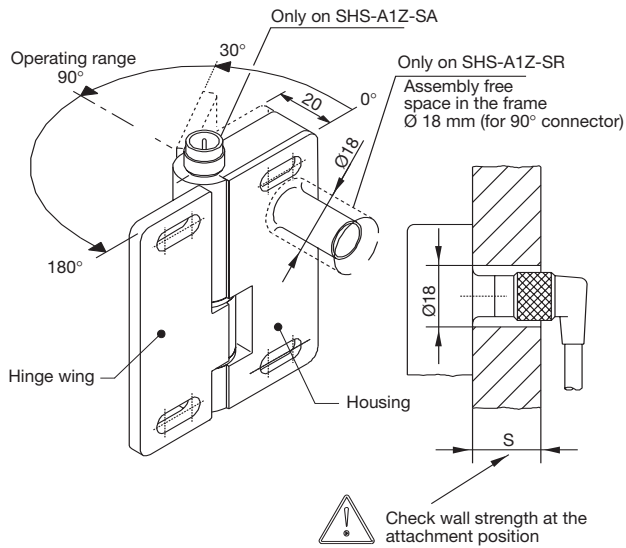
BG  
UL and CSA  
0.4 kg

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UL and CSA  
0.4 kg

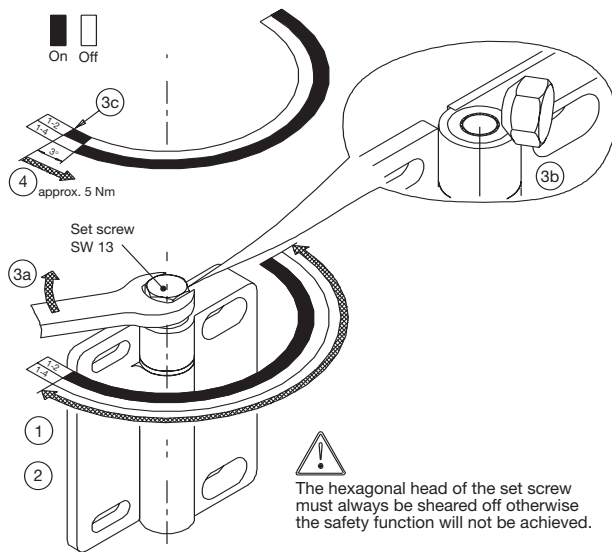
BG  
UL and CSA  
0.4 kg



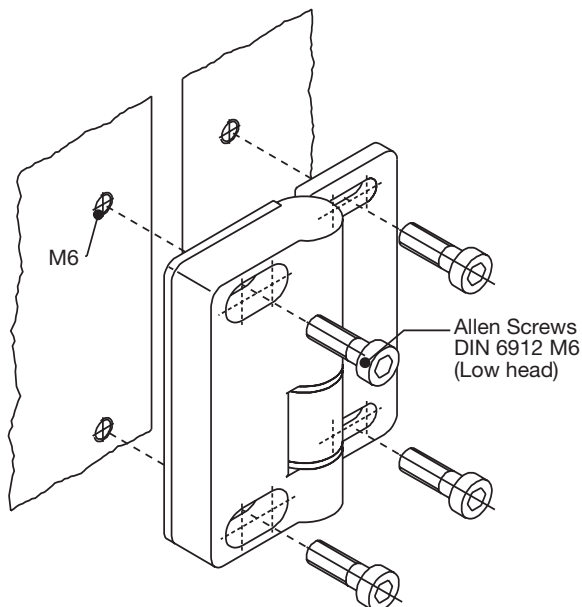
# Installation



- For proper installation the procedure below must be followed.
- SHS without switching point set shall be mounted under no load condition on the guard.
  - SHS switching point shall be set in one successive procedure.
  - The guard shall be moved only after properly setting the switch point.
  - Finally, the set SHS shall be completely fixed on the guard.



- The guard door must turn freely through the total operating range.
- Fix the guard door in the closed position.
- a Tighten the set screw with a box spanner (SW13/max. 20 mm) until resistance is met.
- b Continue until the set screw shears. ( $M_d = 25Nm$ )
- c The set point for the switching angle is now fixed.
- An increased actuation force (torque approx. 5 Nm) is required during the first use of the guard.



Operating angle

0° - 30° = Allen Screw DIN 6912 necessary without washer in the hinge wing

30° - 180° = Allen Screw DIN 912 permissible washer DIN 125 in the hinge wing

## Safety switches with separate actuator



### Type SKC/SK

- Plastic housing
- Built-in catch option
- IEC 947-5-1
- GS-ET-15
- IP 65



### Type SKT

- Plastic housing
- 4x90° head rotation
- Short body
- IP 65



### Type SKI

- Plastic housing
- 4x90° head rotation
- Mounting to EN 50047
- IP 65



### Type SLK

- Slim-line plastic housing
- Spring or solenoid locking
- 2000 N holding force
- 4x90° head rotation
- IP 67



### Type ENM Type GC

- Metal housing
- Mounting to EN 50041
- IP 65



### Type SLM

- Robust metal housing
- Spring or solenoid locking
- Mounting to EN 50041
- IP 67

## Safety switches for hinged guard applications



### Type I 88-AHDB

- Plastic housing
- Mounting on hinge axis
- IP 65



### Type I 88 VKS/VKW

- Plastic housing
- Suitable for hinged covers and doors
- IP 65



### Type ENM-AHZ

- Metal housing
- Forced disconnect contact in forward and reverse travel
- IP 65



### Type GC-VKS/VKW

- Metal housing
- Suitable for hinged covers and doors
- IP 65



### Safety Hinge Switch Type SHS

- Metal housing
- Integration of safety switch with loadbearing hinge
- Full 180° angle of operation
- 180° programmable switching position
- IP 67

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