

HS7A-DMP Non-contact Interlock Switches (3-contact)

Three-contact type newly added.
Auxiliary contacts enable PLCs to monitor the door status.

- Operation signals from auxiliary contacts can be read directly by controllers such as PLCs, allowing for monitoring HS7A-DMP non-contact interlock switches.
- Ideal for installation on guard doors where positioning is difficult.
- Conformable up to safety category 4 (EN ISO 13849-1) (Combining with proprietary safety relay module achieves safety category 4.)
- A maximum of 36 sets can be connected (safety relay module: HR1S-DME)
- Degree of protection: IP67



• The HS7A-DMP non-contact interlock switches can be used as interlock switches when used in combination with safety relay modules specified by IEC.



Wiring Diagram

HS7A Non-contact Interlock Switches

Contact Configuration	Cable Length	LED	Part No.	Applicable Safety Relay Module
1NO+2NC	2m	Without	HS7A-DMP5002	HR1S-DMB1132
		With	HS7A-DMP5012	HR1S-DMB1132P
	5m	Without	HS7A-DMP5005	HR1S-DME1132
		With	HS7A-DMP5015	HR1S-DME1132P
2NO+1NC	2m	Without	HS7A-DMP7002	HR1S-AF5130B HR1S-AF5130PB
		With	HS7A-DMP7012	
	5m	Without	HS7A-DMP7005	
		With	HS7A-DMP7015	

- Package quantity: 1
- The HS7A-DMP non-contact interlock switch is supplied with an HS9Z-ZP1 actuator.
- The contact configuration in the table shows the contact status when the non-contact interlock switch is not activated.

HR1S Safety Relay Module for Non-contact Interlock Switches

Safety Relay Module	Number of Inputs	Max. Number of Connectable Non-contact Interlock Switches
HR1S-DMB1132	2	12
HR1S-DMB1132P		
HR1S-DME1132	6	36
HR1S-DME1132P		
HR1S-AF5130B	1	6
HR1S-AF5130PB		

- When connecting multiple non-contact interlock switches (HS7A-DMP700□), use HR1S-AF5130B/AF5130PB. (HS7A-DMP701□ cannot be connected in multiple numbers.)

Maximum Number of Connectable Non-contact Interlock Switches per Input of Safety Relay Module

Non-contact Interlock Switch	HS7A-DMP50□□		HS7A-DMP70□□	
	Without LED	With LED	Without LED	With LED
HR1S-DMB/DME	6	3	—	—
HR1S-AF5130B/AF5130PB	—	—	6	1

Accessory

Name	Part No.
Actuator	HS9Z-ZP1

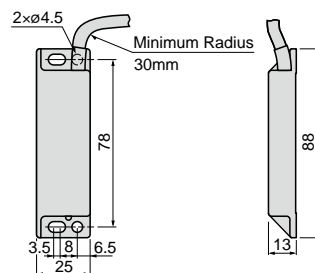
- One HS9Z-ZP1 is supplied with the HS7A-DMP non-contact interlock switch.

Specifications

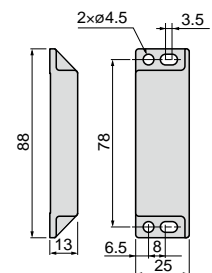
Applicable Standards	IEC/EN 60947-5-1 UL508 (UL listed) CSA C22.2, No. 14	
Operating Temperature	-25 to 85°C (no freezing)	
Relative Humidity	35 to 85% RH (no condensation)	
Storage Temperature	-40 to +85°C (no freezing)	
Pollution Degree	3	
Electric Shock Protection	Class II (IEC 60536)	
Degree of Protection	IP67 (IEC 60529)	
Shock Resistance	300 m/s ² (11 ms) (IEC 60068-2-7)	
Vibration Resistance	100 m/s ² (10 to 150 Hz) (IEC 60068-2-6)	
Rated Voltage (Ue)	24V DC	
Rated Current (Ie)	100 mA	
Repeat Accuracy	10% maximum	
Maximum Operating Frequency	150 Hz	
Voltage Drop	I = 10 mA	0.1V (without LED), 2.4V (with LED)
	I = 100 mA	1V (without LED), 4.2V (with LED)
Electrical Durability	1,200,000 operations minimum	
Housing Material	PBT	
Housing Color	Red	
Cable	AWG23 (0.25 mm ²) × 6 Cable length: 2m, 5m	
Weight (approx.)	HS7A-DMP: 180g (cable length: 2 m) HS9Z-ZP1: 50g	

Dimensions

HS7A-DMP□□□□ (Non-contact Interlock Switch)



HS9Z-ZP1 (Actuator)



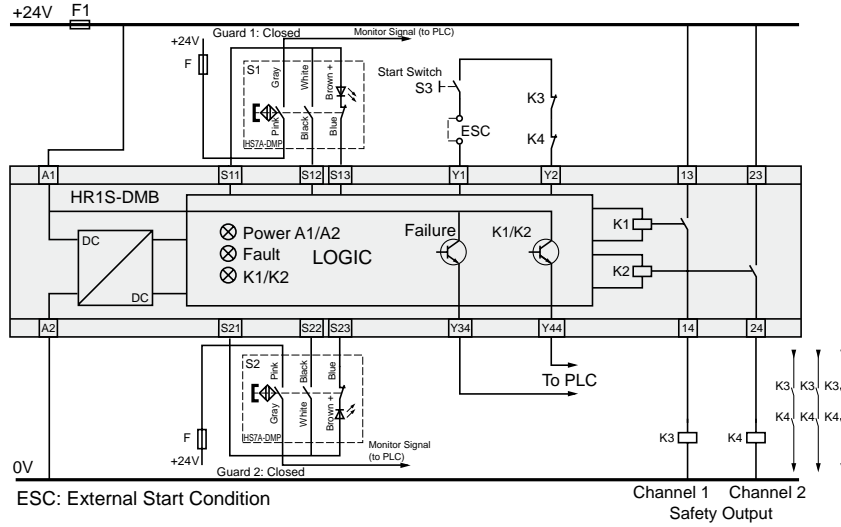
All dimensions in mm.

HS7A-DMP Non-contact Interlock Switches (3-contact)

⚠ The following diagrams show the contact statuses when the non-contact interlock switches are activated by the actuators.

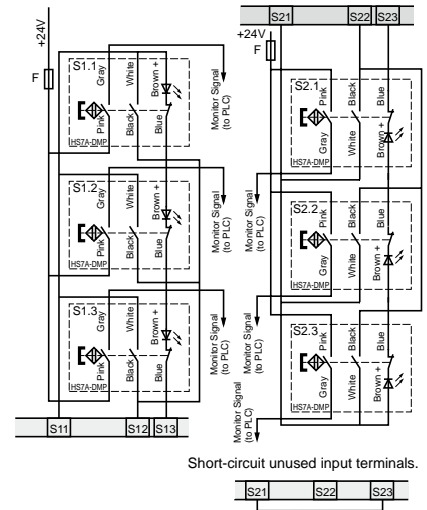
Safety Category 4 (EN ISO 13849-1) Circuit

HR1S-DMB + HS7A-DMP50 (1NO+2NC) + HS9Z-ZP1



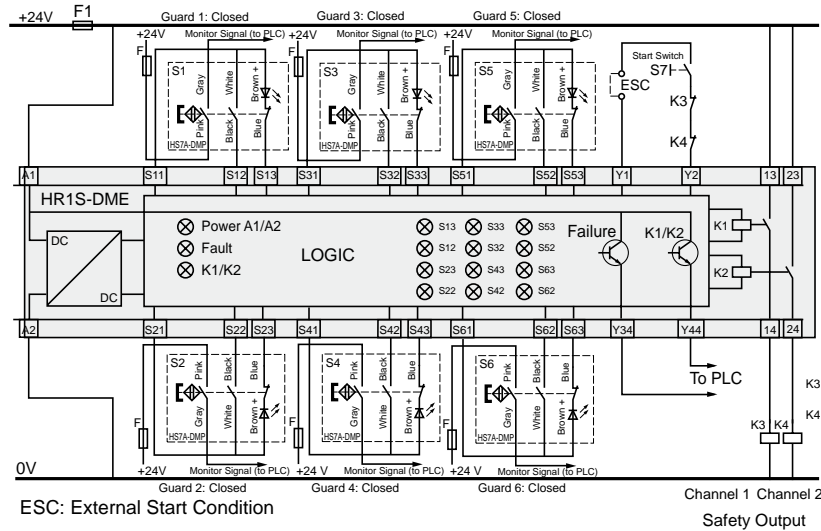
Safety Category 3 (EN ISO 13849-1) Circuit

HR1S-DMB



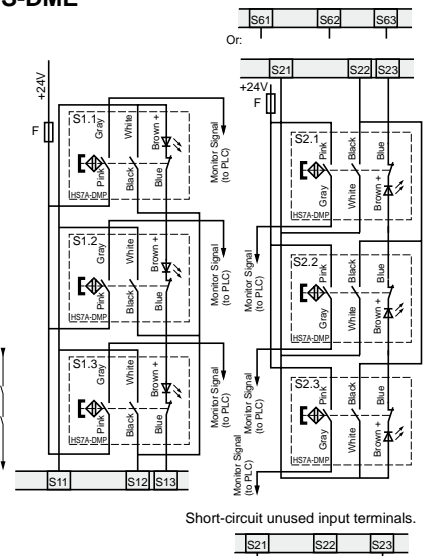
Safety Category 4 (EN ISO 13849-1) Circuit

HR1S-DME + HS7A-DMP50 (1NO+2NC) + HS9Z-ZP1



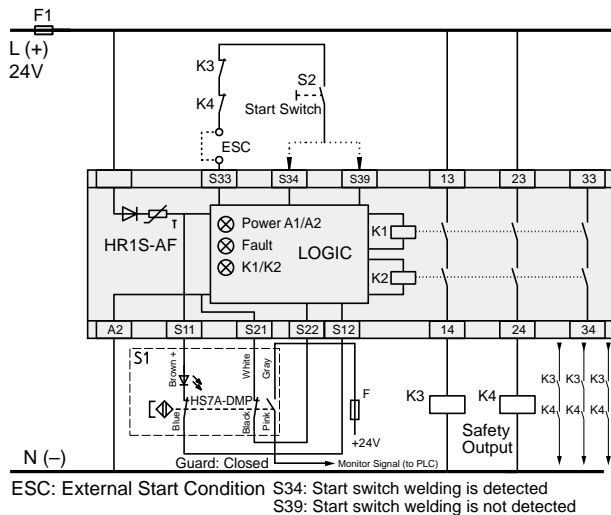
Safety Category 3 (EN ISO 13849-1) Circuit

HR1S-DME



Safety Category 4 (EN ISO 13849-1) Circuit

HR1S-AF + HS7A-DMP70 (2NO+1NC) + HS9Z-ZP1



F1: Protection fuse for the power of safety relay module
F: Protection fuse for monitor signal contacts (max. 500mA gG (gL))

Note: The circuit example shown on the left (HR1S-AF and HS7A-DMP70) may not conform to safety category 4 depending on the operating conditions, such as the frequency of safety function check. Perform risk assessment of your system before operation.

HS7A-DMP Non-contact Interlock Switches(3-contact)

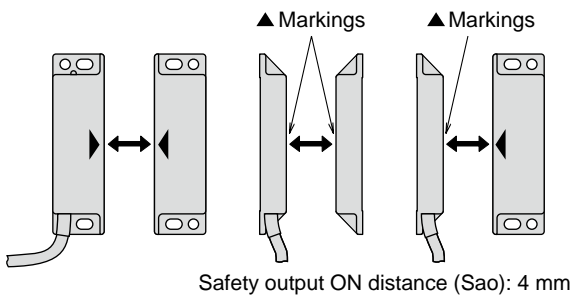
Safety Precautions

- In order to avoid electric shock or fire, turn the power off before installation, removal, wire connection, maintenance, or inspection of the non-contact interlock switch.
- Do not install the actuator in the location where the human body may come in contact. Otherwise injury may occur.

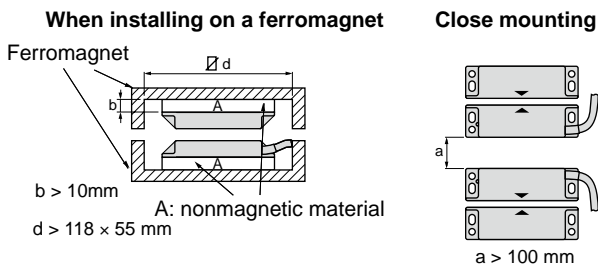
Instructions

- Safety category 4 (EN ISO 13849-1) can be achieved by combining the HS7A non-contact interlock switch and HR1S safety relay module (monitor the dual contacts using the safety relay module).
- When using non-contact interlock switches, combine with a proprietary safety relay module and confirm that the conformable safety category and the safety category (EN ISO 13849-1) required to the machinery have been achieved.
- Be sure to use the HS7A non-contact interlock switch in combination with the proprietary actuator HS9Z-ZP1. Do not use other actuators.
- Regardless of door types, do not use the non-contact interlock switch as a door stop. Install a mechanical door stop on the edge of the door to protect the interlock switch against excessive force.
- A shock to the door exceeding 300 m/s² (approx. 30G) may cause a failure to the non-contact interlock switches.
- Do not store the switches in a dusty, humid, organic-gas atmosphere, or areas subject to direct sunlight.

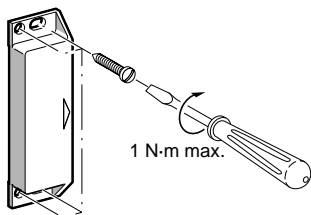
Operating Direction



Precautions for Installation



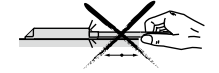
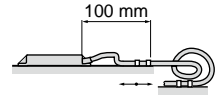
Tightening Torque



⚠ Use a nonmagnetic screw.

Precaution for Cable Wiring

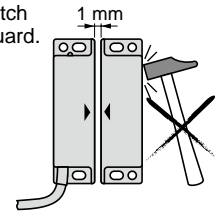
- ⚠ Tensile force on the cable may cause disconnection. Be sure to secure the cable near the non-contact interlock switch.



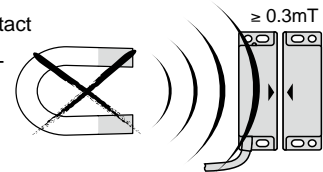
Precautions for Mounting Actuator

- ⚠ Do not use the non-contact interlock switch as a mechanical stop for the movable guard.

- ⚠ Do not use a hammer to adjust the position of non-contact interlock switch.

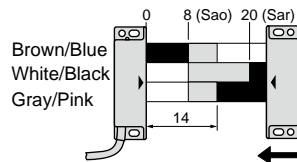


- ⚠ Do not use the non-contact interlock switch in a magnetic field of 0.3 mT or over.

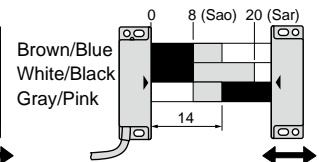


Operation Chart

HS7A-DMP50 □□
(1NO+2NC)



HS7A-DMP70 □□
(2NO+1NC)



Dimensions: mm

Contact Status

■	Contact closed (1)
□	Contact open (0)
▨	Transient area

Sao: Assured operating distance where the safety output is sure to turn on.

Sar: Assured release distance when the safety output is sure to turn off.

Note: When the transfer time between the actuator's Sao-Sar is 500 ms or longer, the time lag is detected as an error.

Operation Area

