

HS7A-DMC Non-contact Interlock Switches

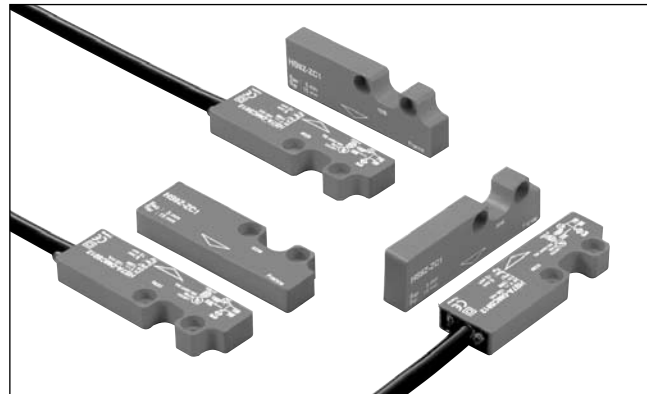
Compact size and easy positioning.

Combination with proprietary relay modules achieves safety category 4 (EN ISO 13849-1).

- Compact size (7 × 16 × 51mm)
- Positioning for installation is easy.
- Up to 36 sets can be connected.
(safety relay module: HR1S-DME)
- Degree of protection: IP67



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



HS7A Non-contact Interlock Switches

Contact Configuration	Cable Length	LED	Part No.	Applicable Safety Relay Module
1NO+1NC	2m	Without	HS7A-DMC5902	HR1S-DMB1132 HR1S-DMB1132P HR1S-DME1132 HR1S-DME1132P
		With	HS7A-DMC5912	
	5m	Without	HS7A-DMC5905	
		With	HS7A-DMC5915	
	10m	Without	HS7A-DMC59010	
		With	HS7A-DMC59110	
2NO	2m	Without	HS7A-DMC7902	HR1S-AF5130B HR1S-AF5130PB
		With	HS7A-DMC7912	
	5m	Without	HS7A-DMC7905	
		With	HS7A-DMC7915	
	10m	Without	HS7A-DMC79010	
		With	HS7A-DMC79110	

- Package quantity: 1
- The HS7A-DMC non-contact interlock switch is supplied with an HS9Z-ZC1 actuator.
- The contact configuration in the table above shows the contact status when the non-contact interlock switch is not activated.

HR1S Safety Relay Modules for Non-contact Interlock Switches

Safety Relay Module	Voltage	Number of Inputs	Max. Number of Connectable Non-contact Interlock Switches
HR1S-DMB1132	24V DC -20 to +20%	2	12
HR1S-DMB1132P			
HR1S-DME1132		6	
HR1S-DME1132P			
HR1S-AF5130B	24V AC -15 to +10% 50/60 Hz 24V DC -15 to +10%	1	6
HR1S-AF5130PB			

- Safety category 3 can be achieved when connecting two or more non-contact interlock switches per one input.
- When connecting multiple non-contact interlock switches (HS7A-DMC790□), use HR1S-AF5130B/AF5130PB. (HS7A-DMC791□ 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-DMC59□□		HS7A-DMC79□□	
	Without LED	With LED	Without LED	With LED
HR1S-DMB/DME	6	3	—	—
HR1S-AF5130B/AF5130PB	—	—	6	1

Accessory

Name	Part No.
Actuator	HS9Z-ZC1

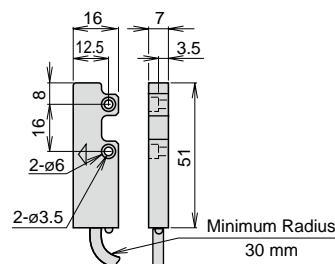
- One HS9Z-ZC1 is supplied with each HS7A-DMC non-contact interlock switch.

Specifications

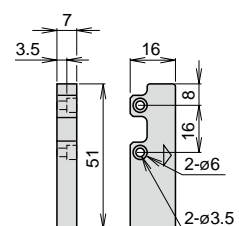
Applicable Standards	IEC/EN 60947-5-1 UL508 (UL listed) CSA C22.2, No. 14	
Operating Temperature	-25 to +85°C (no freezing)	
Relative Humidity	30 to 85% RH (no condensation)	
Storage Temperature	-40 to +85°C (no freezing)	
Pollution Degree	3	
Electric Shock Protection	Class II (IEC 60536)	
Degree of 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)
Housing Material	PBT	
Housing Color	Red	
Cable	AWG23 (0.25 mm ²) × 4 Cable length: 2m, 5m, 10m	
Weight (approx.)	HS7A-DMC: 100g (cable length: 2m) HS9Z-ZC1: 9g	

Dimensions

HS7A-DMC (Non-contact Interlock Switch)



HS9Z-ZC1 (Actuator)



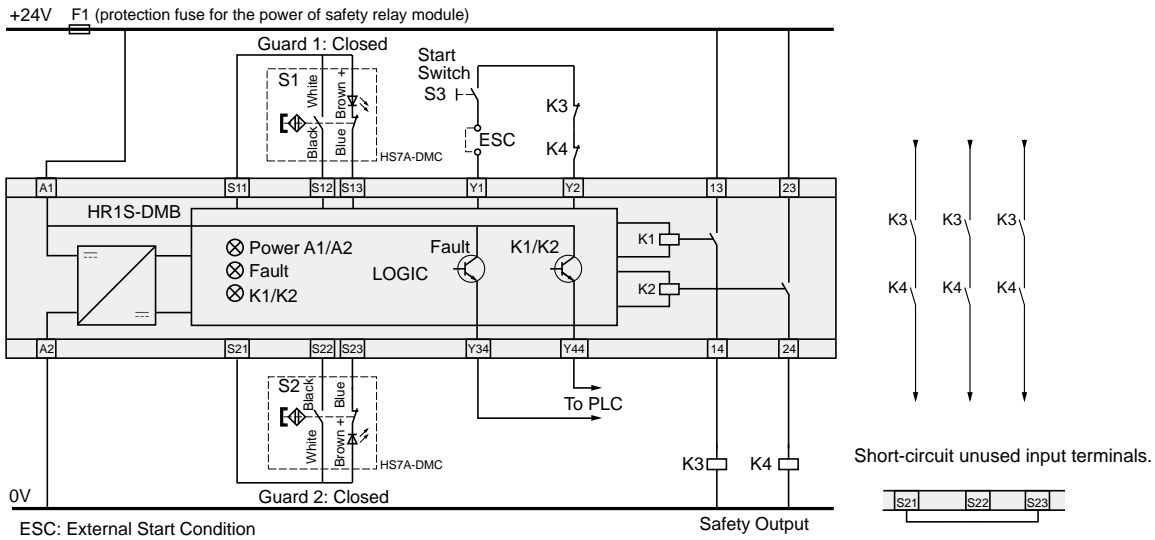
All dimensions in mm.

HS7A-DMC Non-contact Interlock Switches

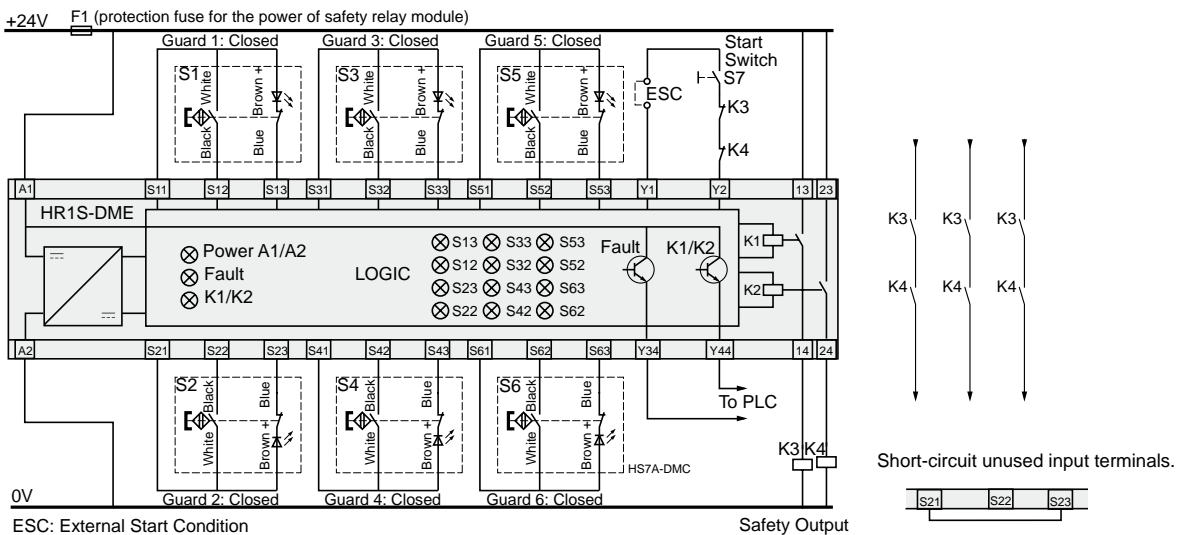
Wiring Diagram

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

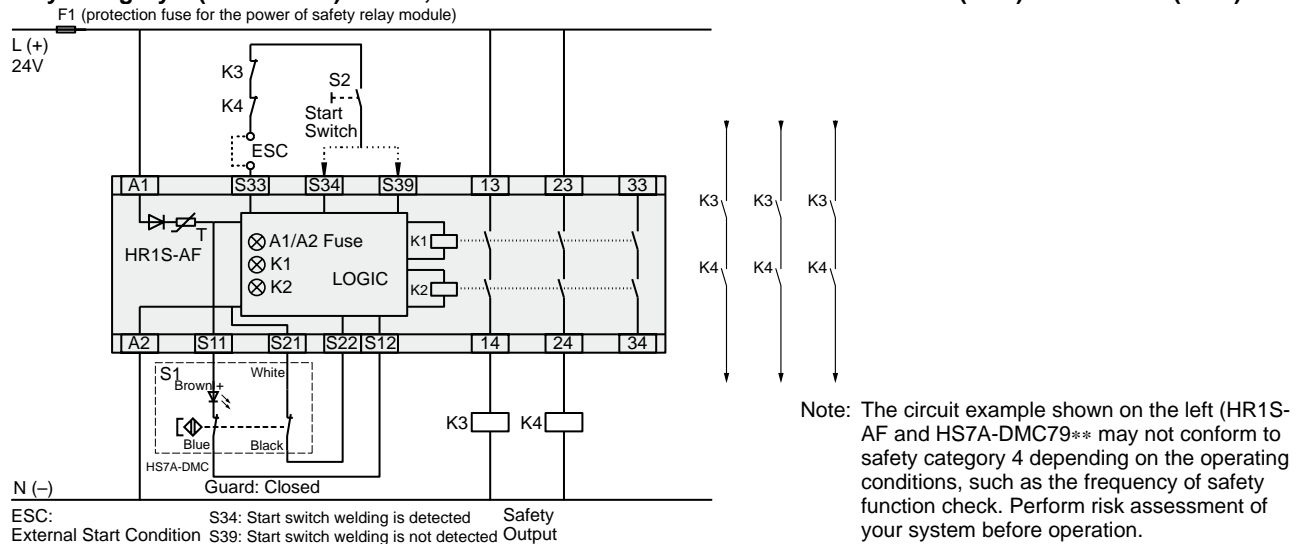
Safety Category 4 (EN 13849-1) Circuit, HR1S-DMB + HS7A-DMC591 (1NO+1NC) + HS9Z-ZC1



Safety Category 4 (EN 13849-1) Circuit, HR1S-DME + HS7A-DMC591 (1NO+1NC) + HS9Z-ZC1

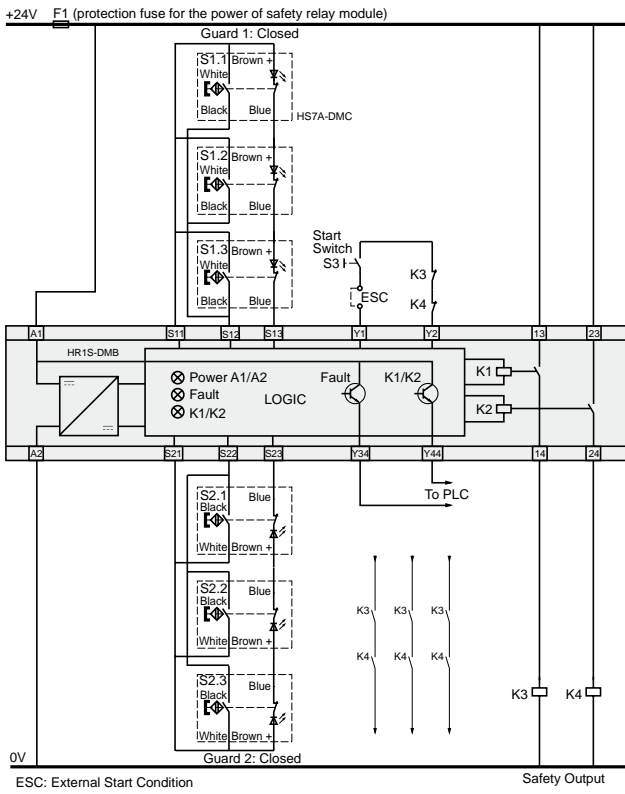


Safety Category 4 (EN 13849-1) Circuit, HR1S-AF5130B/AF5130PB + HS7A-DMC791 (2NO) + HS9Z-ZC1 (Note)

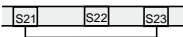


HS7A-DMC Non-contact Interlock Switches

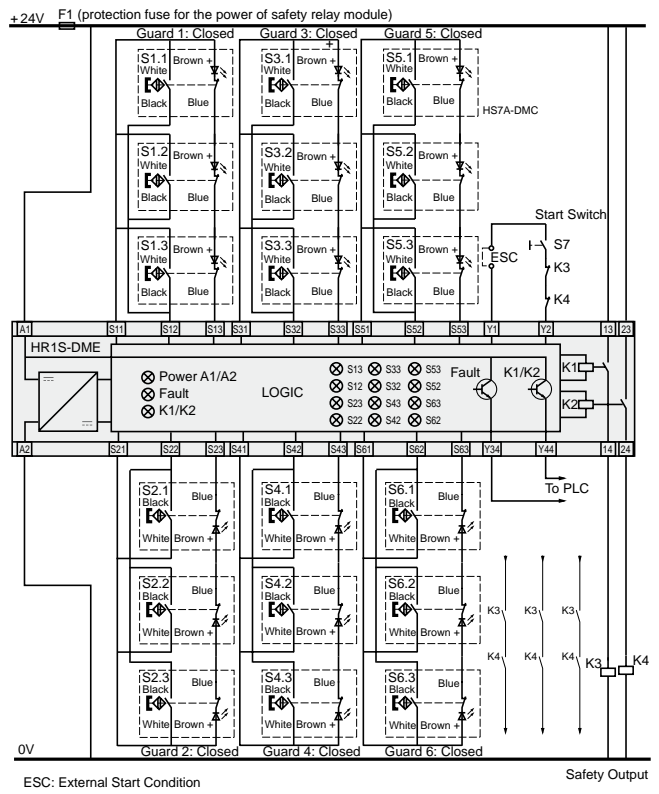
Safety category 3 (EN ISO 13849-1)
HR1S-DMB + HS7A-DMC591□ (1NO+1NC) + HS9Z-ZC1



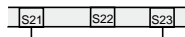
Short-circuit unused input terminals.



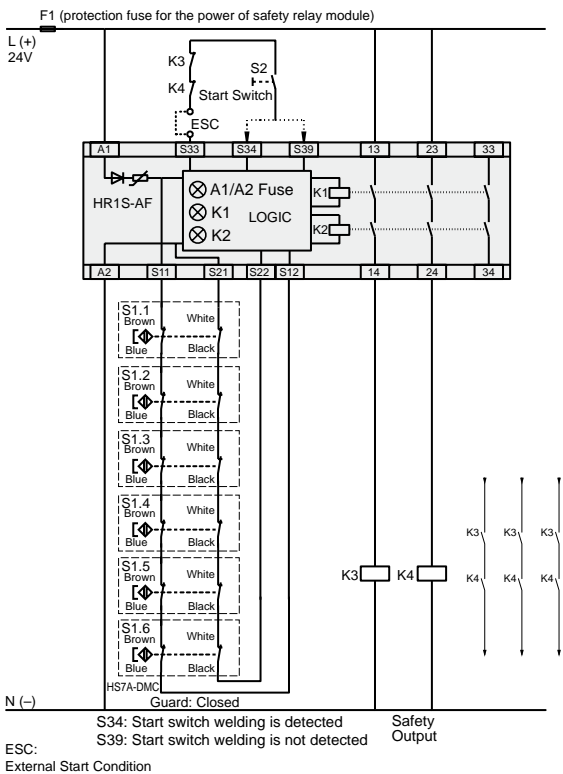
Safety category 3 (EN ISO 13849-1)
HR1S-DME + HS7A-DMC591□ (1NO+1NC) + HS9Z-ZC1



Short-circuit unused input terminals.



Safety category 3 (EN ISO 13849-1)
HR1S-AF5130B/AF5130PB + HS7A-DMC790□ (2NO) + HS9Z-ZC1



S34: Start switch welding is detected
S39: Start switch welding is not detected
ESC: External Start Condition

HS7A-DMC Non-contact Interlock Switches

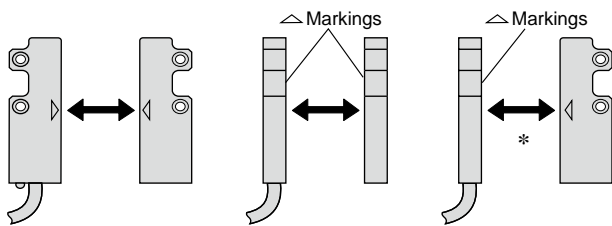
Safety Precautions

- In order to avoid electric shock or fire, turn 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-ZC1. 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 switch.
- Do not store the non-contact interlock switches in a dusty, humid, organic-gas atmosphere, or areas subject to direct sunlight.

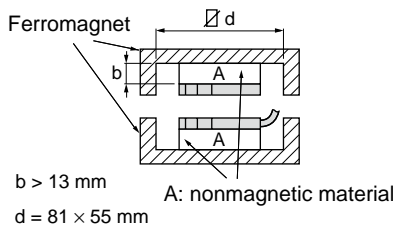
Operating Direction



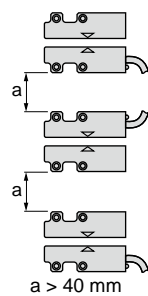
* Safety output ON distance (Sao): 3 mm

Precautions for Installation

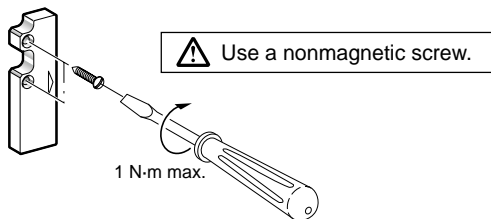
When installing on a ferromagnet



Close mounting

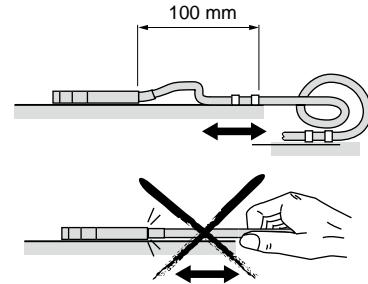


Tightening Torque



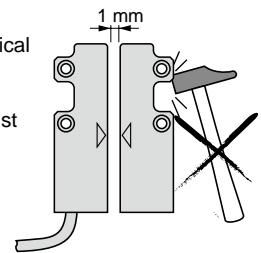
Precaution for Cable Wiring

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

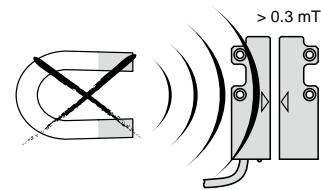


Precautions for Mounting the Actuator

- Do not use the non-contact interlock switch as a mechanical stop for movable guard.
- Do not use a hammer to adjust a position of the non-contact interlock switch.



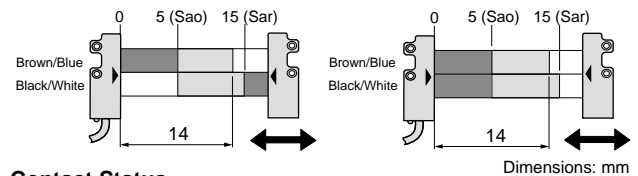
- Do not use the non-contact interlock switch in a magnetic field of 0.3 mT or over.



Operation Chart

HS7A-DMC59□□(1NO+1NC)

HS7A-DMC79□□(2NO)



Contact Status

Contact Closed (1)
Contact Open (0)
Transient State

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

