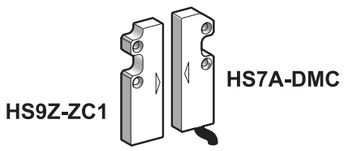
B-673 (6)

INSTRUCTION SHEET

Coded Magnetic Switches
HS7A-DMC



Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

The products have been designed in accordance with the standards in effect : IEC 60947-5-1, EN 60204-1 to ensure the safety of machine operators and machine operating reliability, and have obtained the UL/CSA certifications

SAFETY NOTE

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

HS7A-DMC must be used only in association with a safety control unit. Never use HS7A-DMC without safety control unit.

Failure to follow these instructions can result in death, serious injury or equipment damage.

⚠ CAUTION

The use of the safety relay modules is required for the monitoring of the coded magnetic safety switches.

The products can support up to category 4/PL e (EN ISO13849-1) by combining with a safety control unit*. See instruction sheet and user's manual for wiring with safety control unit.

* Our products include HR5S (Category 2/PL d), HR6S, FS1B, etc.

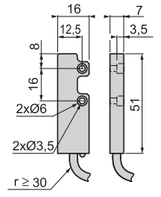
Use the safety switches for an interlocking device in compliance with laws and regulations of the country in which it is being used.

1 Specifications

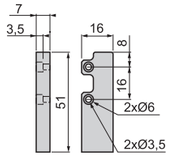
Conforming to standards		IEC / EN 60947-5-1 EN ISO / ISO 14119 UL 508, CSA C22.2 No.14
Interlocking device Type / the level of coded		Type 4 interlocking device / low level coded (EN ISO 14119)
Ambient air temperature		Operation : -13°F to 185°F(-25°C to +85°C) (no freezing) Storage : -40°F to 185°F(-40°C to +85°C) (no freezing)
Vibration resistance		10 gn (10-150 Hz) conforming to IEC 60068-2-6
Shock resistance		30 gn (11 ms) conforming to IEC 60068-2-7
Protection against electric shock		Class Ⅱ as per IEC 60536
Degree of protection		IP67
Degree of pollution		3, conforming to IEC /EN 60947-5-1
Rated operating chatacteristics		Ue = 24VDC Ie = 100 mA
Protection (out of F1 fuse for the safety module protection)		F = 500 mA gG (gL) cartridge fuse (a UL-recognized Type CC fuse in the United States). Optionally, in series with each switch contact.
Repeat accuracy		≤10%
Hysteresis		≤20%
Frequency of operating cycle		150 Hz
Drop out voltage	I=10mA	0,1V without LED; 2,4V with LED
	I=100mA	1V without LED; 4,2V with LED
Functional switches		Closing - Opening
Cable connection		By cable 4 x AWG 23 (0.25mm^2) length 78.74 in, 196.85 in or 393.70 in (2m, 5m, 10m), depending on model

2 Dimensions (mm)

Type No. HS7A-DMC****

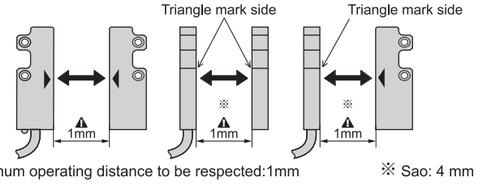


Type No. HS9Z-ZC1



3 Operation

• Functional directions - Minimum distance between the magnet and the sensor



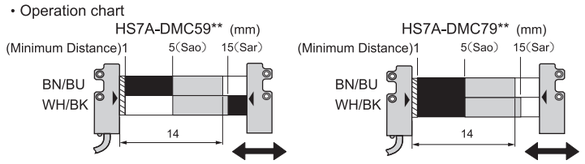
⚠ Minimum operating distance to be respected:1mm ※ Sao: 4 mm

• Contact status

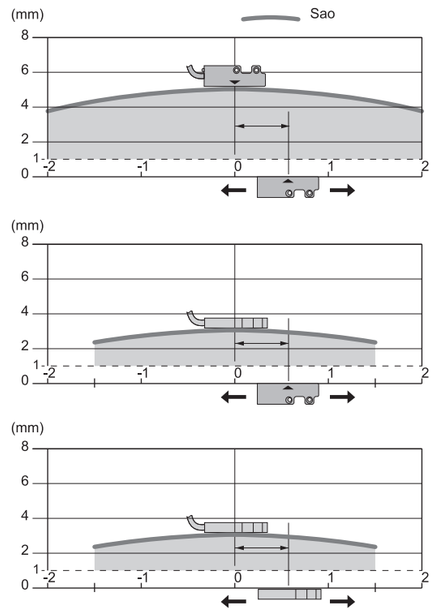
■	Contact closed (1)
□	Contact open (0)
▨	Transient state

Sao : Assured Operation Distance
Sar : Assured Release Distance

• Operation chart



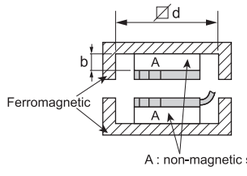
• Sensing area



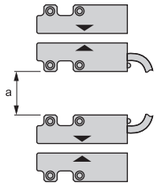
4 Mounting

• Required arrangement wtth ferromagnetic mountlng support

	a	b	▨d
HS7A-DMC	40mm	13mm	81 x 55mm

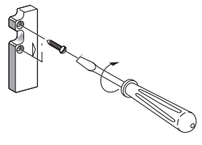


Abjacent set-up



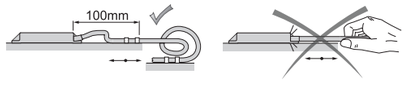
• Tightening torque, Tightening capacity

1 N.m max.



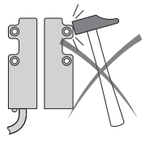
⚠ Use non-magnetic screws only

• Utilisation precautions

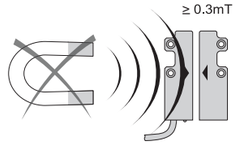


• Adjustment of coded magnetic switches

- Do not use safety switch as a mechanical stop.
- Do not adjust the position of switches using a hammer or other tool likely to exceed the device's shock and vibration tolerances.
- The safety switch fall during the installation may also lead to switch damage.
- The switch and actuator should be aligned by fitting of each shapes



⚠ CAUTION



5 Wiring Diagram

⚠ WARNING

HAZARDOUS VOLTAGE
Disconnect all power before working on equipment.
Electric shock will result in death or serious injury.

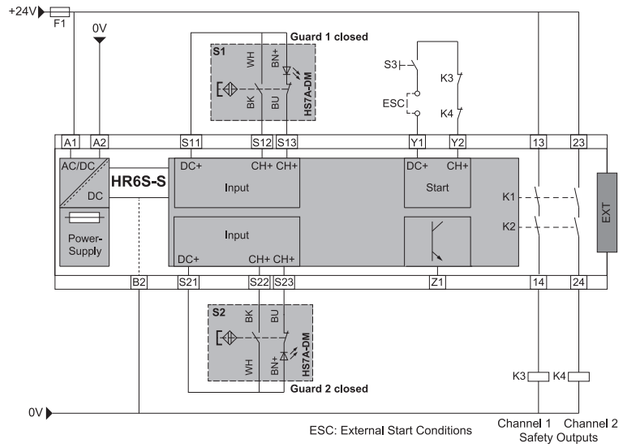
⚠ CAUTION

RISK OF MATERIAL DAMAGE

- Do not connect/disconnect the safety switches when they are powered.
- The safety switches integrate internal non resettable short-circuit protection (fuse resistance). Adding an external fuse (500mA gG) in series with each switch contact can avoid internal protection damage in case of misuse.

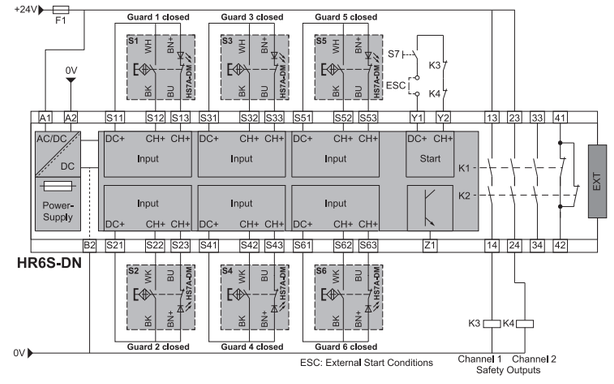
The following Category, PL and SIL are examples. They must be evaluated according to related standards (ISO 14119, etc.) after confirming the usage conditions in the actual application.

Cat. 4 / PL=e (EN/ISO 13849-1) / SIL3 - HR6S-S1* + HS7A-DMC59** (NC+NO) + HS9Z-ZC1



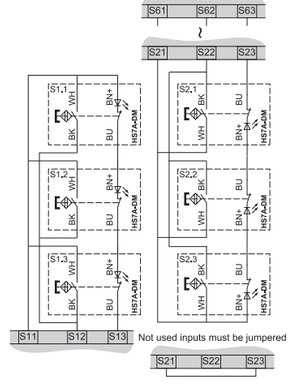
The following Category, PL and SIL are examples. They must be evaluated according to related standards (ISO 14119, etc.) after confirming the usage conditions in the actual application.

Cat. 4 / PL=e (EN/ISO 13849-1) / SIL3 - HR6S-DN1* + HS7A-DMC59** (NC+NO) + HS9Z-ZC1



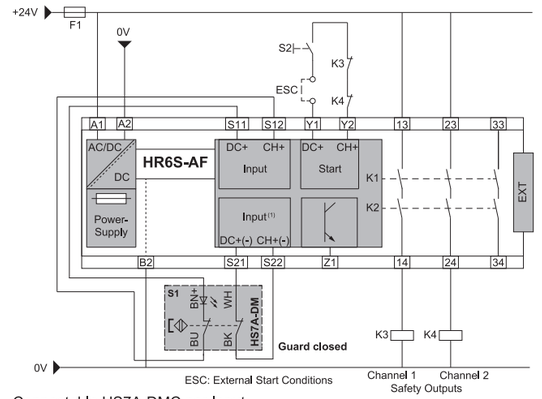
The following Category, PL and SIL are examples. They must be evaluated according to related standards (ISO 14119, ISO TR 24119 etc.) after confirming the usage conditions in the actual application.

Cat. 3 / PL=d (EN/ISO 13849-1) / SIL2 - HR6S-S1*, HR6S-DN1*



The following Category, PL and SIL are examples. They must be evaluated according to related standards (ISO 14119, etc.) after confirming the usage conditions in the actual application.

Cat. 4 / PL=e (EN/ISO 13849-1) / SIL3 - HR6S-AF1* + HS7A-DMC79** (NO+NO) + HS9Z-ZC1



Connectable HS7A-DMC per Input.

	HS7A-DMC59**		HS7A-DMC79**	
	without LED	with LED	without LED	with LED
HR6S-S/DN/AF	6	3	6	3

Type

Type No.	LED	Cable	Contact	Type No.	LED	Cable	Contact
HS7A-DMC5902	without	2m	NO + NC	HS7A-DMC7902	without	2m	NO + NO
HS7A-DMC5912	with			HS7A-DMC7912	with		
HS7A-DMC5905	without	5m		HS7A-DMC7905	without	5m	
HS7A-DMC5915	with			HS7A-DMC7915	with		
HS7A-DMC59010	without	10m		HS7A-DMC79010	without	10m	
HS7A-DMC59110	with			HS7A-DMC79110	with		

IDEC CORPORATION

http://www.idec.com

EU declaration of conformity

Identification of the Product: Coded Magnetic Switch
Name and address of Manufacturer: IDEC CORPORATION
2-6-64 Nishimiyahara, Yodogawa-ku, Osaka 532-0004 Japan
Name and address of the authorized representative: APEM SAS
55, Avenue Edouard Herriot BP1, 82303
Caussade Cedex, France
This declaration of conformity is issued under the sole responsibility of the manufacturer.
Object of the declaration: Series Name – HS7A Series
Model No.: HS7A-DMC59** (** = 02, 12, 05, 15, 010, or 110), HS7A-DMC79** (** = 02, 12, 05, 15, 010, or 110)
The object of the declaration described above is in conformity with the relevant EU harmonization legislation:
2006/42/EC Machinery Directive
2014/35/EU Low Voltage Directive
2014/30/EU Electromagnetic Compatibility Directive
2011/65/EU and (EU) 2015/863 RoHS Directive
Applied Union harmonized legislation and references to the relevant harmonization standards used or references the other technical specifications in relation to which conformity is declared.
EN ISO 13849-1:2015, EN ISO 14119:2013, EN 60204-1:2018, EN 60947-5-1:2017+AC:2020, EN IEC 62061:2021, EN IEC 63000:2018

UK declaration of conformity

Identification of the Product: Coded Magnetic Switch
Name and address of Manufacturer: IDEC CORPORATION
2-6-64 Nishimiyahara, Yodogawa-ku, Osaka 532-0004 Japan
Name and address of the authorized representative: APEM COMPONENTS LIMITED.
Drakes Drive, Long Crendon, Buckinghamshire,
HP18 9BA, UK
This declaration of conformity is issued under the sole responsibility of the manufacturer.
Object of the declaration: Series Name – HS7A Series
Model No.: HS7A-DMC59** (** = 02, 12, 05, 15, 010, or 110), HS7A-DMC79** (** = 02, 12, 05, 15, 010, or 110)
The object of the declaration described above is in conformity with the relevant UK harmonization legislation:
S.I. 2008 No.1597 Supply of Machinery (Safety) Regulations 2008
S.I. 2016 No. 1101 Electrical Equipment (Safety) Regulations 2016
S.I. 2016 No.1091 Electromagnetic Compatibility Regulations 2016
S.I. 2012 No.3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
The products conform with the following standards. :
BS EN ISO 13849-1:2015, BS EN ISO 14119:2013, BS EN 60204-1:2018, BS EN 60947-5-1:2017 + AC:2020, BS EN IEC 62061:2021, BS EN IEC 63000:2018