



DMS Series sensor

Compendium of DMS Series

Two types of sensors

General type(DMS)

General type(Aqua Blue)



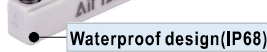
Waterproof, oil and flexure-resistant type(DMS-RW)

Product characteristics:

1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of welding slag, corresponding protective measures shall be taken for the sensor.

Oil resistant and flexural curve material

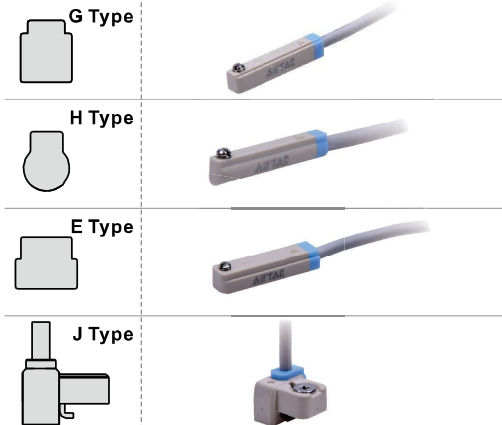
The deflection is increased by about 20% compared with the general type. It can be used in oil dust environment.



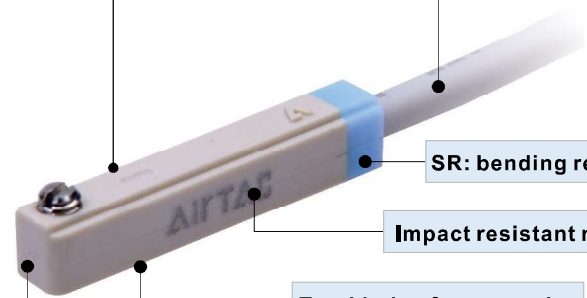
Waterproof design(IP68)

Note: The recommended minimum bending radius of DMS-RW cables is 19mm.

Four types of cross section



Bending resistance

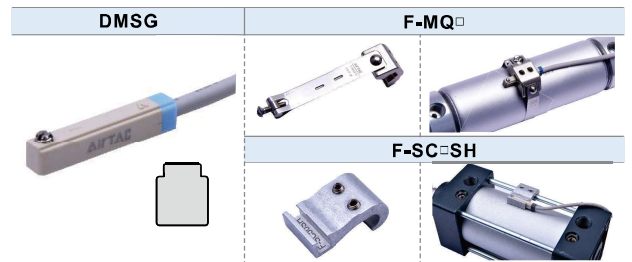


SR: bending resistance

Impact resistant materials

Two kinds of accessories

DMSG can be mounted with 2 accessories, applicable to multi-cylinders.



DMS Specifications

Item	DMS		
Model	2-wire	NPN	PNP
Power supply voltage	10V ~ 28V DC	5V ~ 30V DC	
Switching current	2.5mA ~ 100mA	30V/200mA Max.	
Contact capacity	2.8W Max.	6.0W Max.	
Current consumption	3mA Max.	5mA Max.	
Internal voltage drop	3.5V Max.	0.7V Max.	
Leakage current	0.1mA Max.		
Switching frequency	1000Hz		
Impact resistance	30G		
Circuit protection	Reverse polarity protection		Surge protection
Operating Temp.	-10°C ~ 70°C		
Enclosure	General type : IP64 / Waterproof, oil and flexure-resistant type: IP68		
Standard	CE marking, RoHS		

Ordering code for DMS

DMS G - □ 020 - □					G	H	E	J	M08	M12
1	2	3	4	5						
①Model					DMS : Solid State Sensor					
②Specifications					G H E J					
③Output type					Blank: 2 wire N : NPN P : PNP					
④Lead wire					020: 2m 030: 3m 050: 5m 100: 10m					
					M08:0.5m with M8 plug connector M08010:1m with M8 plug connector M08020:2m with M8 plug connector M08030:3m with M8 plug connector					
					M12:0.5m with M12 plug connector M12010:1m with M12 plug connector M12020:2m with M12 plug connector M12030:3m with M12 plug connector					
⑤Additional specification					Blank: General type RW:Waterproof, oil and flexure-resistant type IP68 [note1]					

[Note1] Waterproof, oil and flexure-resistant type is not available for all series M08, M12 plug connector. Add:The sockets of M08 and M12 need additional order. Please check on page 371.





EMS Series sensor

Compendium of EMS Series

Two types of sensors

General type(EMS)

General type(Aqua Blue)



Waterproof, oil and flexure-resistant type(EMS-RW)

Product characteristics:

1. Flexure resistant curve material can be used in manipulator industry, such as multi joint manipulator and tank chain.
2. In case of high temperature, much dust, or water droplets and oil dust, the sensor shall take corresponding dust-proof measures.

High deflection wire

The deflection is increased by about 20% compared with the general type



Note: The recommended minimum bending radius of EMS-RW cables is 19mm.

Bending resistance

SR: bending resistance

Impact resistant materials

High cylinder installation flexibility

EMSG is the mini type corresponding to DMSG, which can be used for long and short strokes.
EMSH is the mini type corresponding to DMSH, which can be used for long and short strokes.

Two types of cross section

G Type: General type(Aqua Blue)



H Type: General type(Aqua Blue)



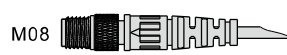
EMS Specifications

Item	EMS
Model	2-wire
Power supply voltage	10V ~ 28V DC
Switching current	2.5mA ~ 100mA
Contact capacity	2.8W Max.
Current consumption	3mA Max.
Internal voltage drop	3.5V Max.
Leakage current	0.1mA Max.
Switching frequency	1000Hz
Impact resistance	30G
Circuit protection	Reverse polarity protection Surge protection
Operating Temp.	-10°C ~ 70°C
Enclosure	General type: IP64 / Waterproof, oil and flexure-resistant type: IP68
Standard	CE marking, RoHS

Ordering code for EMS

EMS G - □ 020 - □

① ② ③ ④ ⑤



① Model	EMS : Solid State Sensor			
② Specifications	G H			
③ Output type	Blank: 2 wire			
④ Lead wire	020: 2m 030: 3m 050: 5m 100: 10m			
	M08:0.5m with M8 plug connector M08010:1m with M8 plug connector M08020:2m with M8 plug connector M08030:3m with M8 plug connector			
⑤ Additional specification	Blank: General type RW:Waterproof, oil and flexure-resistant type IP68			

[Note1] Waterproof, oil and flexure-resistant type is not available for all series M08, M12 plug connector.
Add:The sockets of M08 and M12 need additional order. Please check on page 371.





CMS Series sensor

Compendium of CMS Series

Type of sensors

General type(CMS)

General type(blue) High temperature type (red)

Bending resistance

SR: bending resistance

Impact resistant materials

Two kinds of accessories

CMSG can be mounted with 2 accessories, applicable to multi-cylinders.

Four types of cross section

G Type H Type E Type J Type

CMSG **F-MQ** **F-SC=SH**

CMS Specifications

Item	CMS	
	General	Heat resistant
Model	General	Heat resistant
Power supply voltage	5V ~ 30V AC/DC	
Switching current	100mA	
Contact capacity	10W Max.	
Current consumption	N/A	
Internal voltage drop	2.5V Max. @100mA DC	N/A
Leakage current	N/A	
Switching frequency	200Hz	
Impact resistance	30G	
Circuit protection	N/A	
Operating Temp.	-10°C ~ 70°C	-10°C ~ 125°C
Enclosure	IP64	
Standard	CE marking, RoHS	

Ordering code for CMS

CMS G - 020 - □

1 2 3 4

G H E J M08 M12

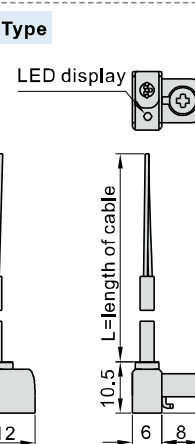
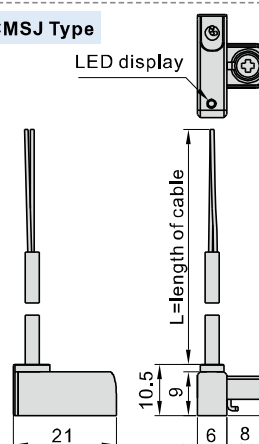
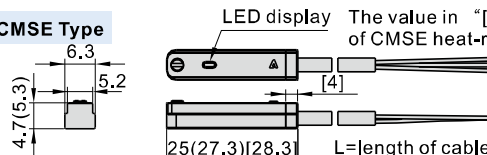
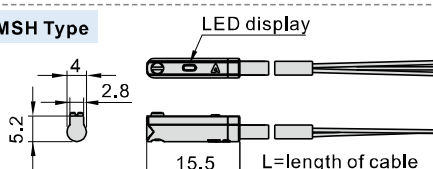
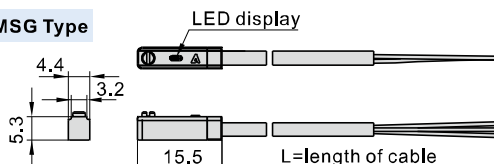
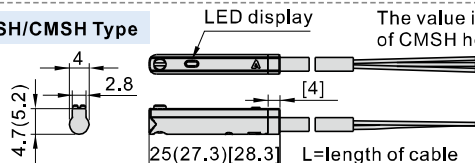
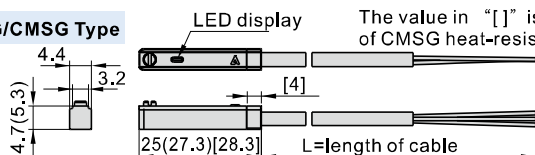
①Model		CMS : Reed Sensor			
②Specifications		G	H	E	J
③Lead wire	Direct lead wire	020: 2m	030: 3m	050: 5m	100: 10m
	Plug connector	M08:0.5m with M8 plug connector M08010:1m with M8 plug connector M08020:2m with M8 plug connector M08030:3m with M8 plug connector	M12:0.5m with M12 plug connector M12010:1m with M12 plug connector M12020:2m with M12 plug connector M12030:3m with M12 plug connector		
④Additional specification		Blank: General type		H:Heat resistant [note1]	

[Note1] M08 and M12 has no heat resistant option.

Add:The sockets of M08 and M12 need additional order. Please check on page371.

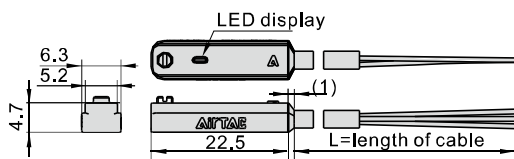


Ordering code for accessories

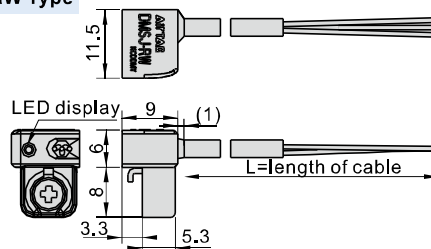


DMS, EMS, CMS Series

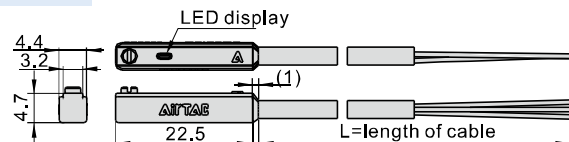
DMSJ-RW Type



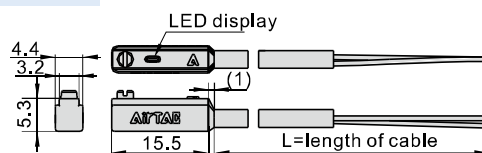
DMSG-RW Type



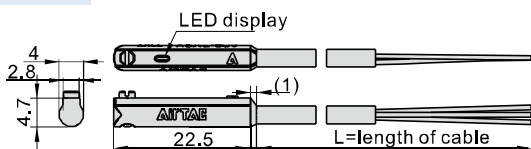
DMSH-RW Type



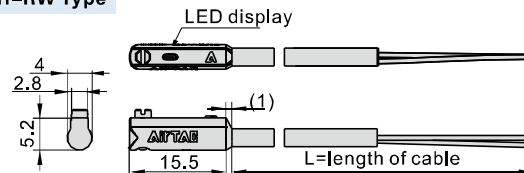
EMSG-RW Type



DMSH-RW Type



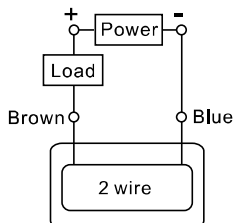
EMSH-RW Type



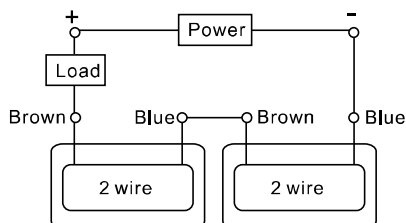
Connection method

2 wire, reed sensor connection

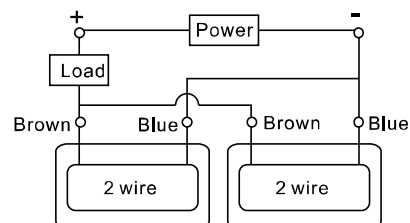
1.General connection



2.Series connection(And)

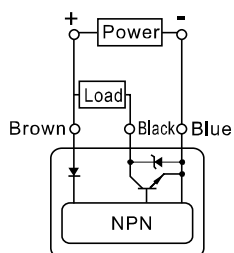


3.Parallel connection(OR)



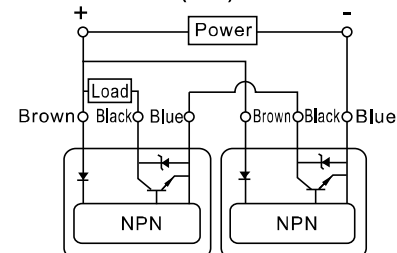
3 wire, solid state NPN connection

1.General connection

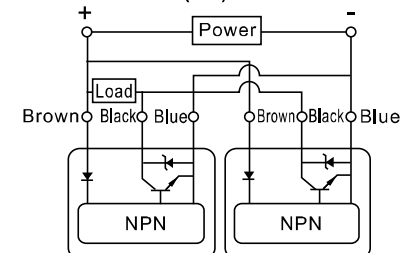


Note: The indicator lights will light up when both auto switches are turned NO.

2.Series connection(And)

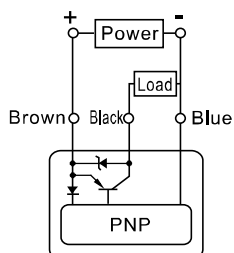


3.Parallel connection(OR)



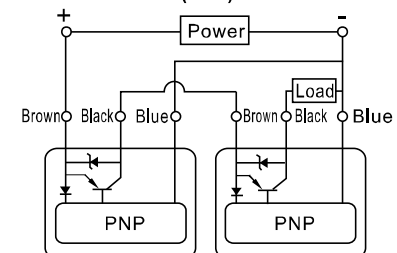
3 wire, solid state PNP connection

1.General connection

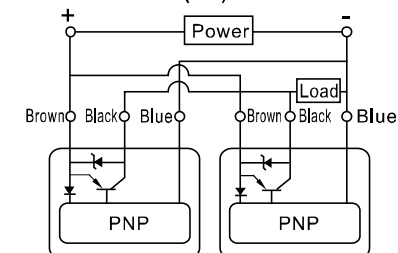


Note: The indicator lights will light up when both auto switches are turned NO.

2.Series connection(And)



3.Parallel connection(OR)



DMS, EMS, CMS Series

The selection of sensor

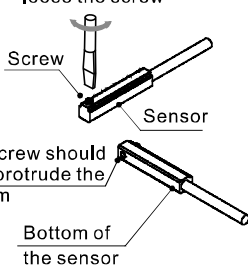
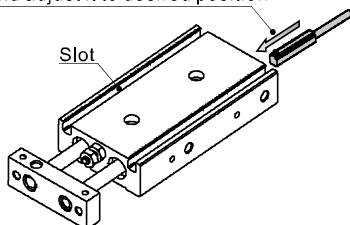
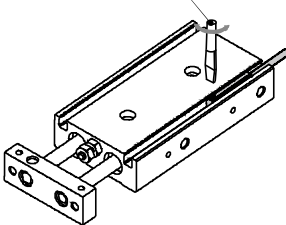
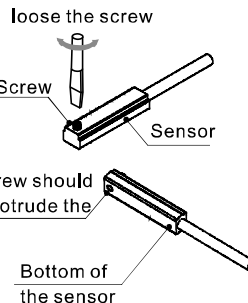
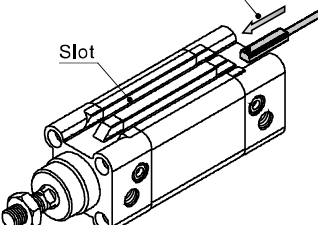
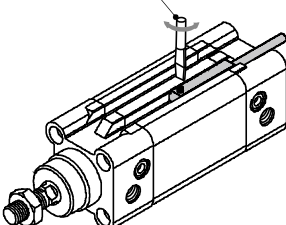
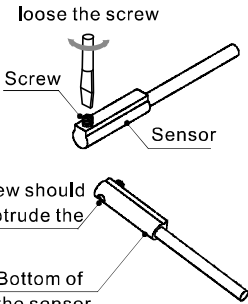
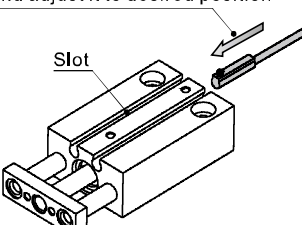
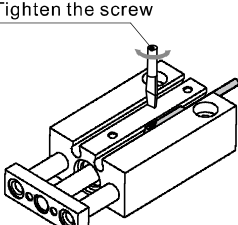
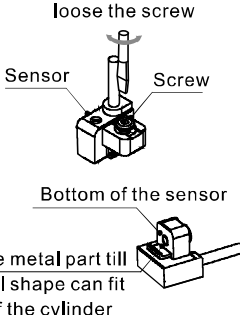
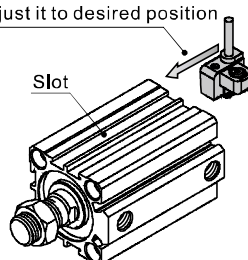
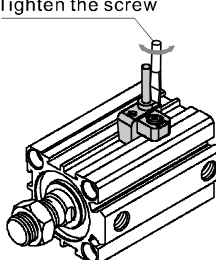
DMSG	CMSG	EMSG	HFKL										MCK										ACQ/TACQ										ACQ				RMTL	RMT	SDA/RMT/RMTL										SDA									
			10	16	20	25	32	40	50	63	80	12	16	20	25	32	40	50	63	80	100	125	140	160	10	16	20	25	32	40	50	63	80	100																								
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		HFK	HFK/HFKP				HFK	TCL/TCM										QCK										TR																														
			10	16	20	25	32	40	6	10	12	16	20	25	32	40	50	63	80	100	12	16	20	25	32	40	50	63	6	10	16	20	25	32																								
			•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																					
		Stainless steel																																																								
		PB/PBR				MI		MI/TMI				MI		MF				MG				MA/MAC																																				
		6	8	10	12	16	8	10	12	16	20	25	32	40	20	25	32	40	20	25	32	40	50	63	16	20	25	32	40	50	63																											
		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																						
		Aluminum alloy										It needs an accessory to mount a sensor on a cylinder																																														
MBL				MCK																																																						
			20	25	32	40	50	63	40	50	63	80																																														
			•	•	•	•	•	•	•	•	•	•																																														
		SC										SGC				It needs an accessory to mount a sensor on a cylinder																																										
		32	40	50	63	80	100	125	160	200	250	125	160	200	250																																											
		•	•	•	•	•	•	•	•	•	•	•	•	•	•																								•																			

DMSJ	CMSJ	ACQ/TACQ										SDA										QCK				QDK				TN								
		32	40	50	63	80	100	12	16	20	25	32	40	50	63	80	100	32	40	50	63	20	25	32	40	10	16	20	25	32								
		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				

DMSH	CMSH	EMSH	ACQ			TC	HFZ										HFY	HFP	HFR				HFC						HFT														
			125	140	160	6	10	6	10	16	20	25	32	40	6	32	10	16	20	25	32	16	20	25	32	40	50	63	10	16	20	25	32										
			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
		QDK			HLQ/HLQL						HLS/HLSL						MU				HLH				MPG																		
			20	25	32	40	6	8	12	16	20	25	6	8	12	16	20	25	6	8	10	12	16	20	6	10	16	20	6	8	10	12	16										
			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
		HRQ			HFK						HLF				HGS				RMH				HFD																				
			2	3	7	10	20	30	50	70	100	200	10	16	20	25	32	40	8	12	16	20	6	8	10	12	10	16	20	25	8	12	16	20	25								
			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
HFKL			HFCQ						HRS						HFKP				Note: HFZ6/HFY6 can not use CMSH sensors; HGS6/QDK20/25 can not use CMSH/DMSH sensors; HGS8/10/12 can not use CMSH sensors;																								
			10	16	20	25	16	20	25	32	40	50	63	10	15	20	30	40											16	20	25	32											
			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					

DMSE	CMSE	SAI/TSAI						SAI			ACE			ACE/JSI													
		32	40	50	63	80	100	125	160	200	12	16	20	25	32	40	50	63	80	100	125						
		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						

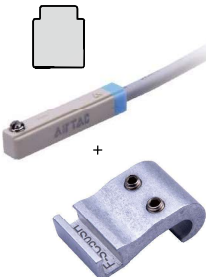
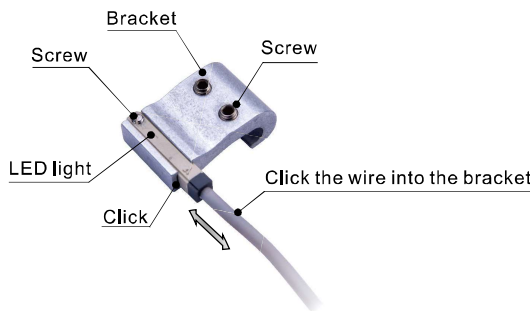
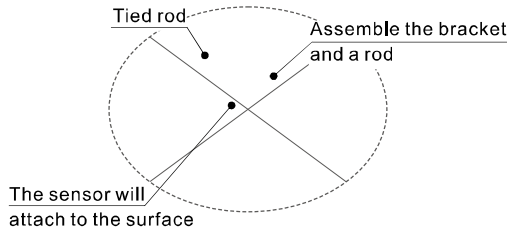
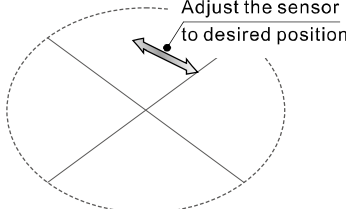
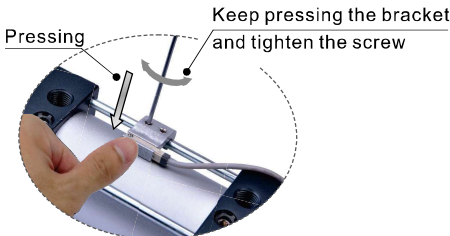
Installation

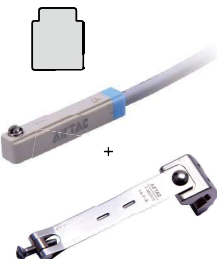
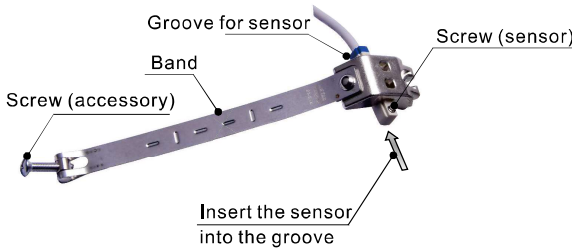
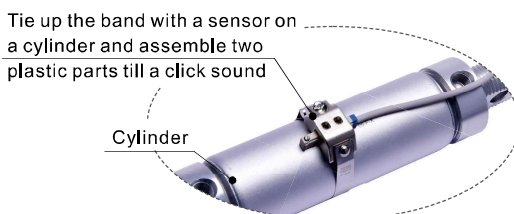
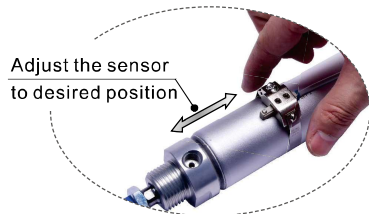
Sensor model	Procedure		
DMSG/CMMSG/EMSG	1 loose the screw Screw Sensor The screw should NOT protrude the bottom Bottom of the sensor 	2 Insert the sensor into the slot and adjust it to desired position Slot 	3 Tighten the screw 
DMSE/CMSE	1 loose the screw Screw Sensor The screw should NOT protrude the bottom Bottom of the sensor 	2 Insert the sensor into the slot and adjust it to desired position Slot 	3 Tighten the screw 
DMSH/CMSH/EMSH	1 loose the screw Screw Sensor The screw should NOT protrude the bottom Bottom of the sensor 	2 Insert the sensor into the slot and adjust it to desired position Slot 	3 Tighten the screw 
DMSJ/CMSJ	1 loose the screw Sensor Screw Bottom of the sensor Adjust the metal part till the lateral shape can fit the slot of the cylinder 	2 Insert the sensor into the slot and adjust it to desired position Slot 	3 Tighten the screw 

Sensor

DMS、EMS、CMS Series

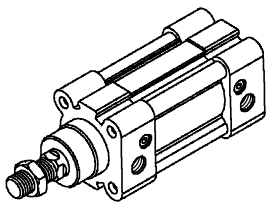
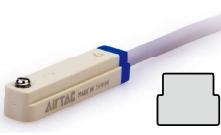
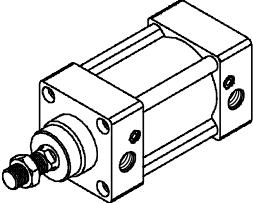
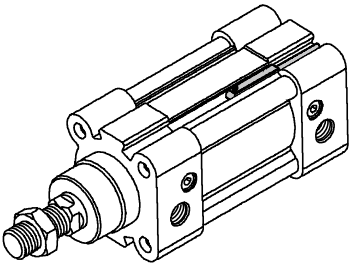
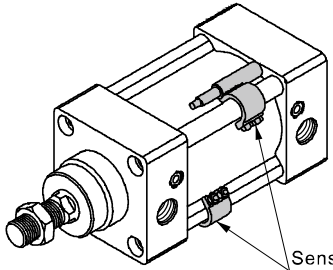
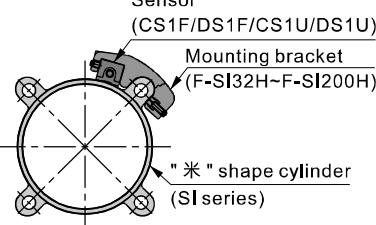
Sensor model	Procedure	
DMSG+(F-SC□SH) CMSG+(F-SC□SH)	1	2
	3	4
DMSG+(F-MQ□) CMSG+(F-MQ□)	1	2
	3	4

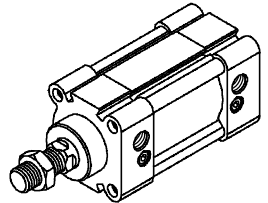
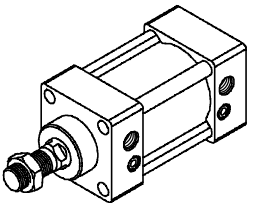
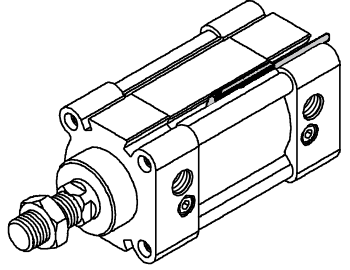
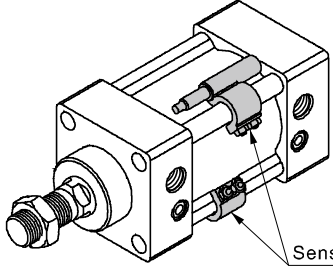
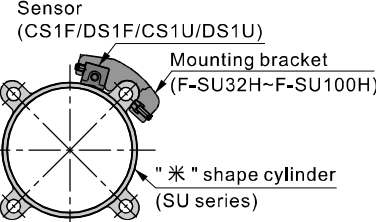
		
		

Sensor for "米" shape cylinder

SAI, SAU series will substitute for SI, SU series. And the corresponding sensors have some adjustments as the chart below.

New type(SAI)		Previous type(SI)		
Cylinder	Sensor	Cylinder	Sensor	
Cylinder and accessory 	 CMSE \ DMSE		 CS1B1 / DS1B1 CS1B2 / DS1B2 CS1B3 / DS1B3 CS1B4 / DS1B4 CS1B5 / DS1B5 CS1B6 / DS1B6 CS1B7 / DS1B7	CS1F/DS1F/CS1U/DS1U + F-SI32H/F-SI40H F-SI50H/F-SI63H F-SI80H/F-SI100H F-SI125H/F-SI160H F-SI200H
Installation 			 Sensor (CS1F/DS1F/CS1U/DS1U) Mounting bracket (F-SI32H~F-SI200H) "米" shape cylinder (SI series)	

New type(SAU)		Previous type(SU)		
Cylinder	Sensor	Cylinder	Sensor	
Cylinder and accessory 	 DMSG \ CMSG \ EMSG		 CS1B1 / DS1B1 CS1B2 / DS1B2 CS1B3 / DS1B3 CS1B4 / DS1B4	CS1F/DS1F/CS1U/DS1U + F-SU32H/F-SU40H F-SU50H/F-SU63H F-SU80H/F-SU100H
Installation 			 Sensor (CS1F/DS1F/CS1U/DS1U) Mounting bracket (F-SU32H~F-SU100H) "米" shape cylinder (SU series)	

Socket

Ordering code

F-EC M08 B 020 - □

① ② ③ ④ ⑤ ⑥

① Category code

② Specification code

③ Socket type

④ Wire type

⑤ Wire length

⑥ Additional specification

F : Accessory

EC : Connecting Wire

M08:M8 socket

M12:M12 socket

B: 2-wire type

C:3-wire type

020: 2 meters

030:3meters

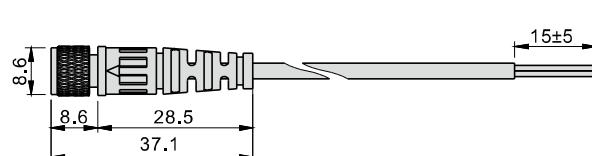
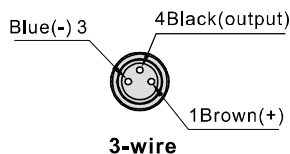
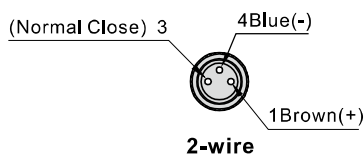
050:5meters

100:10meters

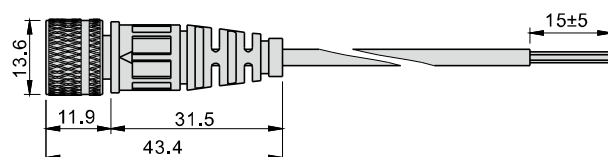
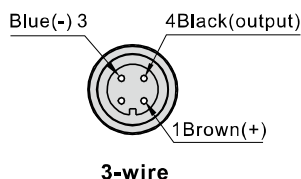
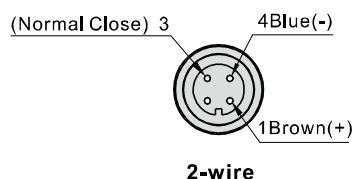
Blank: General type

Appearance

M8 socket



M12 socket



Instruction

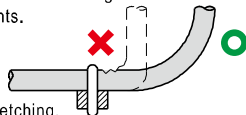
- Sensor shall not fall down or bear great impact when it is installed.
- The wire of the Sensor shall not move with the action of cylinder.
- Clamping torque shall be within the allowable scope when the Sensor is installed(0.15~0.2Nm).
- Sensor shall be installed in the middle position of the action scope.
- Sensor wiring:
 - The wire is unable to bear repetitive torsion and tension.
Please wire an external load before switch the power on.
 - No poor insulation in wire.
 - Do not wire with power line, high voltage line or use one wiring pipe.
 - Please wire the circuit correctly base on the circuit diagram.

- Execute scheduled maintenance by the following guidelines:
 - Make sure the sensor is firmly fixed.
 - Make sure the wire is intact.
 - Make sure that LED indicate the movement of cylinder correctly.
- Application of environment:
 - It is Not allow to use the sensor in the environment with explosive gas.
 - Magnetic sensor shall not be used in the environment with external magnetism.
 - Magnetic sensor shall not be used in the environment that is always eroded by water.
 - Magnetic sensor shall not be used in the environment with oil moisture or chemical substance.
 - Magnetic sensor shall not be used in the environment with periodically changing temperature.
 - Magnetic sensor shall not be used in the environment with excessively great impact.
 - Magnetic sensor shall not be used in the environment with sources of electrical pulse.
 - Avoid the environment with accumulated iron power and dense magnetic objects.

Precautions for wiring

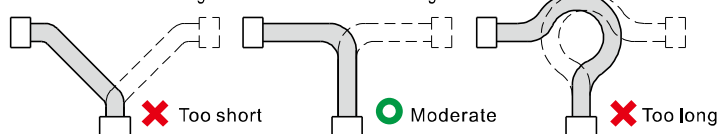
Do not install the wires in the following ways, as it may result in wire breakage accidents.

- Do not excessively bend or tighten the cables at the tie points.



- Cables should be routed to avoid repeated bending and stretching, as bending stress and tensile force can cause wire breakage.

When installing in oscillating conditions, be sure to account for the cable's bending allowance to avoid excessive stretching that could lead to wire breakage.



- When fixing and laying cables (without considering oscillation), the bending radius (R) of the cables should be as large as possible.



- Do not bundle multiple cables together (especially cables or pneumatic tubes with different outer diameters) at the bending points.



- Precautions for Cable Carrier Use:

- Bending Radius of the Cable Carrier: The bending radius (R) should be 10 times or greater than the outer diameter of the cable.
- Prevent Twisting of Cables during Wiring: Cables inside the cable carrier should not be twisted. Place the cables horizontally or suspend them to eliminate any twisting.
- Avoid Over-fixing Inside the Cable Carrier: When wiring, ensure that no tension is applied to the cables, and do not fix the cables to movable parts. Secure the cables only at the two fixed ends of the cable carrier.

