



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

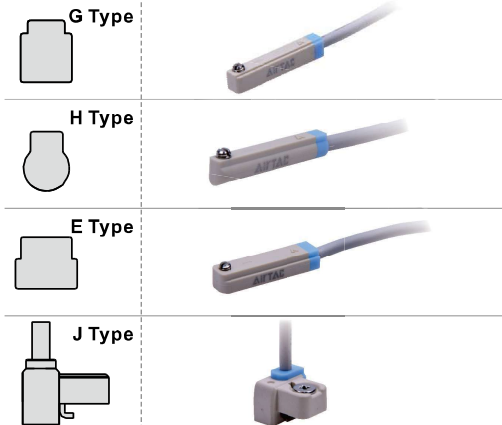
The deflection is increased by about 20% compared with the general type. It can be used in oil dust environment.



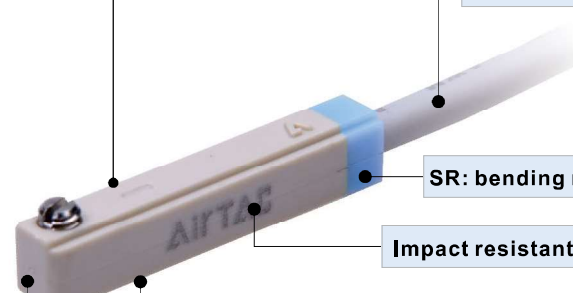
Waterproof design(IP68)

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

Four types of cross section



Bending resistance

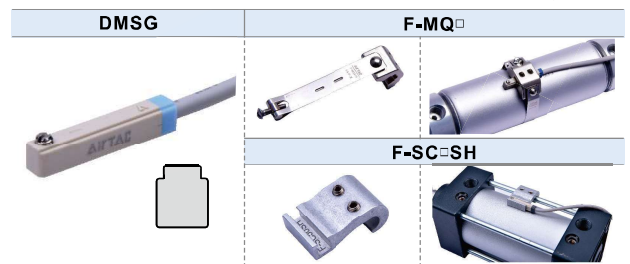


SR: bending resistance

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	0.05mA Max.	0.01mA 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 - □

① ② ③ ④ ⑤

G H E J

M08 M12

① Model	DMS : Solid State Sensor			
② Specifications	G	H	E	J
③ Output type	Blank: 2 wire N : NPN P : PNP			
④ Lead wire	020: 2m 030: 3m 050: 5m 100: 10m			
⑤ Additional specification	Blank: General type RW: Waterproof, oil and flexure-resistant type: IP68[Note 1]			

[Note 1] 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 573.





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)



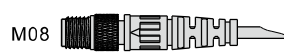
EMS Specifications

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	0.06mA 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
Note	Temperature overheat protection

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	Direct lead wire	020: 2m	030: 3m	050: 5m	100: 10m
	Plug connector [Noet1]	M08:0.5m with M8 plug connector		M12:0.5m with M12 plug connector	
		M08010:1m with M8 plug connector		M12010:1m with M12 plug connector	
		M08020:2m with M8 plug connector		M12020:2m with M12 plug connector	
		M08030:3m with M8 plug connector		M12030:3m with M12 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 573.



Compendium of CMS Series

Type of sensors

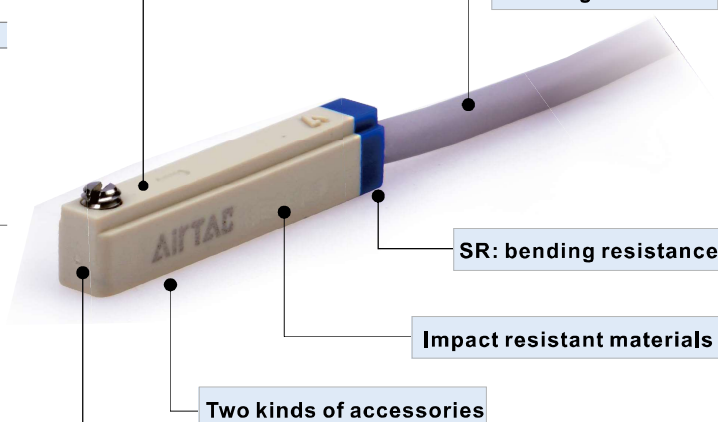
General type(CMS)

General type(blue)

High temperature type (red)



Bending resistance



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

Four types of cross section

G Type



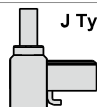
H Type



E Type



J Type



CMS Specifications

Item	CMS	
Model	General	Heat resistant
Power supply voltage	5V ~ 240V 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

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		M12:0.5m with M12 plug connector	
		M08010:1m with M8 plug connector		M12010:1m with M12 plug connector	
		M08020:2m with M8 plug connector		M12020:2m with M12 plug connector	
		M08030:3m with M8 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 page 573.

Ordering code for accessories

F - MQ □			Cylinder Accessory									
①	②	③										
			F : Accessory									
			MQ : Cylinder Accessory									
			Aluminum alloy			Aluminum alloy (Thick type)			Stainless steel			
			Code	For series	For bore size	Code	For series	For bore size	Code	For series	For bore size	
			A20: Φ20mm	MCK	Φ20	A32T: Φ32mm	TWG	Φ32	S06: Φ6mm	PB/PBR MI MF MG MA/MAC	Φ6	
			A25: Φ25mm		Φ25	A40T: Φ40mm		Φ40	S08: Φ8mm		Φ8	
			A32: Φ32mm		Φ32	A50T: Φ50mm		Φ50	S10: Φ10mm		Φ10	
			A40: Φ40mm		Φ40			S12: Φ12mm	Φ12			
			A50: Φ50mm	MBL	Φ50		S16: Φ16mm	Φ16				
			A63: Φ63mm		Φ63		S20: Φ20mm	Φ20				
			A80: Φ80mm		Φ80		S25: Φ25mm	Φ25				
							S32: Φ32mm	Φ32				
							S40: Φ40mm	Φ40				
							S50: Φ50mm	Φ50				
							S63: Φ63mm	Φ63				



F - SC □ SH Tie Rod Cylinder Accessory				F : Accessory			
①	②	③	④	SC : Tie Rod Cylinder Accessory			
Category	Model	Cylinder	Attached	Aluminum alloy			
				Code	For series	For bore size	Stainless steel
				32	SC SGC	Φ32, Φ40	
				50		Φ50	
				63		Φ63	
				80		Φ80, Φ100	
				125		Φ125	
				160		Φ160, Φ200	
				250		Φ250	

Dimensions

DMSG/CMMSG Type

The value in "[]" is dimension of CMMSG heat-resistant type.

Note: The value in "()" is dimension of CMMSG type.

DMSE/CMSE Type

The value in "[]" is dimension of CMSE heat-resistant type.

Note: The value in "()" is dimension of CMSE type.

DMSH/CMSH Type

The value in "[]" is dimension of CMSH heat-resistant type.

Note: The value in "()" is dimension of CMSH type.

CMSJ Type

DMSJ Type

EMSG Type

Note: a number in the bracket is the dimension of CMSH.

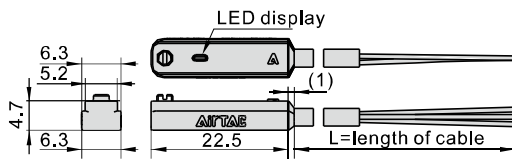
EMSH Type

length of cable specification	length of cable(L)
020 Type	2000mm
030 Type	3000mm
050 Type	5000mm

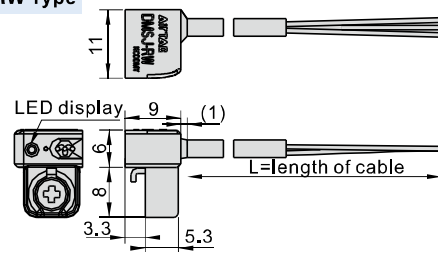
length of cable specification	length of cable(L)
020 Type	2000mm
030 Type	3000mm
050 Type	5000mm

DMS, EMS, CMS Series

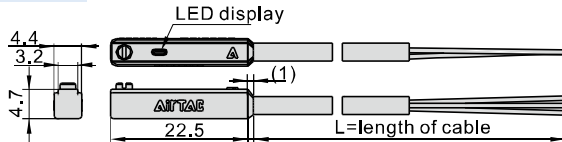
DMSE-RW Type



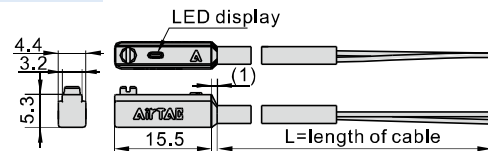
DMSJ-RW Type



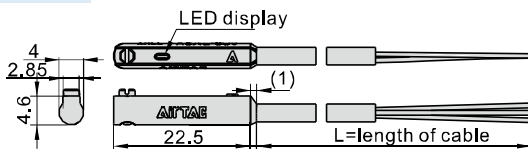
DMSG-RW Type



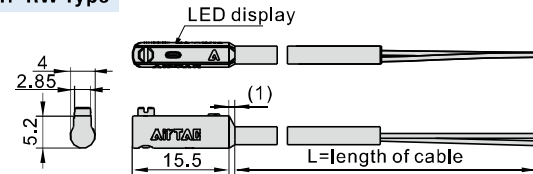
EMSG-RW Type



DMSH-RW Type



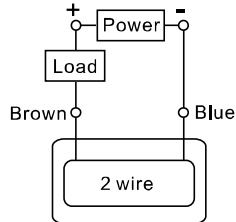
EMSH-RW Type



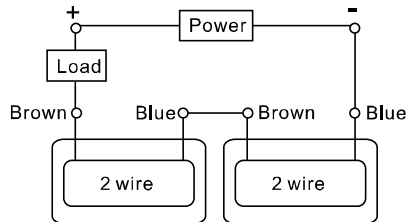
Connection method

2 wire, reed sensor connection

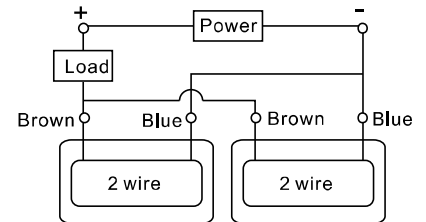
1.General connection



2.Series connection(And)

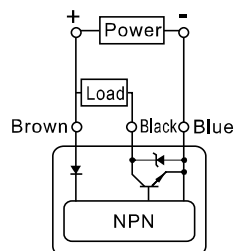


3.Parallel connection(OR)



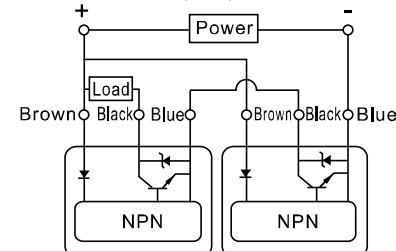
3 wire, solid state NPN connection

1.General connection

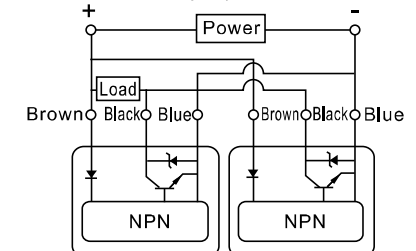


Note: The indicator lights will light up when both auto switches are turned NO.

2.Series connection(And)

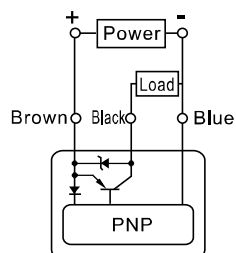


3.Parallel connection(OR)



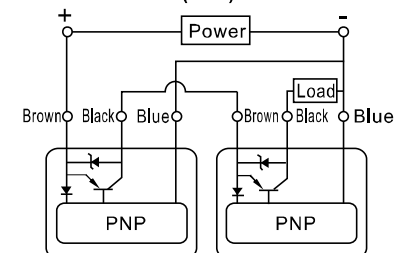
3 wire, solid state PNP connection

1.General connection

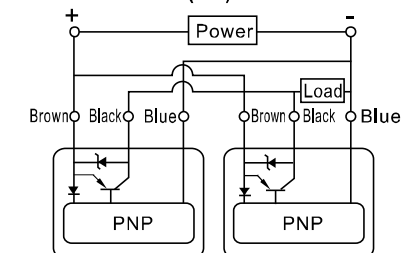


Note: The indicator lights will light up when both auto switches are turned NO.

2.Series connection(And)



3.Parallel connection(OR)

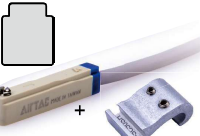


Sensor

DMS、EMS、CMS Series

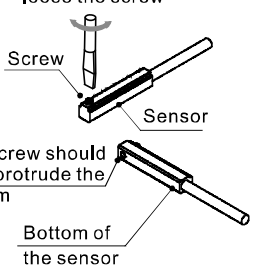
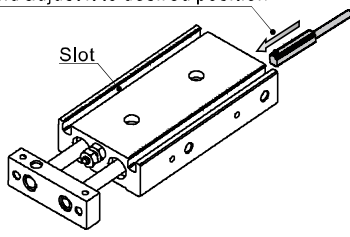
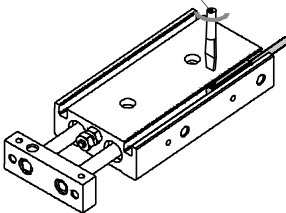
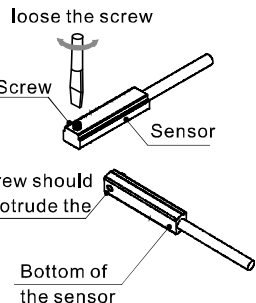
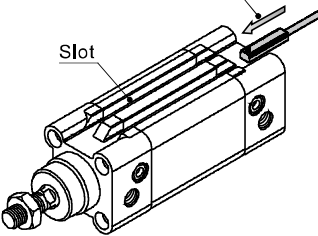
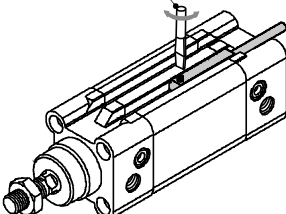
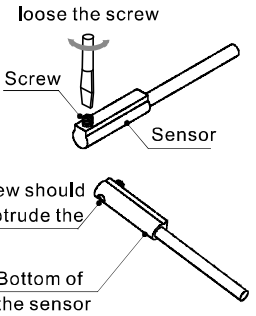
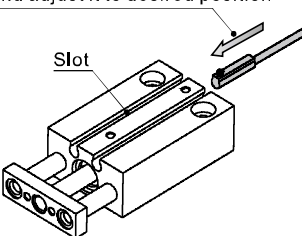
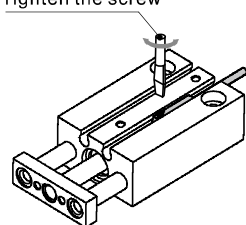
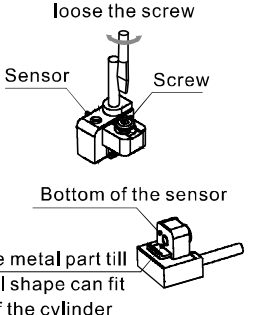
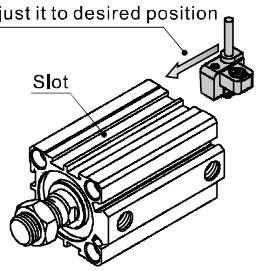
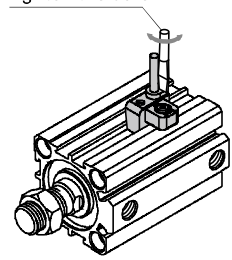
The selection of sensor

[illegible]

	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																				
	SGC				It needs an accessory to mount a sensor on a cylinder																									
	125	160	200	250																										
	•	•	•	•																										

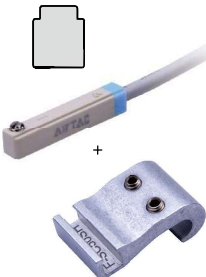
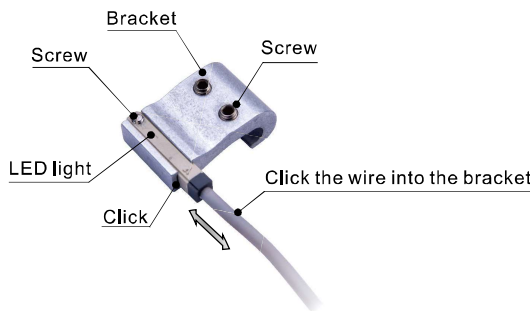
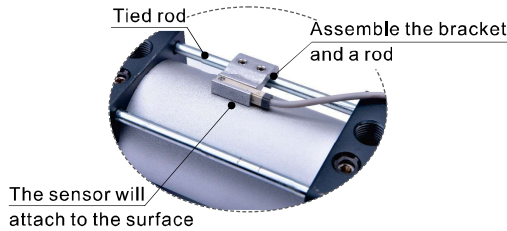
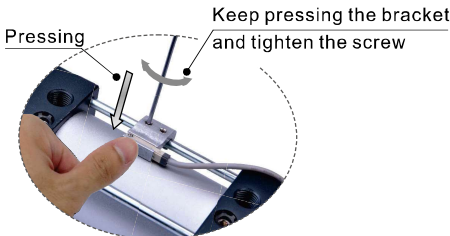
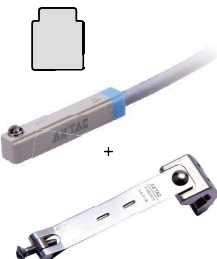
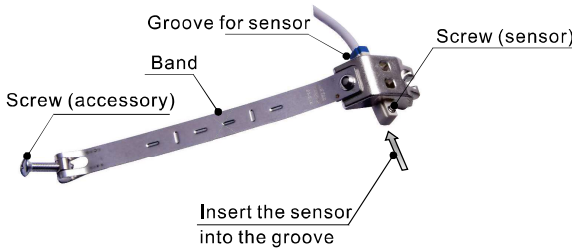
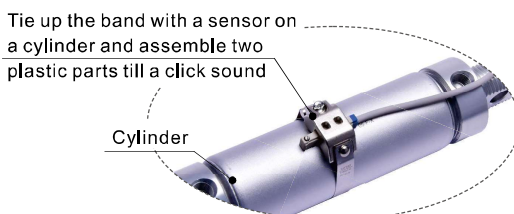
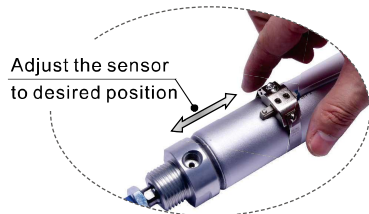
[illegible][illegible][illegible]

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

DMSG、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			

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			

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

(Normal Close) 3

4Blue(-)

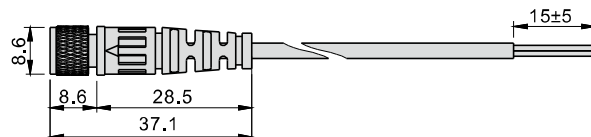
2-wire

Blue(-) 3

4Black(output)

1Brown(+)

3-wire



M12 socket

(Normal Close) 3

4Blue(-)

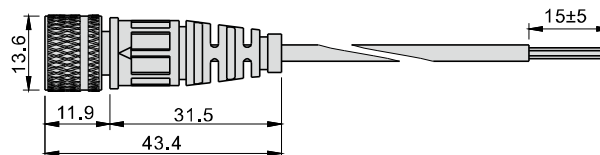
2-wire

Blue(-) 3

4Black(output)

1Brown(+)

3-wire



Instruction

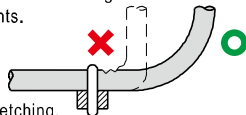
- Sensor shall not fall down or bear great impact when it is installed.
- The wire of the Sensor shall not move with the action of cylinder.
- Clamping torque shall be within the allowable scope when the Sensor is installed(0.15~0.2Nm).
- Sensor shall be installed in the middle position of the action 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

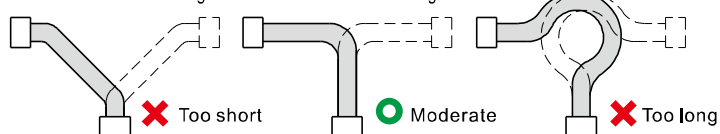
Do not install the wires in the following ways, as it may result in wire breakage accidents.

- 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.

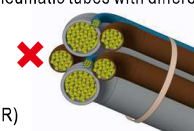
When installing in oscillating conditions, be sure to account for the cable's bending allowance to avoid excessive stretching that could lead to wire breakage.



- 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.

