



Compendium of DMS Series

Three types of sensors

| General type(DMS) | Waterproof type(Yellow) |
|---|--|
| General type(Aqua Blue) | Waterproof type(Yellow) |
| Manipulator industry(A05-DMS) | Oil resistance and deflection resistance (A06-DMS) |
| <p>Product characteristics:</p> <ol style="list-style-type: none"> 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. | <p>Product characteristics:</p> <ol style="list-style-type: none"> 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. |

High deflection wire

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

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)

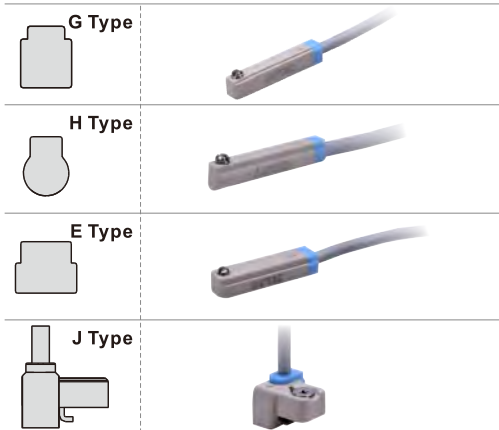
Two kinds of accessories

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

| DMSG | F-MQ□ |
|------|----------------|
| | |
| | F-SC=SH |
| | |

Note: The recommended minimum bending radius of A05-DMS, A06-DMS cables is 19mm.

Four types of cross section



DMS Specifications

| Item | DMS | | |
|-----------------------|--|----------------|-----|
| | 2-wire | NPN | PNP |
| Model | | | |
| 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 | 50G | | |
| Circuit protection | Reverse polarity protection Surge protection | | |
| Operating Temp. | -10°C ~ 70°C | | |
| Enclosure | DMS, A05-DMS: IP64 / A06-DMS: IP68 | | |
| Standard | CE marking, RoHS | | |

[Note] A05 \ A06 type has only two-wire type.

Ordering code for DMS

| | | | |
|--------------------------|--|--|--|
| DMS G - □ 020 - □ | | | |
| A05-DMS G - □ 020 | | | |
| A06-DMS G - □ 020 | | | |

① ② ③ ④ ⑤ ⑥

| | |
|----------------------------|---|
| ① Industry code | Blank: General type A05: Manipulator industry A06: Oil resistance and deflection resistance |
| ② Model | DMS : Solid State Sensor |
| ③ Specifications | G H E J [Noet1] |
| ④ Output type | Blank: 2 wire N : NPN [Noet2] P : PNP |
| ⑤ Lead wire | Direct lead wire |
| | Plug connector [Noet3] |
| ⑥ Additional specification | Blank: General type W: Waterproof type IP68 [note4] |

[Note1] Type J is not available for A06. [Note2] A05 and A06 have no NPN and PNP option. [Note3] A05 and A06 have no plug connector option. [Note4] A05, J type and M08, M12 don't have a-w Waterproof option. Standard A06 model already has a waterproof function. Add: The sockets of M08 and M12 need additional order. Please check on page 374.





Compendium of EMS Series

Three types of sensors

| | |
|---|--|
| General type(EMS) | |
| General type(Aqua Blue) | Waterproof type(Yellow) |
| | |
| Manipulator industry(A05-EMS) | Oil resistance and deflection resistance (A06-EMS) |
| <p>Product characteristics:</p> <ol style="list-style-type: none"> 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. | <p>Product characteristics:</p> <ol style="list-style-type: none"> 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. |
| High deflection wire | Oil resistant and flexural curve material |
| The deflection is increased by about 20% compared with the general type | The deflection is increased by about 20% compared with the general type. It can be used in oil dust environment. |
| | |
| | Waterproof design(IP68) |

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.

Note: The recommended minimum bending radius of A05-EMS, A06-EMS cables is 19mm.

Two types of cross section

| | | |
|---------------|-------------------------|-------------------------|
| G Type | General type(Aqua Blue) | Waterproof type(Yellow) |
| | | |
| H Type | General type(Aqua Blue) | Waterproof type(Yellow) |
| | | |

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 | 50G |
| Circuit protection | Reverse polarity protection Surge protection |
| Operating Temp. | -10°C ~ 70°C |
| Enclosure | EMS, A05-EMS: IP64 / A06-EMS: IP68 |
| Standard | CE marking, RoHS |
| Note | Temperature overheat protection |

Ordering code for EMS

| | | | | | | | | | | |
|----------------------------|---|---|---|---|---|-----|--|-----|--|--|
| EMS G - □ 020 - □ | | G | | H | | M08 | | M12 | | |
| A05-EMS G - □ 020 | | | | | | | | | | |
| A06-EMS G - □ 020 | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | | | | | |
| ① Industry code | Blank: General type A05: Manipulator industry A06: Oil resistance and deflection resistance | | | | | | | | | |
| ② Model | EMS : Solid State Sensor | | | | | | | | | |
| ③ Specifications | G H | | | | | | | | | |
| ④ Output type | Blank: 2 wire | | | | | | | | | |
| ⑤ Lead wire | Direct lead wire | 020: 2m 030: 3m 050: 5m 100: 10m | | | | | | | | |
| | Plug connector [Noet1] | 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 | | | | | | |
| ⑥ Additional specification | Blank: General type W:Waterproof type IP68 [note2] | | | | | | | | | |

[Note1]A05 and A06 have no plug connector option. [Note2]A05 and A06 don't have a-w Waterproof option. Standard A06 model has a waterproof function. Add:The sockets of M08 and M12 need additional order. Please check on page 374.





Compendium of CMS Series

Two types of sensors

General type(CMS)

General type(blue) High temperature type (red)

Manipulator industry(A05-CMS)

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

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 ~ 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 | 50G | |
| 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 - □

A05-CMS G - 020

① ② ③ ④ ⑤

| | |
|----------------------------|--|
| ① Industry code | Blank: General type A05: Manipulator industry |
| ② Model | CMS : Reed Sensor |
| ③ Specifications | G H E J |
| ④ Lead wire | Direct lead wire |
| | Plug connector [Noet1] |
| ⑤ Additional specification | Blank: General type H:Heat resistant [note2] |

020: 2m 030: 3m 050: 5m 100: 10m

| | |
|----------------------------------|-----------------------------------|
| 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 |

[Note1]A05 has no plug connector option. [Note2]A05 has no heat resistant option.
Add:The sockets of M08 and M12 need additional order. Please check on page374.




Ordering code for accessories

F - MQ □ **Cylinder Accessory**



| | | | | | | | | | |
|-------------------|-------------------------|------------|---------------|-----------------------------|------------|---------------|-----------------|--------------|---------------|
| ① Category | F : Accessory | | | | | | | | |
| ② Model | MQ : Cylinder Accessory | | | | | | | | |
| ③ Cylinder | 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 | Φ6 |
| | A25: Φ25mm | | Φ25 | A40T: Φ40mm | | Φ40 | S08: Φ8mm | | Φ8 |
| | A32: Φ32mm | MBL | Φ32 | A50T: Φ50mm | | Φ50 | S10: Φ10mm | MA/MAC | Φ10 |
| | A40: Φ40mm | | Φ40 | | | | S12: Φ12mm | | Φ12 |
| | A50: Φ50mm | | 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**

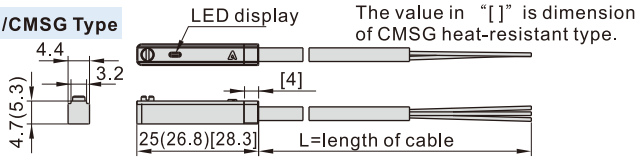


| | | | |
|-------------------|---------------------------------|------------|---------------|
| ① Category | F : Accessory | | |
| ② Model | SC : Tie Rod Cylinder Accessory | | |
| ③ Cylinder | Code | For series | For bore size |
| | 32 | SC SGC | Φ32, Φ40 |
| | 50 | | Φ50 |
| | 63 | | Φ63 |
| | 80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

DMS, EMS, CMS Series

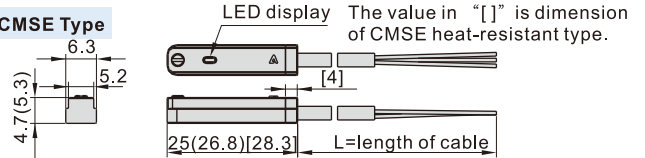
Dimensions

DMSG/CMSG Type



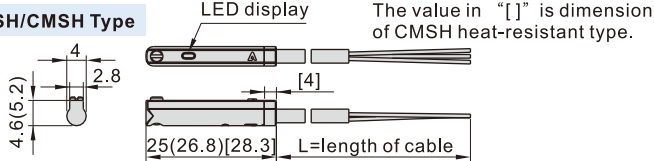
Note: The value in “()” is dimension of CMSG type.

DMSE/CMSE Type



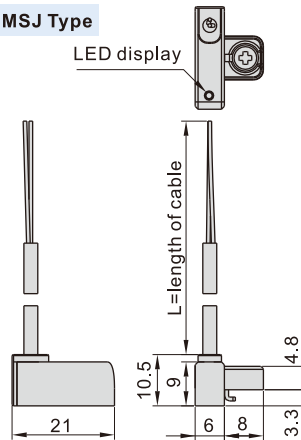
Note: The value in “()” is dimension of CMSE type.

DMSH/CMSH Type

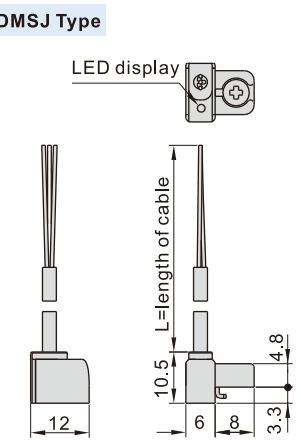


Note: The value in “()” is dimension of CMSH type.

CMSJ Type

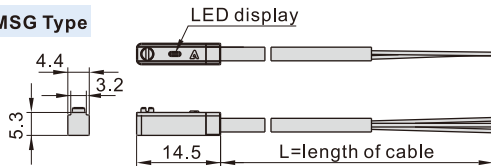


DMSJ Type

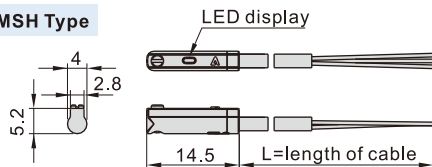


| length of cable specification | length of cable(L) |
|-------------------------------|--------------------|
| 020 Type | 2000mm |
| 030 Type | 3000mm |
| 050 Type | 5000mm |

EMSG Type



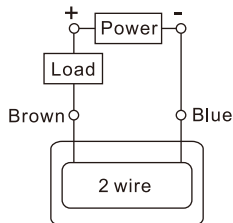
EMSH Type



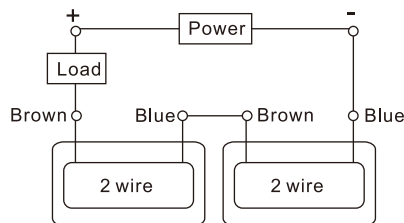
Connection method

2 wire, reed sensor connection

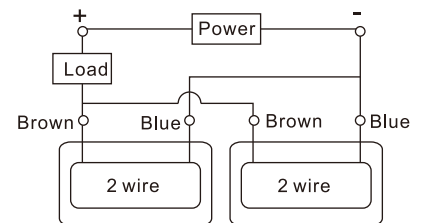
1.General connection



2.Series connection(And)

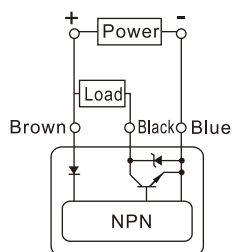


3.Parallel connection(OR)



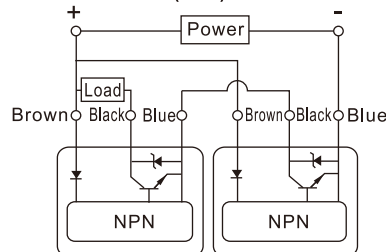
3 wire, solid state NPN connection

1.General connection

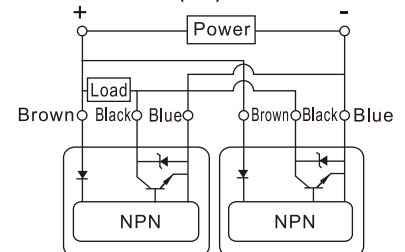


Note: The indicator lights will light up when both auto switches are turned NO.

2.Series connection(And)

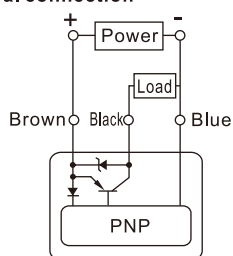


3.Parallel connection(OR)



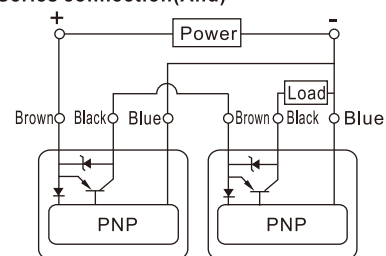
3 wire, solid state PNP connection

1.General connection

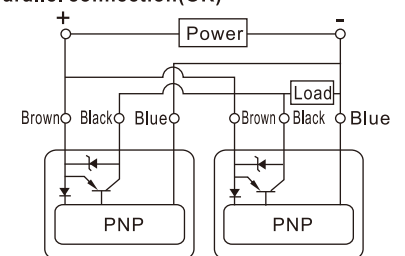


Note: The indicator lights will light up when both auto switches are turned NO.

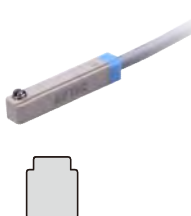
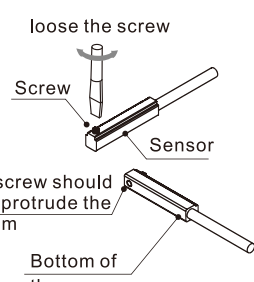
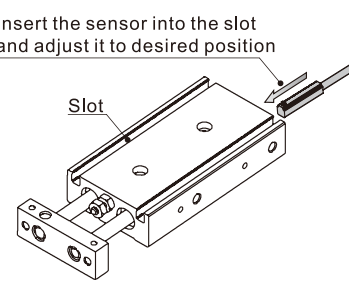
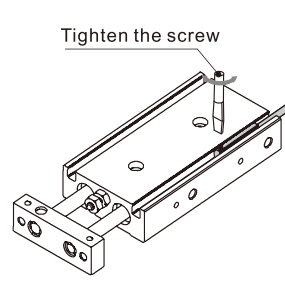

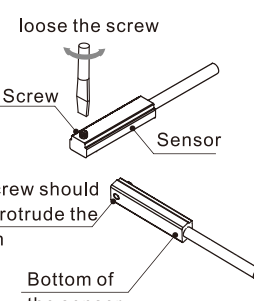
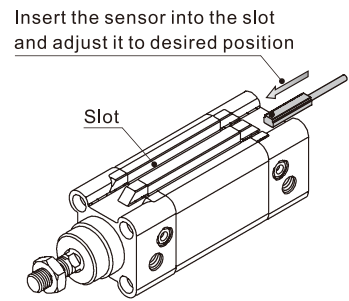
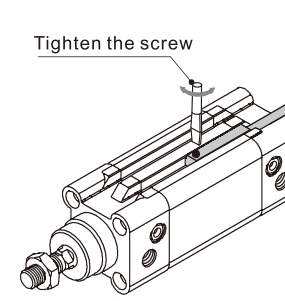

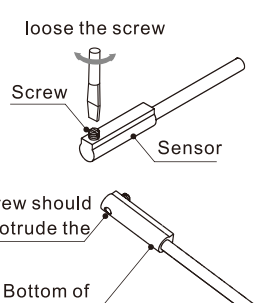
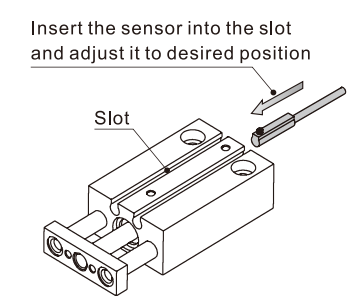
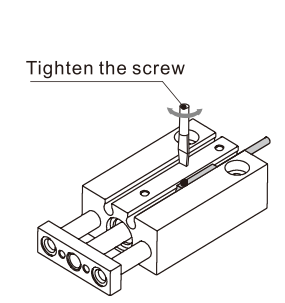
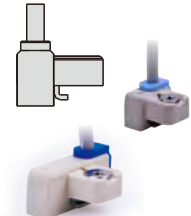
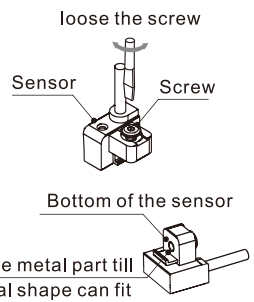
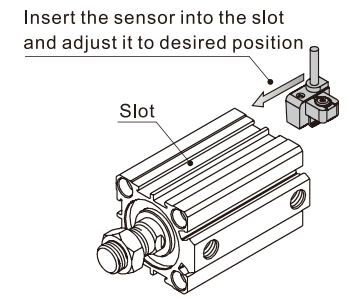
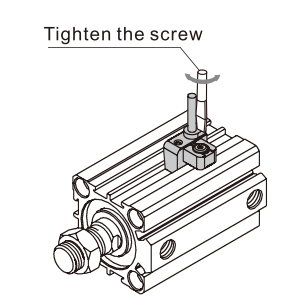
2.Series connection(And)




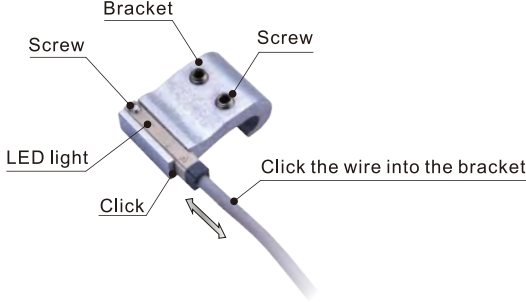

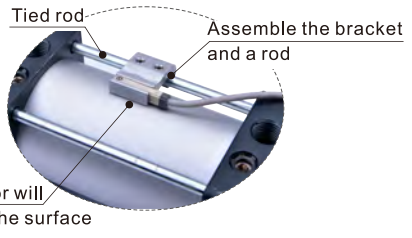
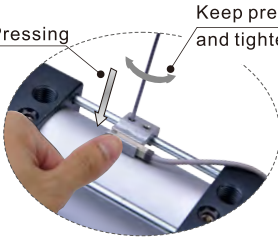

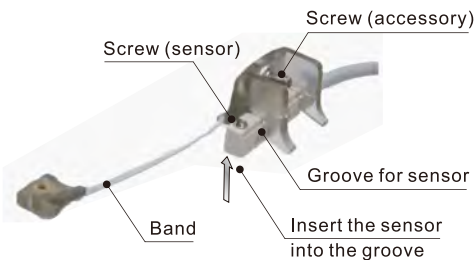
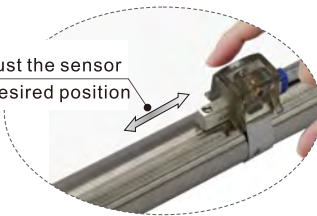
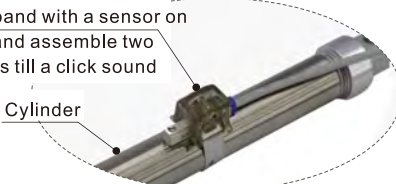
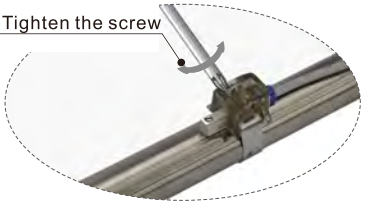
3.Parallel connection(OR)



Installation

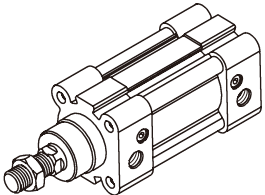

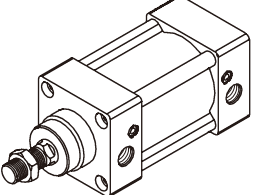


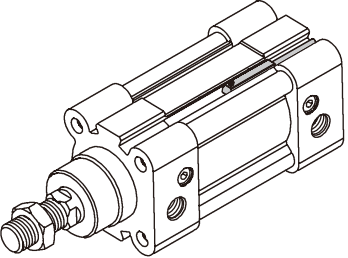
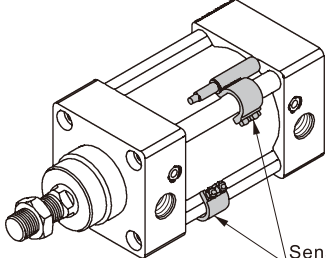
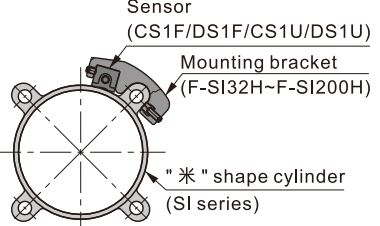
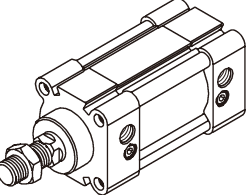

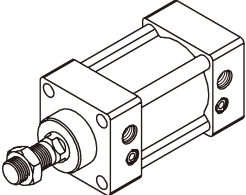


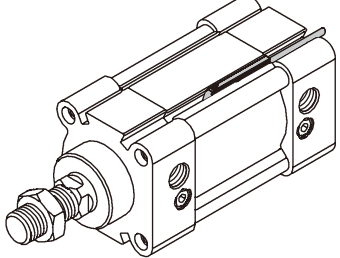
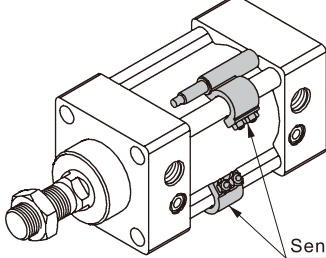
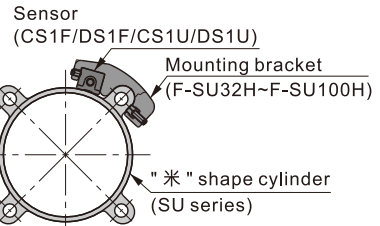
| Sensor model | Procedure | | |
|---|--|---|--|
| DMSG/CMSG/EMSG  | 1  <p>loose the screw</p> <p>Screw</p> <p>Sensor</p> <p>The screw should NOT protrude the bottom</p> <p>Bottom of the sensor</p> | 2  <p>Insert the sensor into the slot and adjust it to desired position</p> <p>Slot</p> | 3  <p>Tighten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

DMSG, EMS, CMS Series

| Sensor model | Procedure | |
|---|---|---|
| <p>DMSG+(F-SC□SH) CMSG+(F-SC□SH)</p>  | <p>1</p>  <p>3</p>  | <p>2</p>  <p>4</p>  |
| <p>DMSG+(F-MQ□) CMSG+(F-MQ□)</p>  | <p>1</p>  <p>3</p>  | <p>2</p>  <p>4</p>  |

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 and accessory | <p>Cylinder</p>  <p>Sensor</p>  <p>CMSE \ DMSE</p> | Cylinder and accessory | <p>Cylinder</p>  <p>Sensor</p>  <p>CS1B1 / DS1B1 CS1B2 / DS1B2 CS1B3 / DS1B3 CS1B4 / DS1B4 CS1B5 / DS1B5 CS1B6 / DS1B6 CS1B7 / DS1B7</p>  <p>CS1F/DS1F/CS1U/DS1U + F-SI32H/F-SI40H F-SI50H/F-SI63H F-SI80H/F-SI100H F-SI125H/F-SI160H F-SI200H</p> |
| Installation |  | Installation |   <p>Sensor (CS1F/DS1F/CS1U/DS1U) Mounting bracket (F-SI32H~F-SI200H) "米" shape cylinder (SI series)</p> <p>Sensor (CS1B1~B7/DS1B1~B7)</p> |
| New type(SAU) | | Previous type(SU) | |
| Cylinder and accessory | <p>Cylinder</p>  <p>Sensor</p>  <p>DMSG \ CMSG \ EMSG</p> | Cylinder and accessory | <p>Cylinder</p>  <p>Sensor</p>  <p>CS1B1 / DS1B1 CS1B2 / DS1B2 CS1B3 / DS1B3 CS1B4 / DS1B4</p>  <p>CS1F/DS1F/CS1U/DS1U + F-SU32H/F-SU40H F-SU50H/F-SU63H F-SU80H/F-SU100H</p> |
| Installation |  | Installation |   <p>Sensor (CS1F/DS1F/CS1U/DS1U) Mounting bracket (F-SU32H~F-SU100H) "米" shape cylinder (SU series)</p> <p>Sensor (CS1B1~B4/DS1B1~B4)</p> |

Socket

Ordering code

F - EC M08 B 020 - □

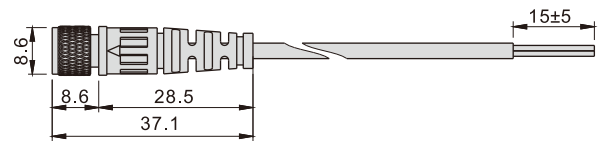
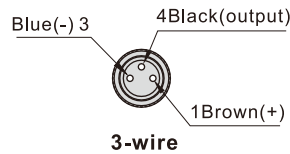
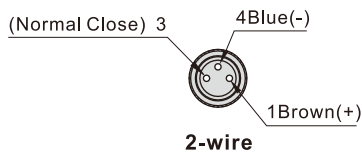
① ② ③ ④ ⑤ ⑥



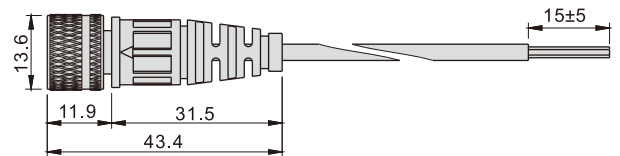
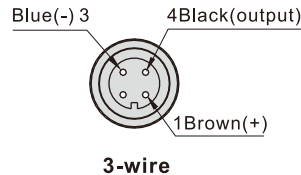
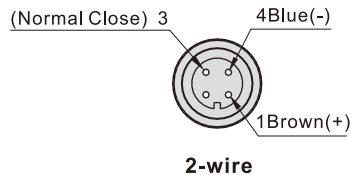
| | | | | |
|-----------------------------------|----------------------|----------------|-------------|--------------|
| ① Category code | F : Accessory | | | |
| ② Specification code | EC : Connecting Wire | | | |
| ③ Socket type | M08:M8 socket | M12:M12 socket | | |
| ④ Wire type | B: 2-wire type | C:3-wire type | | |
| ⑤ Wire length | 020: 2 meters | 030:3meters | 050:5meters | 100:10meters |
| ⑥ Additional specification | Blank: General type | | | |

Appearance

M8 socket



M12 socket



Instruction

1. Sensor shall not fall down or bear great impact when it is installed.
2. The wire of the Sensor shall not move with the action of cylinder.
3. Clamping torque shall be within the allowable scope when the Sensor is installed(0.15~0.2Nm).
4. Sensor shall be installed in the middle position of the action scope.
5. Sensor wiring:
 - A. The wire is unable to bear repetitive torsion and tension. Please wire an external load before switch the power on.
 - B. No poor insulation in wire.
 - C. Do not wire with power line, high voltage line or use one wiring pipe.
 - D. Pleas wire the circuit correctly base on the circuit diagram.
6. Execute scheduled maintenance by the following guidelines:
 - A. Make sure the sensor is firmly fixed.
 - B. Make sure the wire is intact.
 - C. Make sure that LED indicate the movement of cylinder correctly.
7. Application of environment:
 - A. It is Not allow to use the sensor in the environment with explosive gas.
 - B. Magnetic sensor shall not be used in the environment with external magnetism.
 - C. Magnetic sensor shall not be used in the environment that is always eroded by water.
 - D. Magnetic sensor shall not be used in the environment with oil moisture or chemical substance.
 - E. Magnetic sensor shall not be used in the environment with periodically changing temperature.
 - F. Magnetic sensor shall not be used in the environment with excessively great impact.
 - G. Magnetic sensor shall not be used in the environment with sources of electrical pulse.
 - H. Avoid the environment with accumulated iron power and dense magnetic objects.