



## Compendium of DMS\CMS Series

**Two types of sensors**

DMS: Solid State Sensor (Gray)	DMS: Waterproof type of Solid State Sensor (Yellow)
CMS: Reed Sensor (Blue)	CMS: Heat resistant of Reed Sensor (Red)

**Bending resistance**

**Six types of cross section**

<b>G Type</b>		
<b>GS Type</b> [Note1]		
<b>H Type</b>		
<b>HS Type</b> [Note2]		
<b>E Type</b>		
<b>J Type</b>		

**Two kinds of accessories**

DMSG/CMSG, Each size of the cylinder has its corresponding accessory.

DMSG / CMSG	F-MQ □	
	F-SC □ SH	

[Note1] GS type is the mini type of G type, and it can be used for short stroke cylinder.  
 [Note2] HS type is the mini type of H type, and it can be used for short stroke cylinder.

### 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	2.7V 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	IP64/IP68		
Standard	CE marking, RoHS		

### CMS Specifications

Item	CMS	
	General	Heat resistant
Model		
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	

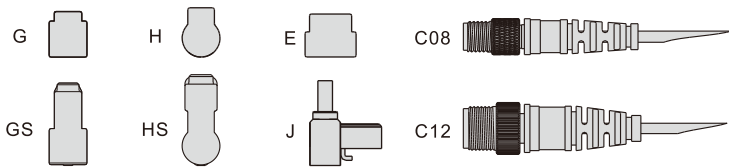


## DMS、CMS Series

### Ordering code for DMS

DMS G - □ 020 - □

① ② ③ ④ ⑤



① Model	DMS: Solid State Sensor					
② Specifications	G	GS	H	HS	E	J
③ Output type	Blank: 2 wire		N: NPN		P: PNP	
④ Lead wire length	020: 2m		030: 3m	050: 5m		
⑤ Additional specification	C08: 150mm with M8 plug connector			C12: 150mm with M12 plug connector		
	Blank: General type			W: Waterproof type IP68 [note1]		

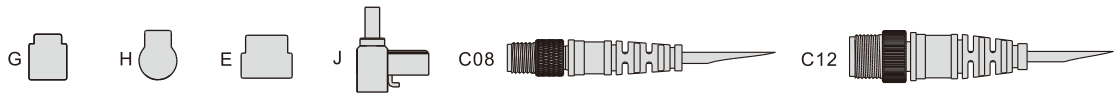
[Note 1] There is no waterproof type for C08 & C12.

The sockets of C08 and C12 need additional order. Please check on page346.

### Ordering code for CMS

CMS G - 020 - □

① ② ③ ④



① Model	CMS: Reed Sensor			
② Specifications	G	H	E	J
③ Lead wire length	020: 2m		030: 3m	050: 5m
④ Additional specification	C08: 150mm with M8 plug connector		C12: 150mm with M12 plug connector	
	Blank: General type		H: Heat resistant [note2]	

[Note 2] There is no heat resistant type for C08 & C12.

The sockets of C08 and C12 need additional order. Please check on page346.

### Ordering code for accessories

F - MQ □

#### Cylinder Accessory

① ② ③



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 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	MBL	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

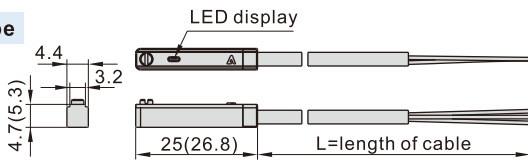
① ② ③ ④



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

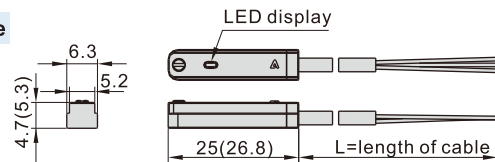
### Dimensions

#### G Type



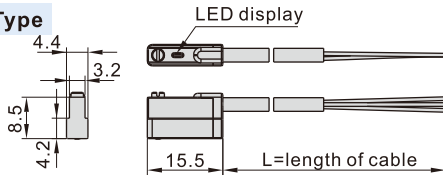
Note: a number in the bracket is the dimension of CMSG.

#### E Type

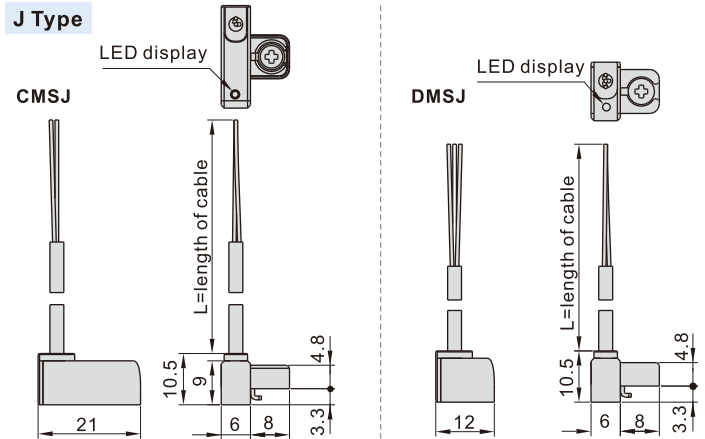


Note: a number in the bracket is the dimension of CMSE.

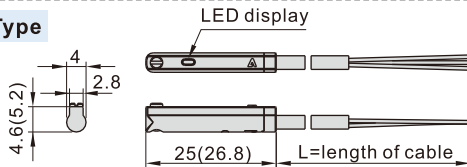
#### GS Type



#### J Type

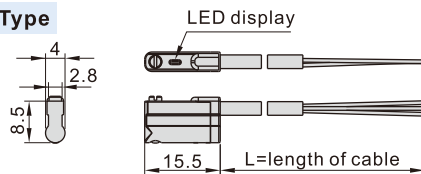


#### H Type



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

#### HS Type

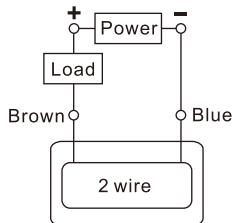


length of cable specification	length of cable(L)
020 Type	2000mm
030 Type	3000mm
050 Type	5000mm

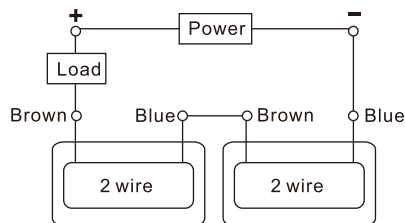
### Connection method

#### 2 wire, reed sensor connection

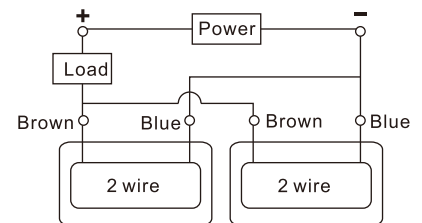
##### 1.General connection



##### 2.Series connection(And)

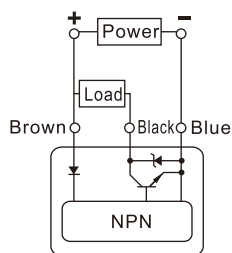


##### 3.Parallel connection(OR)



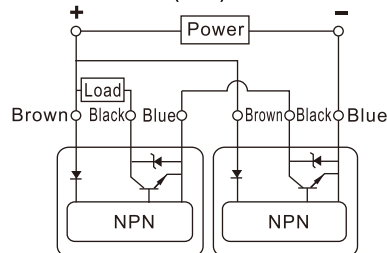
#### 3 wire, solid state NPN connection

##### 1.General connection

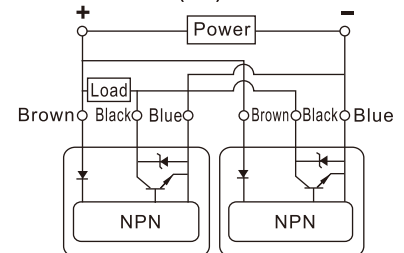


Note: The indicator lights will light up when both auto switches are turned NO.

##### 2.Series connection(And)

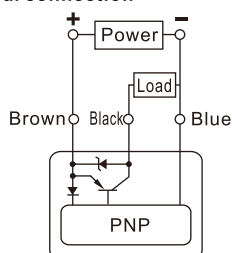


##### 3.Parallel connection(OR)



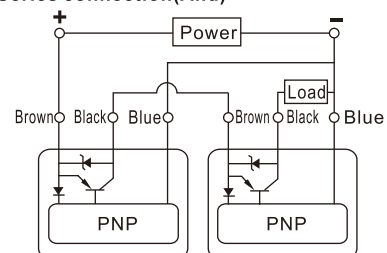
#### 3 wire, solid state PNP connection

##### 1.General connection

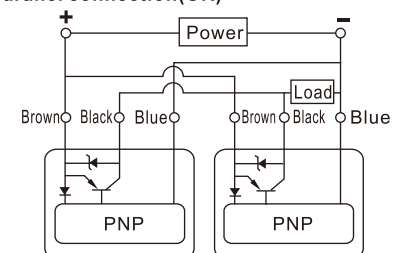


Note: The indicator lights will light up when both auto switches are turned NO.

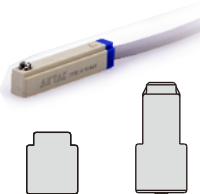


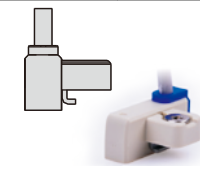


##### 2.Series connection(And)



##### 3.Parallel connection(OR)



### The selection of sensor

DMSG(S)	CMSG	HFK												ACQ\TACQ												SDA												
		10	16	20	25	32	40							12	16	20	25	32	40	50	63	80	100	125	140	160	12	16	20	25	32	40	50	63	80	100		
		●	●	●	●	●	●							●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●
		TWQ						TCL\TCM						QCK						TWH\TWM																		
		20	25	32	40	50	6	10	12	16	20	25	32	40	50	63	80	100	12	16	20	25	32	40	50	63	20	25	32	40	50	63	80					
		●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
		SAU				HFZ				HFY				HFP				MD\MK																				
	32	40	50	63	80	100	6	10	16	20	25	32	40	6	10	16	20	25	32	10	16	20	25	32	6	10	16	20	25	32								
	●	●	●	●	●	●			●	●	●	●	●			●	●	●	●	●			●	●	●	●	●	●	●	●	●							
	TR			STW																																		
	6	10	16	20	25	32	10	16	20	25	32																											
	●	●	●	●	●	●	●	●	●	●	●																											
		Stainless steel																																				
		PB\PBR						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												Aluminum alloy (Thick type)																								
	MBL						MCK						TWG																									
							20	25	32	50	50	63	25	32	40	50	63	80	32	40	50																	
							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
		SC						SGC																														
		32	40	50	63	80	100	125	160	200	250	125	160	200	250																							
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
		ACQ\TACQ						SDA						TWQ			QCK			QDK			TN															
		32	40	50	63	80	100	12	16	20	25	32	40	50	63	80	100	32	40	50	32	40	50	63	20	25	32	40	10	16	20	25	32					
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
	TWH\TWM																																					
	20	25	32	40	50	63	80																															
	●	●	●	●	●	●	●																															
		ACQ\TACQ			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	12	16	20	6	10	16	20	6	8	10	12	16							
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
	HRQ						HFK																															
	2	3	7	10	20	30	50	70	100	200	10	16	20	25	32	40																						
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																						
		SE/BSE						SAI						ACE																								
		32	40	50	63	80	100	125	32	40	50	63	80	100	125	160	200	12	16	20	25	32	40	50	63	80	100											
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							

It needs an accessory to mount a sense on a cylinder

It needs an accessory to mount a sense on a cylinder

### Replacement

New		Previous	
DMSG / DMSG(S) / CMSG		DS1-G / CS1-G	
Ordering code	DMSG(S)-020	DS1G020	
	DMSG(S)-030	DS1G030	
	DMSG(S)-050	DS1G050	
	DMSG(S)-C08	DS1GC08	
	DMSG(S)-C12	DS1GC12	
	DMSG(S)-020-W	-	
	DMSG(S)-030-W	-	
	DMSG(S)-050-W	-	
	DMSG(S)-N020(-W)	DS1GN020(No Waterproof type)	
	DMSG(S)-N030(-W)	DS1GN030(No Waterproof type)	
	DMSG(S)-N050(-W)	DS1GN050(No Waterproof type)	
	DMSG(S)-NC08	DS1GNC08	
	DMSG(S)-NC12	DS1GNC12	
	DMSG(S)-P020(-W)	DS1GP020(No Waterproof type)	
	DMSG(S)-P030(-W)	DS1GP030(No Waterproof type)	
	DMSG(S)-P050(-W)	DS1GP050(No Waterproof type)	
	DMSG(S)-PC08	DS1GPC08	
	DMSG(S)-PC12	DS1GPC12	
	CMSG-020	CS1G020	
	CMSG-030	CS1G030	
	CMSG-050	CS1G050	
	CMSG-C08	CS1GC08	
	CMSG-C12	CS1GC12	
	CMSG-020-H	CS1G020HT	
	CMSG-030-H	CS1G030HT	
CMSG-050-H	CS1G050HT		
-	CS1GC08HT		
-	CS1GC12HT		

New		Previous	
DMSJ / CMSJ		DS1-J / CS1-J	
Ordering code	DMSJ-020	DS1J020	
	DMSJ-030	DS1J030	
	DMSJ-050	DS1J050	
	DMSJ-C08	DS1JC08	
	DMSJ-C12	DS1JC12	
	DMSJ-020-W	-	
	DMSJ-030-W	-	
	DMSJ-050-W	-	
	DMSJ-N020(-W)	DS1JN020(No Waterproof type)	
	DMSJ-N030(-W)	DS1JN030(No Waterproof type)	
	DMSJ-N050(-W)	DS1JN050(No Waterproof type)	
	DMSJ-NC08	DS1JNC08	
	DMSJ-NC12	DS1JNC12	
	DMSJ-P020(-W)	DS1JP020(No Waterproof type)	
	DMSJ-P030(-W)	DS1JP030(No Waterproof type)	
	DMSJ-P050(-W)	DS1JP050(No Waterproof type)	
	DMSJ-PC08	DS1JPC08	
	DMSJ-PC12	DS1JPC12	
	CMSJ-020	CS1J020	
	CMSJ-030	CS1J030	
	CMSJ-050	CS1J050	
	CMSJ-C08	CS1JC08	
	CMSJ-C12	CS1JC12	
	CMSJ-020-H	CS1J020HT	
	CMSJ-030-H	CS1J030HT	
CMSJ-050-H	CS1J050HT		
-	CS1JC08HT		
-	CS1JC12HT		

New		Previous	
DMSE / CMSE		DS1-E / CS1-E	
Ordering code	DMSE-020	DS1E020	
	DMSE-030	DS1E030	
	DMSE-050	DS1E050	
	DMSE-C08	DS1EC08	
	DMSE-C12	DS1EC12	
	DMSE-020-W	-	
	DMSE-030-W	-	
	DMSE-050-W	-	
	DMSE-N020(-W)	DS1EN020(No Waterproof type)	
	DMSE-N030(-W)	DS1EN030(No Waterproof type)	
	DMSE-N050(-W)	DS1EN050(No Waterproof type)	
	DMSE-NC08	DS1ENC08	
	DMSE-NC12	DS1ENC12	
	DMSE-P020(-W)	DS1EP020(No Waterproof type)	
	DMSE-P030(-W)	DS1EP030(No Waterproof type)	
	DMSE-P050(-W)	DS1EP050(No Waterproof type)	
	DMSE-PC08	DS1EPC08	
	DMSE-PC12	DS1EPC12	
	CMSE-020	CS1E020	
	CMSE-030	CS1E030	
	CMSE-050	CS1E050	
	CMSE-C08	CS1EC08	
	CMSE-C12	CS1EC12	
	CMSE-020-H	CS1E020HT	
	CMSE-030-H	CS1E030HT	
CMSE-050-H	CS1E050HT		
-	CS1EC08HT		
-	CS1EC12HT		

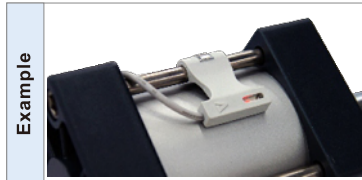
  

New		Previous	
DMSH / DMSHS / CMSH		DS1-H / CS1-H	
Ordering code	DMSH(S)-020	DS1H020	
	DMSH(S)-030	DS1H030	
	DMSH(S)-050	DS1H050	
	DMSH(S)-C08	DS1HC08	
	DMSH(S)-C12	DS1HC12	
	DMSH(S)-020-W	-	
	DMSH(S)-030-W	-	
	DMSH(S)-050-W	-	
	DMSH(S)-N020(-W)	DS1HN020(No Waterproof type)	
	DMSH(S)-N030(-W)	DS1HN030(No Waterproof type)	
	DMSH(S)-N050(-W)	DS1HN050(No Waterproof type)	
	DMSH(S)-NC08	DS1HNC08	
	DMSH(S)-NC12	DS1HNC12	
	DMSH(S)-P020(-W)	DS1HP020(No Waterproof type)	
	DMSH(S)-P030(-W)	DS1HP030(No Waterproof type)	
	DMSH(S)-P050(-W)	DS1HP050(No Waterproof type)	
	DMSH(S)-PC08	DS1HPC08	
	DMSH(S)-PC12	DS1HPC12	
	CMSH-020	CS1H020	
	CMSH-030	CS1H030	
	CMSH-050	CS1H050	
	CMSH-C08	CS1HC08	
	CMSH-C12	CS1HC12	
	CMSH-020-H	CS1H020HT	
	CMSH-030-H	CS1H030HT	
CMSH-050-H	CS1H050HT		
-	CS1HC08HT		
-	CS1HC12HT		

### Replacement of previous sensor

**New sensor + Tie Rod Cylinder Accessory**

DMSG/CMSG + F-SC□SH

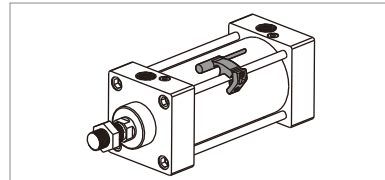


Ordering code	Ordering code	Ordering code
	DMSG + CMSG +	
		F-SC63SH
		F-SC80SH
		F-SC125SH
		F-SC160SH
		F-SC250SH

**Previous sensor + Accessory**

**previous sensor**

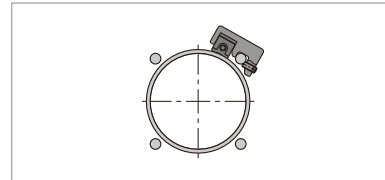
DS1-A / CS1-A



Ordering code
DS1A CS1A

**previous sensor + Accessory**

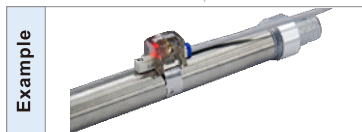
DS1-F / CS1-F    DS1-U / CS1-U    +    F-SC□H



Ordering code	Ordering code	Ordering code
DS1F CS1F	DS1U CS1U	F-SC32H
		F-SC63H
		F-SC80H
		-
		-
		-

**new sensor + band**

DMSG/CMSG + F-MQ□



Ordering code	Ordering code	Ordering code
	DMSG + CMSG +	
		F-MQA25
		F-MQA32
		F-MQA40
		F-MQA50
		F-MQA63
		F-MQA80
		F-MQ32T
		F-MQ40T
		F-MQ50T
		F-MQS06
		F-MQS08
		F-MQS10
		F-MQS12
		F-MQS16
		F-MQS20
		F-MQS25
		F-MQS32
		F-MQS40
		F-MQS50
		F-MQS63

**previous sensor + band**

**previous sensor**

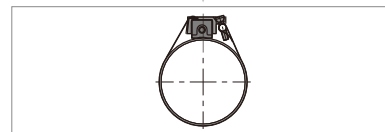
DS1-M / CS1-M    DS1-T / CS1-T



Ordering code	Ordering code	
D(C)S1M□A20	-	
D(C)S1M□A25		
D(C)S1M□A32		
D(C)S1M□A40		
D(C)S1M□A50		
D(C)S1M□A63		
-		
-		
D(C)S1M□S06		-
D(C)S1M□S08		
D(C)S1M□S10		
D(C)S1M□S12		
D(C)S1M□S16		
D(C)S1M□S20		
D(C)S1M□S25		
D(C)S1M□S32		
D(C)S1M□S40		
D(C)S1M□S50		
D(C)S1M□S63		

**previous sensor + band**

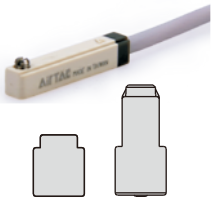
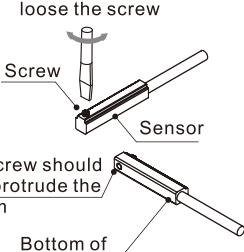
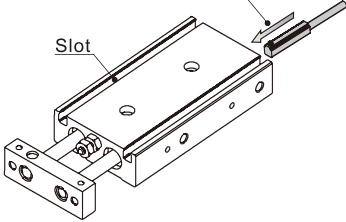
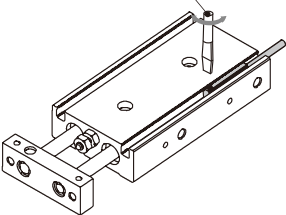
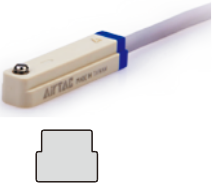
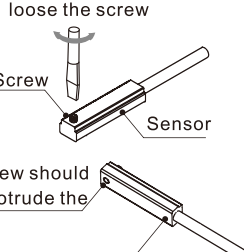
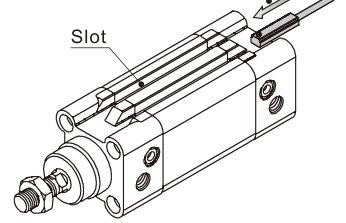
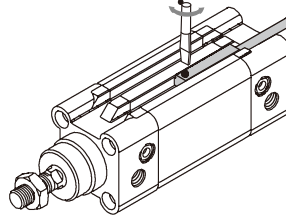
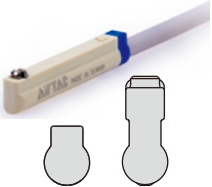
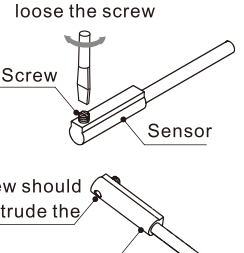
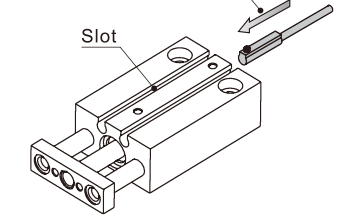
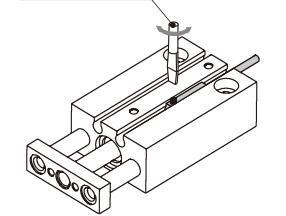
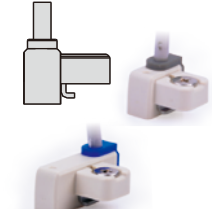
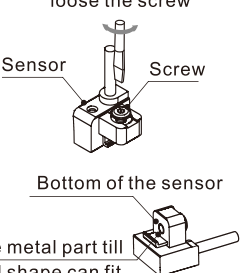
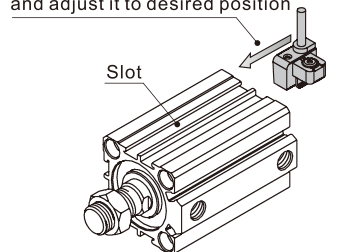
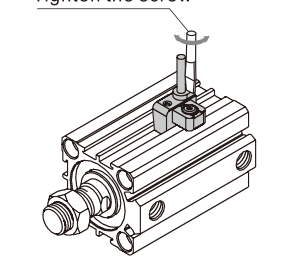
DS1-F / CS1-F    DS1-U / CS1-U    +    GXPAB-01



Ordering code	Ordering code	Ordering code
DS1F CS1F	DS1U CS1U	-
		GXPAB-01
		-
		-
		GXPAB-01



### Installation

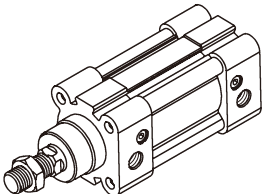

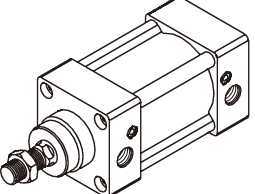

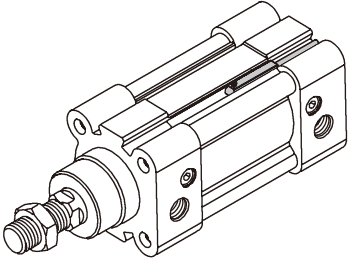
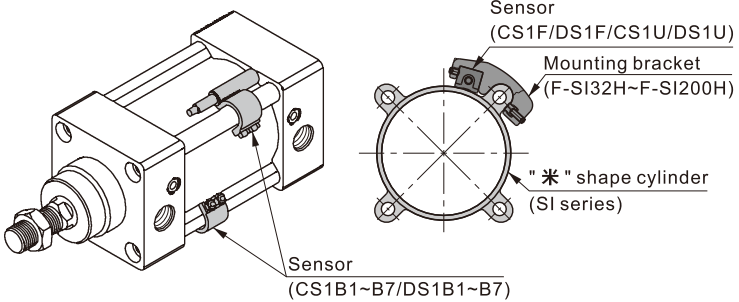
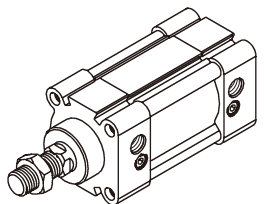

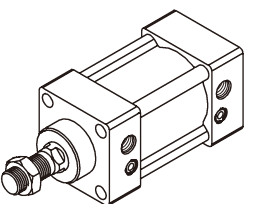

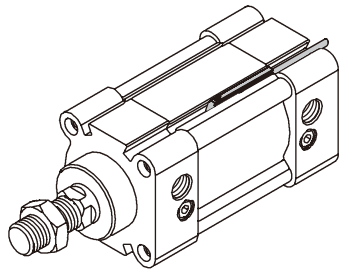
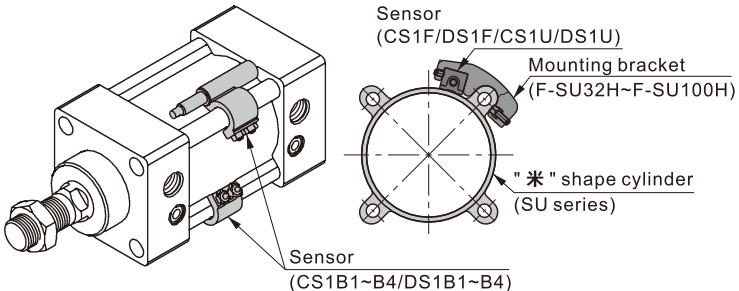
Sensor model	Procedure		
<p><b>DMSG(S)/CMSG</b></p> 	<p><b>1</b></p>  <p>loose the screw</p> <p>Screw</p> <p>Sensor</p> <p>The screw should NOT protrude the bottom</p> <p>Bottom of the sensor</p>	<p><b>2</b></p>  <p>Insert the sensor into the slot and adjust it to desired position</p> <p>Slot</p>	<p><b>3</b></p>  <p>Tighten the screw</p>
<p><b>DMSE/CMSE</b></p> 	<p><b>1</b></p>  <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>	<p><b>2</b></p>  <p>Insert the sensor into the slot and adjust it to desired position</p> <p>Slot</p>	<p><b>3</b></p>  <p>Tighten the screw</p>
<p><b>DMSH(S)/CMSH</b></p> 	<p><b>1</b></p>  <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>	<p><b>2</b></p>  <p>Insert the sensor into the slot and adjust it to desired position</p> <p>Slot</p>	<p><b>3</b></p>  <p>Tighten the screw</p>
<p><b>DMSJ/CMSJ</b></p> 	<p><b>1</b></p>  <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>	<p><b>2</b></p>  <p>Insert the sensor into the slot and adjust it to desired position</p> <p>Slot</p>	<p><b>3</b></p>  <p>Tighten the screw</p>

Sensor model	Procedure			
<b>DMSG+(F-SC□SH)</b> <b>CMSG+(F-SC□SH)</b>	1		2	
	3		4	
<b>DMSG+(F-MQ□)</b> <b>CMSG+(F-MQ□)</b>	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 and accessory	<p><b>Cylinder</b></p>  <p><b>Sensor</b></p>  CMSE \ DMSE	Cylinder and accessory	<p><b>Cylinder</b></p>  <p><b>Sensor</b></p>  CS1B1 / DS1B1 CS1B2 / DS1B2 CS1B3 / DS1B3 CS1B4 / DS1B4 CS1B5 / DS1B5 CS1B6 / DS1B6 CS1B7 / DS1B7
Installation		Installation	 <p>Sensor (CS1F/DS1F/CS1U/DS1U)                      Mounting bracket (F-SI32H~F-SI200H)                      "米" shape cylinder (SI series)                      Sensor (CS1B1~B7/DS1B1~B7)</p>
New type(SAU)		Previous type(SU)	
Cylinder and accessory	<p><b>Cylinder</b></p>  <p><b>Sensor</b></p>  CMSG \ DMSG	Cylinder and accessory	<p><b>Cylinder</b></p>  <p><b>Sensor</b></p>  CS1B1 / DS1B1 CS1B2 / DS1B2 CS1B3 / DS1B3 CS1B4 / DS1B4
Installation		Installation	 <p>Sensor (CS1F/DS1F/CS1U/DS1U)                      Mounting bracket (F-SU32H~F-SU100H)                      "米" shape cylinder (SU series)                      Sensor (CS1B1~B4/DS1B1~B4)</p>

### Socket

#### Ordering code

F - DMS C08 2 020

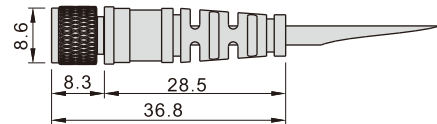
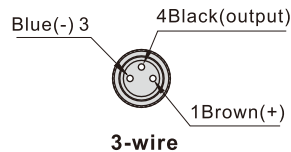
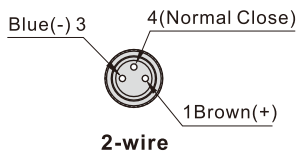
① ② ③ ④ ⑤



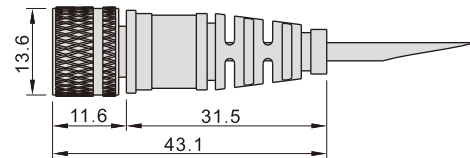
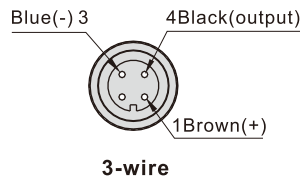
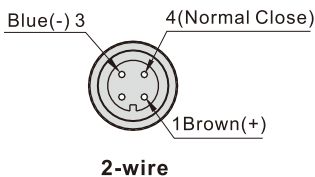
① Category code	F: Accessory		
② Specification code	DMS: Digital Magnetic Sensor		
③ Socket type	C08:M8 socket	C12:M12 socket	
④ Wire type	2: 2-wire type	3: 3-wire type	
⑤ Wire length	020: 2 meters	030: 3 meters	050: 5 meters

#### 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.