

Contact displacement sensor

# D5SN

*Compact, light, and high performance*

- Ultra-small sensor only 6-mm dia. in diameter
- 0.1- $\mu\text{m}$  high resolution (D5SN-S01)
- IP67 protective structure (D5SN-S01/S04).
- Insulated sensor
- Voltage/current output



## Ordering Informations

Item	Model
Sensor	D5SN-S01
	D5SN-S04
	D5SN-S04-L
Amplifier	D5SN-A01

Note: The amplifier is the same for all sensors.

- Select from three sensors according to the measurement environment

## Specifications

### Sensor

Item Model	D5SN-S01	D5SN-S04	D5SN-S04-L
Measurement range	1 mm	4 mm	
Operating range	Approx. 1.5 mm	Approx. 5 mm	
Resolution	0.1 μm *1	0.4 μm *1	
Linearity	0.3% F.S. max.	0.5% F.S. max *2	
Measuring power	Approximately 0.7 N *3		Approximately 0.25 N *3
Protective structure (excluding the connector)	IP67		IP54
Mechanical life	50 million times or more		
Insulated/non-insulated	Insulated type		
Ambient temperature	-10°C to 60°C (with no icing or condensation)		
Ambient operating humidity	25% to 95%RH (with no condensation)		
Temperature drift	0.03%F.S./°C *4		
Weight	Approximately 70 g (including cable and connector)		
Cable length	3-wire shielded cable, 2m		

### Amplifier

Item Model	D5SN-A01	
Power supply voltage (permissible range)	12 to 24 VDC (10.8 to 26.4 VDC)	
Current consumption	80 mA max.	
Analog output	Voltage	From -5 to +5 V (load impedance of 10 kΩ or higher) * 5
	Current	4 to 20 mA (load impedance of 300 Ω or less) * 5
Enable output	Output form	NPN open collector
	Open/close output current	100 mA max.
	Residual voltage of output when ON	1.5 V max.
	Collector withstand voltage when OFF	26.4 VDC
	Current leakage when OFF	0.1 mA max.
Protective structure	IP30	
Ambient temperature	-10°C to 55°C (with no icing or condensation)	
Ambient operating humidity	25% to 85%RH (with no condensation)	
Temperature drift	0.010%F.S./°C *4	
Weight	Approximately 200 g (including cable)	
Cable length	5-wire shielded cable, 2 m	

\*1. Minimum possible scanning value when using our K3NX Series of Digital Panel Meters

\*2. F.S. indicates the measurement range (1 mm or 4 mm)

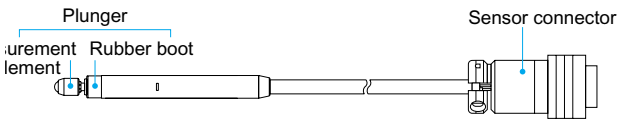
\*3. Typical value at the central measurement position when the standard measurement head is attached and fixed in the downward orientation. When fixed in the horizontal or upward orientation, the measuring power will decrease. Note that if a measurement head other than the standard head is used, the measuring power will vary depending on the weight of the head.

\*4. Typical value at the center of the measurement range.

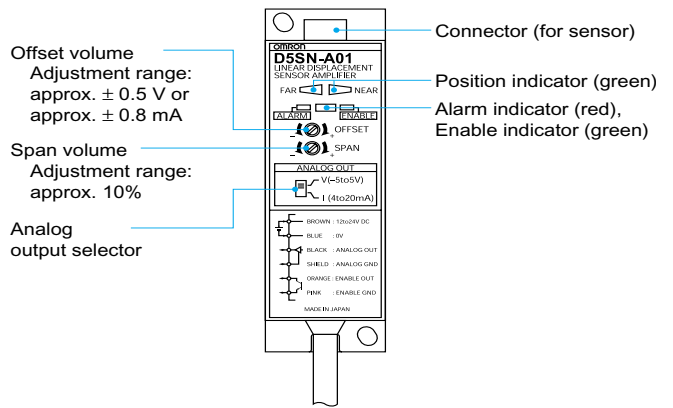
\*5. Even if the object is within the measurement range, the analog output may deviate from the specification range (-5 to +5 V, or 4 to 20 mA) depending on the offset adjustment or the span adjustment.

## Nomenclature:

### Sensor



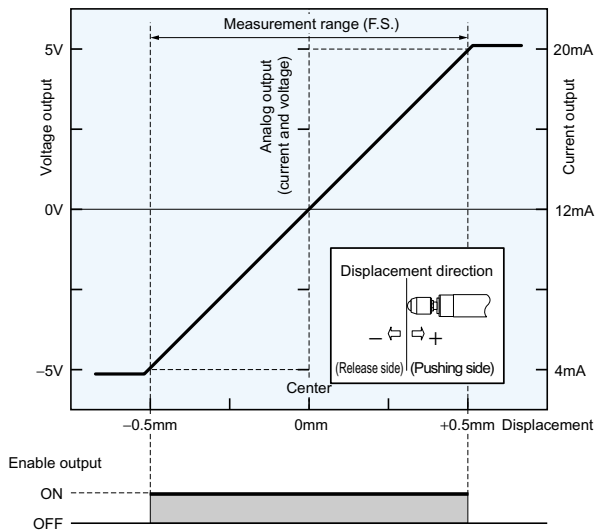
### Amplifier



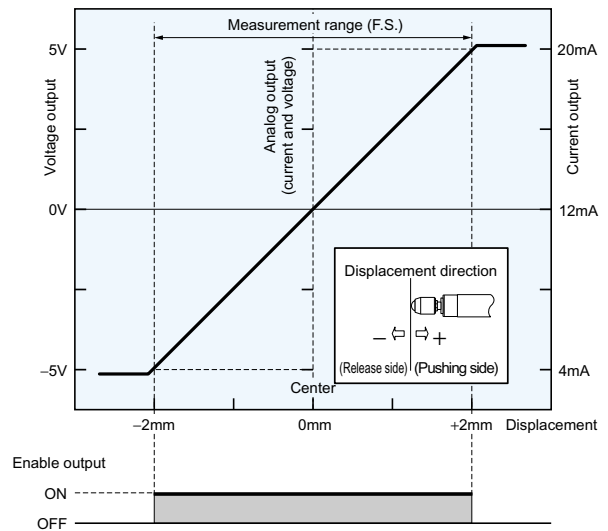
## Output Characteristics

### Voltage/current output

#### D5SN-S01



#### D5SN-S04/S04-L



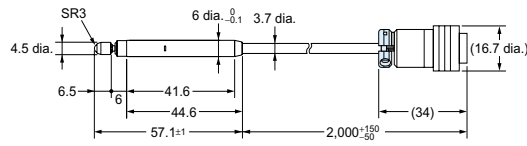
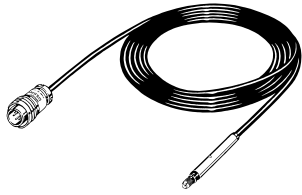
## LED display and ENABLE output

Indentation position		LED display		ENABLE output	Remarks
		FAR NEAR	ALARM / ENABLE		
Entire area (when problem occurs)				OFF	Indicates problems such as a bad connector connection or a broken wire in the sensor cable.
Outside measurement range	Open side			OFF	
	In measurement range	Open side			ON
Central vicinity				ON	Indicates the central vicinity of the measurement range.
Outside measurement range	Indentation side			ON	
				OFF	Danger of plunger damage.

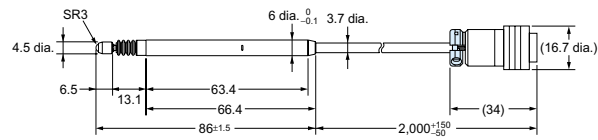
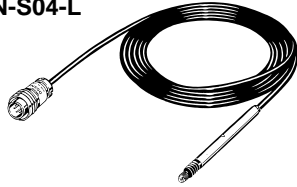
## Dimensions (Unit: mm)

### Sensor

#### D5SN-S01

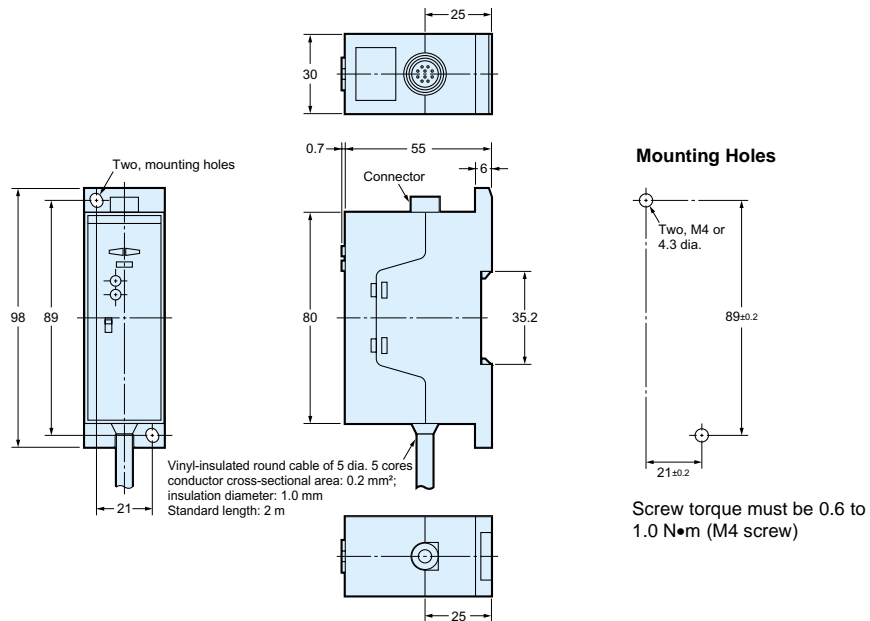
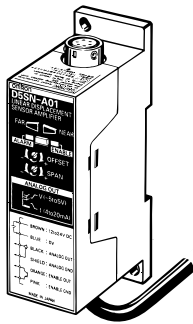


#### D5SN-S04 D5SN-S04-L



### Amplifier

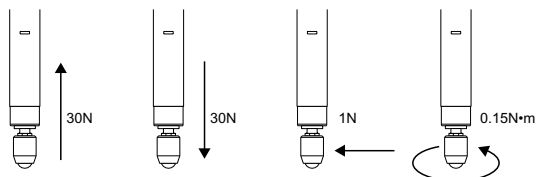
#### D5SN-A01



## Precautions

### Correct Use

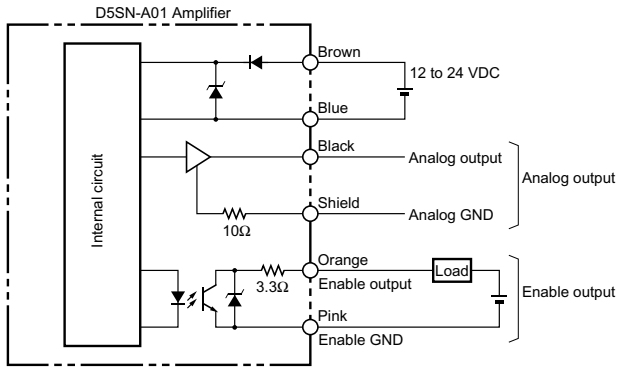
- This product is a high-precision instrument. Do not drop or subject to any other kind of shock.
- Do not apply a greater force to the plunger of this product than that indicated in the diagram. Excessive force may damage the plunger.
- Do not remove the dust-protection rubber boot. Foreign matter in the sensor may cause it to fail.
- Observe the location and load requirements when mounting the sensor and amplifier. Mounting with excessive force may damage the devices.



- The sensor will break if the plunger is pressed in too far. Measurement should be performed within the range that the pressure warning indicator does not illuminate.

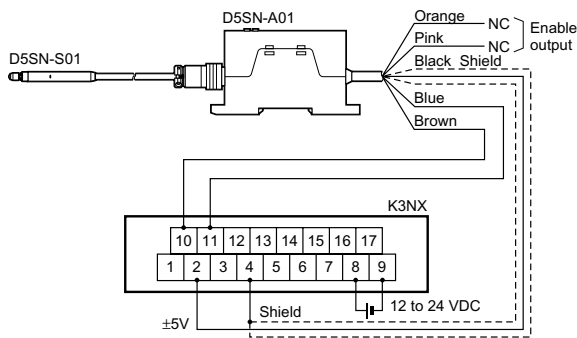
## Connection

### Input/output circuit schematic

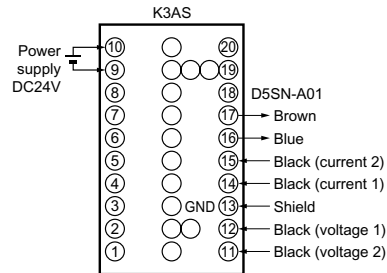


### Connection schematic

#### Example of connection to a digital panel meter (K3NX)

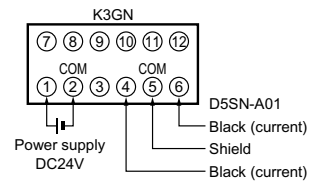


#### Example of connection to a digital panel meter (K3AS)



Note: Two inputs are possible on the K3AS, however, due to the output circuit of the D5SN, two current inputs are not possible.

#### Example of connection to a digital panel meter (K3GN)



Note: Power output (24 V DC) is not possible to the K3GN.

Note: 1. If you do not intend to use the enable outputs (orange and pink), cover the outputs with insulation tape to ensure that they do not contact any other wires.

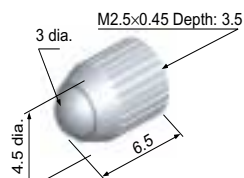
2. For the digital panel meter, use a DC voltage input type or a DC current input type.

## Options (measurement heads) (Please inquire regarding delivery times and prices)

Select from a wide variety of measurement head options according to the measurement object

#### ● Ball type (steel)

D5S-T1



\* Standard attached gauge head. Can also be purchased separately.

#### ● Ball type (special steel)

D5S-T2



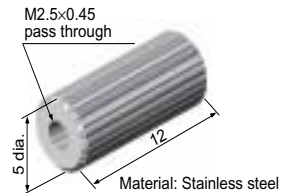
#### ● Ball type (ruby)

D5S-T3



#### ● Conversion adapter

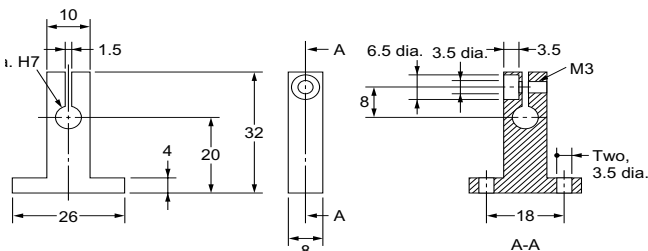
D5S-TA



\* A commercially available gauge head can be installed.

## Clamps

### Recommended mounting jig



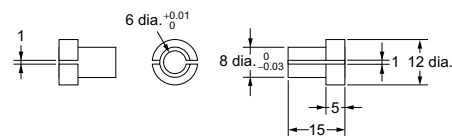
Tightening torque: 0.6 to 0.8 N•m (M3 screw)

Material : Aluminum

#### (Reference)

A shaft holder capable of holding this product is available from Misumi. Model: SHSTA6

### Mounting jig for 8-mm dia. Stand



Material: Brass

#### 3-point support mounting

