Eddy Current Type Displacement Sensor
Quick RIVERNEW

Model Code / Additional Spec. Code

(No entry if additional spec. code is not specified.)

■ Sensor (length: 3 m)

10 mm range: **RXS - 10 - M050 - 03**

5 mm range: **RXS - 05 - M050 - 03**

2 mm range: **RXS - 02 - M030 - 03**

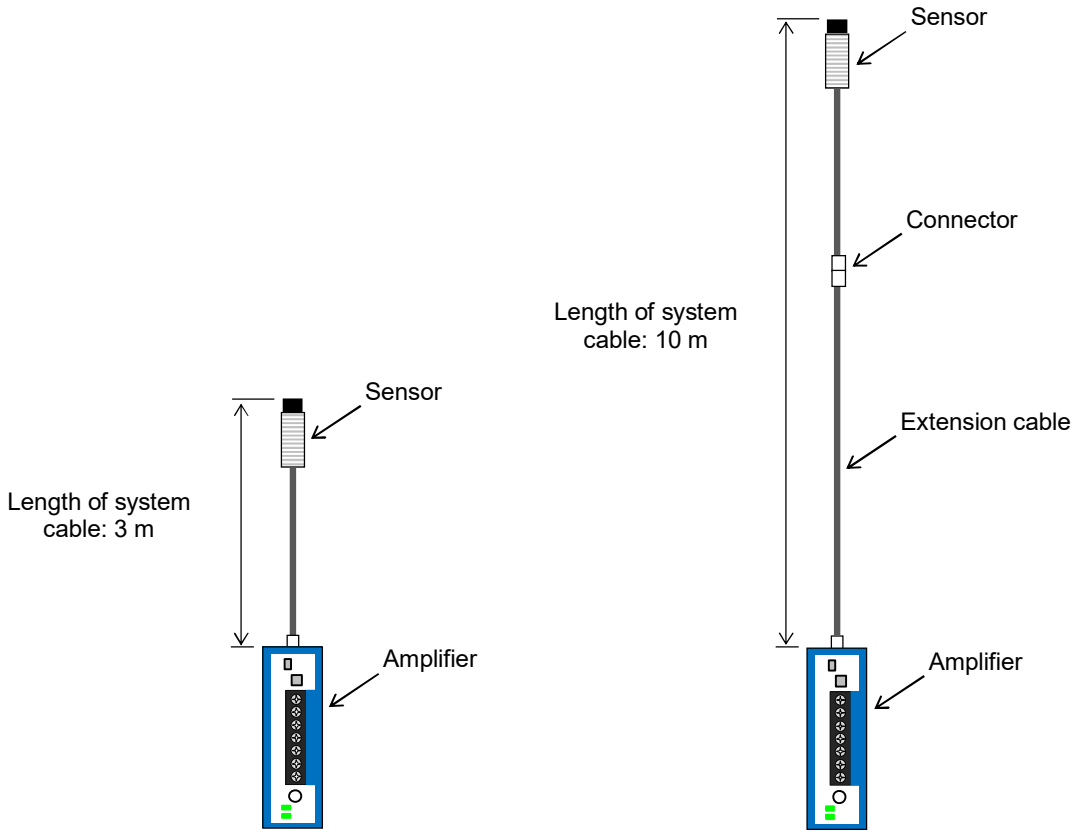
■ Extension cable (length: 7 m)

RXW - 07

■ Amplifier

RXC - 0

Configuration



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■ General

Specification					
Model name		Sensor	RXS-02-M030-03	RXS-05-M050-03	RXS-10-M050-03
		Extension cable	None or RXW-07		
		Amplifier	RXC-0		
Measurement range			0 mm to 2 mm	0 mm to 5 mm	0 mm to 10 mm
Length of system cable			3 m (no extension cable), 10 m (including an extension cable)		
Frequency response			100 Hz (-3 dB)		
Standard target material		Material	Iron/cast iron, steel, stainless steel (magnetic/non-magnetic), aluminum/aluminum alloy, copper/copper alloy		
		Size and shape	ϕ 27 mm or more t = 5 mm or more Flat	ϕ 45 mm or more t = 5 mm or more Flat	ϕ 102 mm or more t = 5 mm or more Flat
Maximum resolution		S45C, SS400, SCM440, SUS430	0.4 µm	0.7 µm	0.9 µm
		SUS304	0.6 µm	0.9 µm	1.2 µm
		A5052, C2801, C1020	0.7 µm	1.2 µm	1.6 µm
Linearity*1		S45C, SS400, SCM440, SUS430	typ. ±1.0 % of F.S.	typ. ±1.0 % of F.S.	typ. ±1.0 % of F.S.
		SUS304	typ. ±1.5 % of F.S.	typ. ±1.2 % of F.S.	typ. ±1.8 % of F.S.
		A5052, C2801, C1020	typ. ±1.8 % of F.S.	typ. ±1.5 % of F.S.	typ. ±2.0 % of F.S.
Temperature characteristics *2	Sensor*3	-10 °C to 30 °C (20 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. -0.03 % of F.S./°C	typ. -0.05 % of F.S./°C	typ. -0.05 % of F.S./°C
		SUS304	typ. -0.03 % of F.S./°C	typ. -0.04 % of F.S./°C	typ. -0.03 % of F.S./°C
		A5052, C2801, C1020	typ. -0.04 % of F.S./°C	typ. -0.06 % of F.S./°C	typ. -0.04 % of F.S./°C
		30 °C to 70 °C (30 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. -0.05 % of F.S./°C	typ. -0.06 % of F.S./°C	typ. -0.09 % of F.S./°C
		SUS304	typ. -0.06 % of F.S./°C	typ. -0.06 % of F.S./°C	typ. -0.09 % of F.S./°C
		A5052, C2801, C1020	typ. -0.07 % of F.S./°C	typ. -0.09 % of F.S./°C	typ. -0.10 % of F.S./°C
	Extension cable	-10 °C to 30 °C (20 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. 0.02 % of F.S./°C	typ. ±0.01 % of F.S./°C	typ. ±0.01 % of F.S./°C
		SUS304	typ. 0.01 % of F.S./°C	typ. ±0.01 % of F.S./°C	typ. -0.01 % of F.S./°C
		A5052, C2801, C1020	typ. ±0.02 % of F.S./°C	typ. ±0.01 % of F.S./°C	typ. ±0.01 % of F.S./°C
		30 °C to 70 °C (30 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. 0.05 % of F.S./°C	typ. 0.04 % of F.S./°C	typ. 0.03 % of F.S./°C
		SUS304	typ. 0.07 % of F.S./°C	typ. 0.06 % of F.S./°C	typ. 0.04 % of F.S./°C
		A5052, C2801, C1020	typ. 0.11 % of F.S./°C	typ. 0.08 % of F.S./°C	typ. 0.05 % of F.S./°C
	Amplifier (no extension cable)	-10 °C to 20 °C (20 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. ±0.03 % of F.S./°C	typ. -0.04 % of F.S./°C	typ. ±0.01 % of F.S./°C
		SUS304	typ. -0.07 % of F.S./°C	typ. -0.05 % of F.S./°C	typ. -0.01 % of F.S./°C
		A5052, C2801, C1020	typ. -0.11 % of F.S./°C	typ. -0.05 % of F.S./°C	typ. -0.03 % of F.S./°C
		20 °C to 50 °C (20 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. -0.08 % of F.S./°C	typ. -0.05 % of F.S./°C	typ. -0.04 % of F.S./°C
		SUS304	typ. -0.09 % of F.S./°C	typ. -0.08 % of F.S./°C	typ. -0.05 % of F.S./°C
		A5052, C2801, C1020	typ. -0.16 % of F.S./°C	typ. -0.12 % of F.S./°C	typ. -0.05 % of F.S./°C
	Amplifier (including an extension cable)	-10 °C to 20 °C (20 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. 0.10 % of F.S./°C	typ. 0.06 % of F.S./°C	typ. 0.04 % of F.S./°C
		SUS304	typ. 0.10 % of F.S./°C	typ. 0.08 % of F.S./°C	typ. 0.05 % of F.S./°C
		A5052, C2801, C1020	typ. 0.20 % of F.S./°C	typ. 0.11 % of F.S./°C	typ. 0.06 % of F.S./°C
		20 °C to 50 °C (20 °C as standard)			
		S45C, SS400, SCM440, SUS430	typ. 0.10 % of F.S./°C	typ. 0.03 % of F.S./°C	typ. 0.03 % of F.S./°C
		SUS304	typ. 0.12 % of F.S./°C	typ. 0.05 % of F.S./°C	typ. 0.03 % of F.S./°C
		A5052, C2801, C1020	typ. 0.15 % of F.S./°C	typ. 0.08 % of F.S./°C	typ. 0.05 % of F.S./°C

*1 The value obtained by calibrating with the ambient temperature of 25 °C using a calibration table. The typ. values are the typical values used as reference for measurement error.

*2 The value obtained when the ambient temperature is 25 °C and the distance between the sensor detection surface and the target material is 50% of the maximum measurement range. The typ. values are the typical values used as reference for measurement error.

*3 The sensor temperature characteristics represent the value obtained when the temperature of the sensor and the target material is the same and both temperatures are sufficiently saturated.

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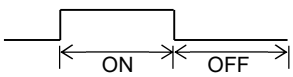
■ Sensor

Specification				
Model name		RXS-02-M030-03	RXS-05-M050-03	RXS-10-M050-03
Total length of the sensor		3 m		
Material	Detection surface	PBT		
	Screw	SUS304		
	Cable (sheath)	PVC		
	Connector (case)	PBT		
Environmental resistance	Protective structure	IPX7 (excluding the connector)		
	Operating temperature range	-10 °C to +70 °C		
	Operating humidity range	30%RH to 85%RH (non-condensation, non-immersion)		
	Vibration resistance	10 Hz to 58 Hz 0.3 mm peak to peak, 58 Hz to 150 Hz, 20 m/s^2 (approximately 2 G), Vertical direction: 20 cycles of log sweeping, Longitudinal direction: 20 cycles of log sweeping		
	Impact resistance	500 m/s^2 (approximately 50 G), 5 times in vertical direction, 5 times in longitudinal direction		
Mass		Approximately 72 g	Approximately 120 g	Approximately 213 g

■ Extension cable

Specification		
Model name		RXW-07
Total length of the extension cable		7 m
Material	Cable (sheath)	PVC
	Connector (case)	PBT
Environmental resistance	Operating temperature range	-10 °C to +70 °C
	Operating humidity range	30 %RH to 85 %RH
	Vibration resistance	10 Hz to 58 Hz 0.3 mm peak to peak, 58 Hz to 150 Hz, 20 m/s^2 (approximately 2 G), Vertical direction: 20 cycles of log sweeping, Longitudinal direction: 20 cycles of log sweeping
	Impact resistance	500 m/s^2 (approximately 50 G), 5 times in vertical direction, 5 times in longitudinal direction
Mass		Approximately 112 g

■ Amplifier

Specification			
Model name			RXC-0
Power supply			+24 VDC ±10% (including the ripple), Not isolated between power supply - input - output - ground
Power consumption			0.9 W or less
Analog output	Output voltage range	Displacement output	0 V to 5 V (Min. approximately -3.0 V, Max. approximately +5.6 V)
		Burnout output	When burn-up is selected: +6.1 V or more When burn-down is selected: -3.5 V or less
		Output impedance	100 Ω
Zero shift contact input			Non-voltage contact input, ON: 15 ms or more -> OFF: 15 ms or more 
Environmental resistance		Operating temperature range	-10 °C to +50 °C
		Operating humidity range	30 %RH to 85 %RH
		Vibration resistance	10 Hz to 58 Hz 0.3 mm peak to peak, 58 Hz to 150 Hz 20 m/s^2 (approximately 2 G), 3 directions: 20 cycles of log sweeping
		Impact resistance	200 m/s^2 (approximately 20 G), 5 times each in 3 directions
Material		Case	PBT
		DIN adapter	POM
Mass			Approximately 140 g

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Function

- Calibration

This function is used to linearize the relationship between "distance between the sensor detection surface and the target material" and "amplifier analog output voltage".
The calibration is performed at three points including 0%, 50%, and 100% of the measuring distance*4.
Use the actual target material for the calibration.

- Zero shift

An input from the ZERO terminal on the amplifier will make the position of the sensor detection surface and the target material at the time to be the standard zero point. Accordingly, the amplifier analog output voltage shifts to 0 V.
The zero shift is canceled when the amplifier shifts into the calibration mode, or the amplifier is turned off.
The zero shift is available at 0% to 50% of the measuring distance.

- Sensor disconnection detection

When the sensor is disconnected or the sensor is not connected, the amplifier analog output voltage burns out to notify the user of an abnormality.

- Select burnout output direction

The direction in which the amplifier analog output voltage burns out (positive direction/negative direction) can be set.

- Select input sensor

The measurement range of the input sensor can be set.

- Select cable length

The length of the sensor system cable can be set.
10 m system: Sensor (3 m) + Extension cable (7 m)
3 m system: Sensor (3 m)

*4 "Measuring distance" can be changed within 50% to 100% of the maximum measurement range of the sensor used.

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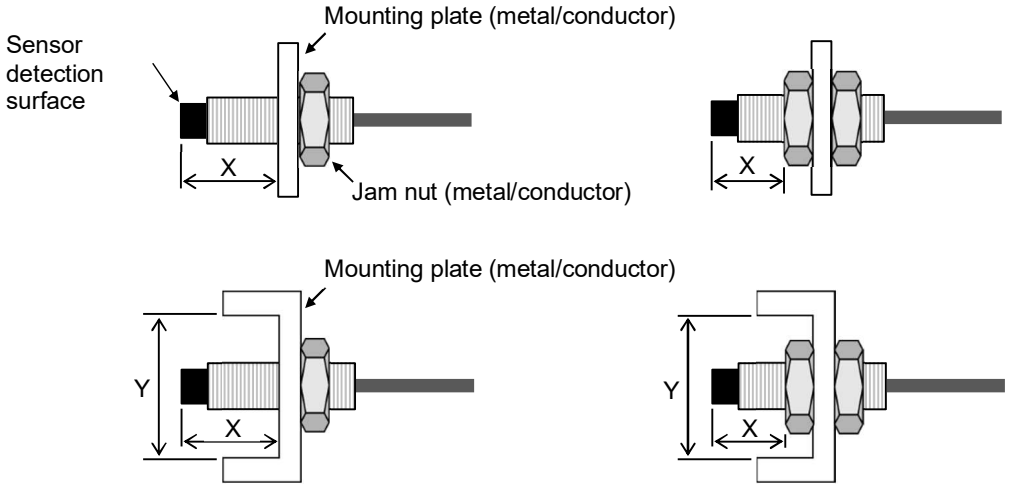
Installation

<<Distance between the sensor detection surface and the surrounding metal (conductor)>>

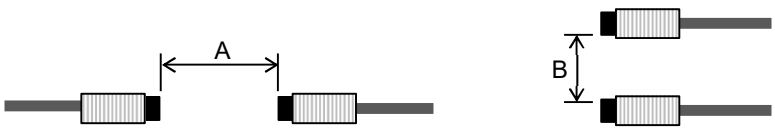
A metal or conductor other than the target material around the sensor detection surface may affect a measurement. Keep a distance of at least dimensions X and Y between the sensor detection surface and the surrounding metal or the conductor.



Measurement Range	Sensor Model Name	Dimension X	Dimension Y
10 mm range	RXS-10-M050-03	65 mm	150 mm
5 mm range	RXS-05-M050-03	40 mm	95 mm
2 mm range	RXS-02-M030-03	25 mm	70 mm

<<Proximal installation distance of the sensor detection surface>>

If the sensor detection surfaces are close to each other, the accurate measurement may not be obtained due to mutual interference between them. Keep a distance of at least the values shown below between the sensor detection surfaces.



Opposite Installation　　Parallel Installation

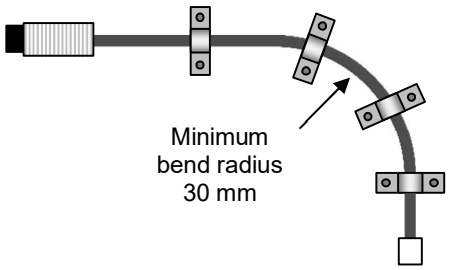
Measurement Range	Sensor Model Name	Dimension A	Dimension B
10 mm range	RXS-10-M050-03	1500 mm	1500 mm
5 mm range	RXS-05-M050-03	600 mm	650 mm
2 mm range	RXS-02-M030-03	500 mm	600 mm

<<Installing the sensor cable and the extension cable>>

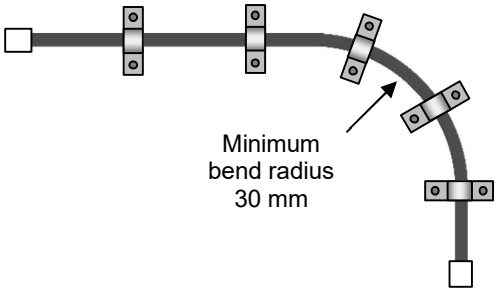
Clamp the cables so that no tensile or torsional stress is applied to the cables and connectors.
Be careful not to damage the cables when clamping them.

The minimum bend radius of the cables is 30 mm.

Do not bend or shake the cables constantly.



Sensor Cable



Extension Cable

<<Installing the amplifier>>

Install the amplifier to the 35 mm DIN rail.

When installing more than one amplifier or together with other products, keep a distance of at least 20 mm (reference) from the side of the amplifier.