

Displacement Transducer Model MSK series

ATG1

User's Manual




Contents

1. SAFETY PRECAUTIONS	3
1.1 SYMBOLS	3
1.2 ATTENTION ON SAFETY	3
2. FEATURES	4
3. INSTALLATION / WIRING	6
3.1 PRECAUTION.....	6
3.2 MOUNTING EXAMPLE.....	7
3.3 WIRING	8
4. MODEL	9
5. SPECIFICATIONS	10
5.1 GENERAL SPECIFICATIONS	10
5.2 PERFORMANCE SPECIFICATIONS.....	10
5.3 OUTPUT CIRCUIT	11
5.4 FREQUENCY OF OUTPUT PULSE	11
6. DIMENSION.....	12

1. Safety Precautions

1.1 Symbols


In this manual, the following symbols are indicated about the act that requires attention and the prohibition.

Symbol shows danger of electric shock	
Symbol shows requiring your attention	
Symbol shows prohibited of an act	

1.2 Attention on safety

When using the SANTEST equipment, thoroughly read this manual. Also pay careful attention and handle the module properly.

Design precautions

 When there are false of sensor, the signal from the sensor will be lost. So the safety of the overall system is always maintained.

2. Features

- ◆ **Non-Contact linear sensor**

ATG1 is a linear measurement contactless system using the magneto resistive device for industrial application. The device detects a magnetic mark that magnetize on the magnetic layer of the tape. The ASIC converts the sensor signal to high resolution pulse.

- ◆ **High resolution**

Resolution $0.2\mu\text{m}$, accuracy $\pm 2\mu\text{m}$ (1mm)

- ◆ **Cable length 40m**

Maximum 40m long with extension cable.

- ◆ **Incremental pulse output**

High speed pulse output (A and B quadrature)

- ◆ **Stand alone**

Don't need any conditioner. It outputs position signal.

- ◆ **DC power supply**

24V DC power supply and low consumption.



3. Installation / Wiring

3.1 Precaution

◆ Sensor

Do not hit, bend or damage the sensor.

Do not disassemble the sensor then warranty will be lost


Fast moving may dislodge the retainer inside the bearing, causing the measuring range to be reduced. In this case, pushing the feeler with a little strong force will return to the original range.


The sensor is equipped with a bellows on the bearing rod. Organic solvents, ozone, ultraviolet rays, and other adverse conditions in the ambient atmosphere can cause rapid deterioration of the bellows. If you need replace it , please contact us.

The feeler can be replaced to another type one. Thread is M2.5.

◆ Cable

Do not pull strongly the cable or damage it. A inlet of structure for cable are designed to waterproof. But we recommend install another protection using shielding plate In order to enhance the safety

 Do not bind the sensor cable with the power wires or install them close to each others. The sensor should locate at 100mm or more away from power lines. Not doing so could result in noise that would cause erroneous operation.

 Do not make installation or wiring during power on.

3.2 Mounting example

Attach using the shaft holder. We shows a mounting diagram using a commercially available pipe holder below. There is no constraints mounting direction.

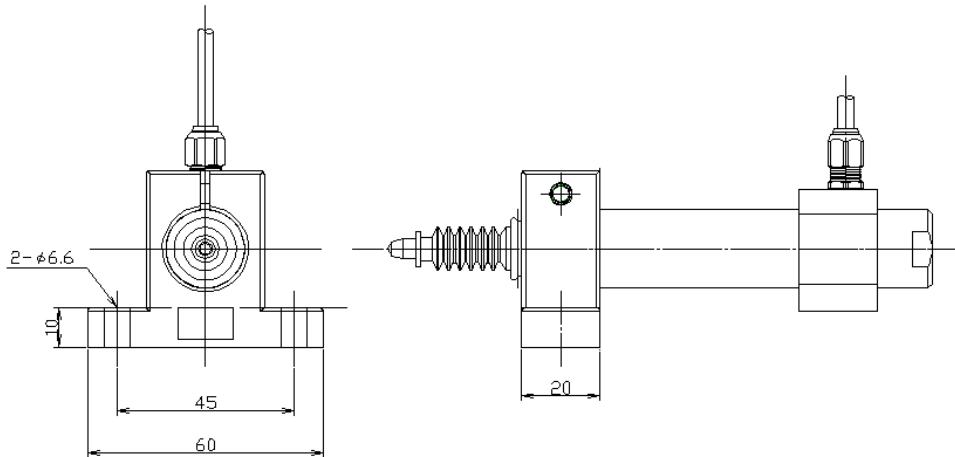


Fig 1 Installation example

⊘ Use the unit under the specified environment given in the general specification. Using under extend range may result fire or may damage the unit.

Wiring precautions

⚠ Do not make installation or wiring during power on.

The sensor cable is a part of sensitive to noise. Please be wired in mind the following considerations

- ◆ Wire length should be as short as possible
- ◆ Separate the power line and sensor cable.
- ◆ Be sure to attach a surge absorbing device on a terminal of the magnetic relay, contactor and solenoid.

3.3 Wiring

■ Sensor cable

	Name	Color	Function
	+Vcc	White	Power+
	0V	Black	Power-
	A+	Red	Pulse output
	A-	Green	Pulse output
	B+	Yellow	Pulse output
	B-	Brown	Pulse output
	SHLD	Shield Mesh	Shield

■ Extension cable

Total cable length can be extended for up to 40m. Connect the each wire of the same color.

		Sensor	Extension cable
Name			
+Vcc		White	White
0V		Black	Black
A+		Red	Red
A-		Green	Green
B+		Yellow	Yellow
B-		Brown	Brown
SHLD		Shield mesh	Shield mesh

4. Model

sensor

ATG1-10-[①]-[②]- G[③]LF

① Resolution

D8 : 1um(std.)

DA : 0.2um

② Material of bellows

N : NBR F : Fluorine rubber

③ Cable length

Unit : m

Extension cable

CL-AG-S-[⑤]-FF

⑤ cable length

Unit : m maximum 30m

5. Specifications

5.1 General specifications

Item	Specification
Supply voltage	DC 22V ~ 26V
Supply current	0.05A
Operating temperature	0~+60°C
Storage temperature	-20~+60°C
Humidity	20~90%RH(no condensation)
Vibration	6G(40Hz 2mmpp)
Shock	50G(2mS)
Withstanding voltage	AC500V 1min.
Insulation	> 20MΩ (DC500V)
Protection	IP67

5.2 Performance specifications

Item	Specification
Stroke	10mm
Output signals	A/B differential
Output driver	Line driver compliant with EIA-422
Linearity	±2μm typ.(within 1mm)
	±10μm max.(full range)
Resolution	0.2μm or 1μm
Repeatability	1μm
Response speed	500mm/s(1μm) 100mm/s(0.2μm)
Drift	Less than 50ppmFS/°C
Measuring Force(20°C)	1.1~2.8 N
Dimension	φ20×145 with feeler
Mass	250g without cable
Cable length	40m max
Feeler	Spherical steel M2.5 (Interchangeable)

5.3 Output circuit

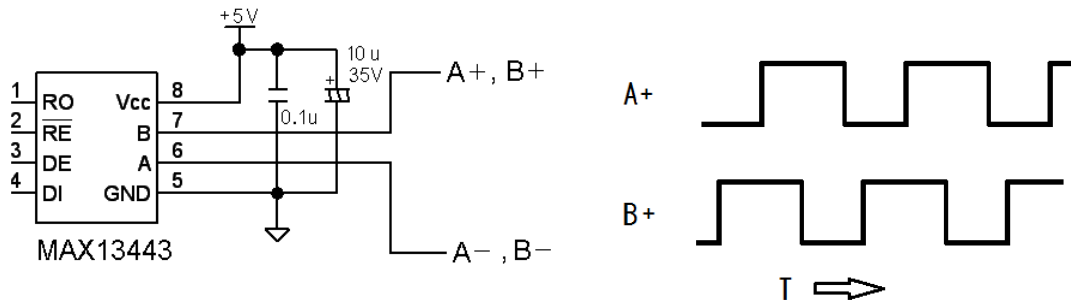


Fig 2 Output circuit

Waveform when push the feeler

5.4 Frequency of output pulse

Permissible velocity depends on the resolution. If you select 0.2µm resolution, the frequency of output pulse will be higher. We recommend prepare the high response counter.

Resolution	Permissible velocity
0.2µm	100mm/s
1µm	500mm/s

ATG1 will output pulses of 4 multiplied. Then, frequency of pulse can be calculated by the following formula,

$$f = V \div \text{resolution} \div 4 \quad V: \text{Velocity}(\text{mm/s})$$

When velocity is about maximum, frequency will be 125kHz. Confirm the specification of your equipments.

6. Dimension

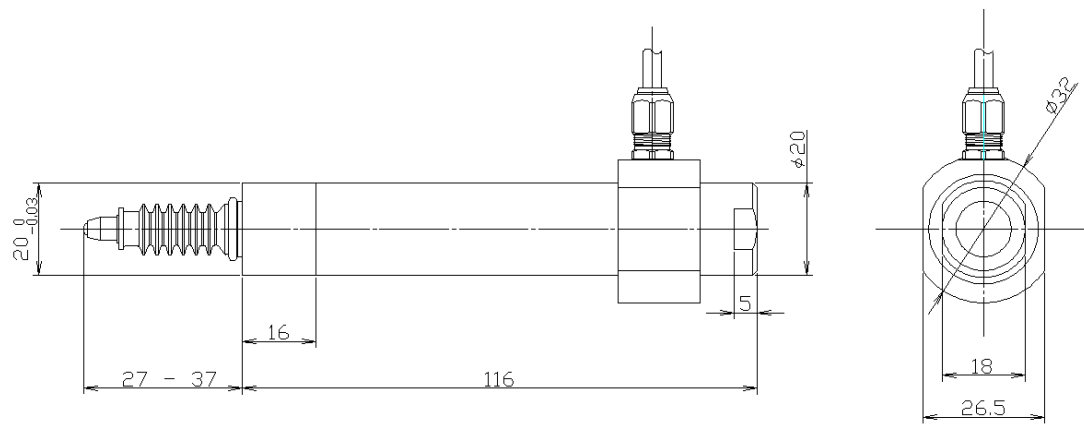


Fig 3 Outline drawing

MEMO

----- Warranty -----

The product has been designed and manufactured for general industries applications.

The gratis warranty term of products shall be for one year after the date of delivery to a designated place. If any faults or detects found to be responsibility of Santest occurs during use of the product within gratis warranty terms, The products shall be repaired at no cost via the dealer or Santest co., Ltd. Note that if repairs are required out of Japan, expenses to send to Japan shall be charged for. Even within the gratis warranty terms, shall be charged for in the following case.

- ◆ Failure occurring inappropriate storage or handling, carelessness or negligence by the user.
- ◆ Any other failure found to not be the responsibility of Santest
- ◆ Failure caused by unapproved modification and repair.
- ◆ Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Santest
- ◆ Failure caused by external irresistible forces such as fires, earthquakes or wind and water damage.

Regardless of the gratis warranty terms, Santest shall not be liable for compensation to damage caused by any cause found not be responsibility of Santest.

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Specifications subjects to change without any notice for improvement.