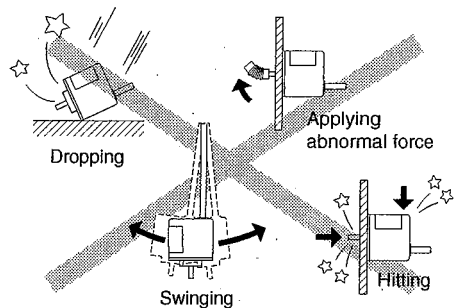


■ Correct use

Since this device consists precision parts, handle it very carefully.



- * Use a coupling to couple with the rotary shaft of this device so that excessive force will not be applied to the rotary shaft.
- To prevent malfunctions, install the wires for this device in a pipe independent from the high tension lines and power lines.
- If surge voltages are generated in the power source, insert a surge absorber between the power source and the device. Shorten the wires for the device as much as possible to prevent malfunctions.
- In some cases, the effect of a shielding wire is higher when it is connected to 0 V and in other cases, higher when it is open.

Warranty

1. This product is covered by a warranty for a period of one year from the date of purchase.
2. This warranty covers free-of-charge repair for defects judged to be the responsibility of the manufacturer, i.e., defects occurred while the product is used under normal operating conditions according to descriptions in this manual and notices on the unit label.
3. For free-of-charge repair, contact either your sales representative or our sales office nearby.
4. The following failures will be handled on a fee basis even during the warranty period.
 - (a) Failures occurring through misuse, mis-operation, or modification
 - (b) Failures occurring through mishandling (dropping) or transportation
 - (c) Failures occurring through natural calamities (fires, earthquakes, flooding, and lightening), environmental

*Outer appearance and specifications are subject to change without prior notice.

HOME PAGE: <http://www.onosokki.co.jp/English/english.htm>

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ONO SOKKI

ROTARY ENCODER SP-405ZA INSTRUCTION MANUAL

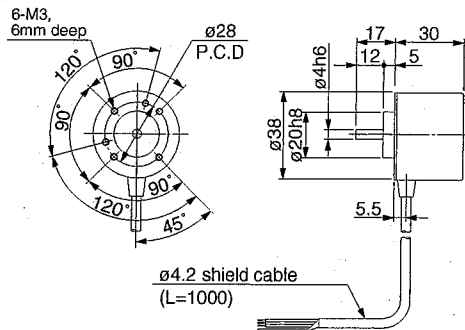
Thank you for purchasing an ONO SOKKI product.

Before use, please read this manual to find out how to use and maintain your device correctly and effectively.

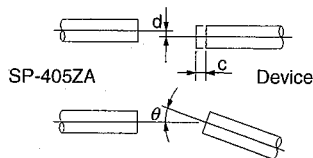
Rating

Item	Specification
Output wave form	2-phase square wave signal + Zero mark (With no regulation of timing)
Output voltage	1 : More than power supply voltage-20 % 0 : 0.5 V or less
Output system	Collector output More than load resistance 10 k Ω
Source voltage	+5 V to 12 V \pm 10%
Current consumption	50 mA or less
Response frequency	100 kHz (Must be used below max. revolution speed)
Connection system	A cable terminal is an open state Cable length is 1000mm
Max. revolution speed	6,000 r/min
Allowable load	25 N in radial direction 15 N in thrust direction
Starting torque	2 mN·m
Moment of inertia	6 g·cm ²
Operating temperature	-10 °C to +70 °C
Storage temperature	-20 °C to +80 °C
Max. humidity	90 % (No condensation)
Vibration durability	98 m/s ² (Three axes, each direction, 2 hrs)
Shock durability	980 m/s ² (Three axes, each direction, 3 times, *Only a shaft is 98m/s ²)
Mass	0.1 kg

Outer dimensions (mm)



● Coupling of shaft (When helical or bellows coupling is used)



d. Level difference: 0.03 mm max.

θ. Angle difference: 0.5° max.

c. Displacement in axial direction: 0.2 mm max.

*Standard thickness of mounting plate is 5 mm.

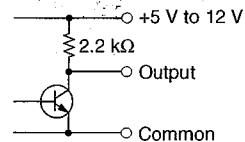
*Can be installed in any direction.

Color of signal lines

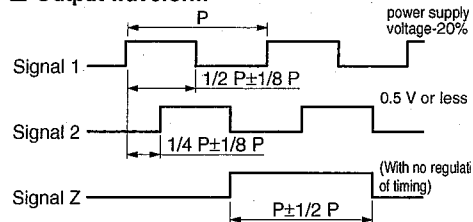
Wire color	Terminal name	Wire color	Terminal name
Green	Signal 1	Red	+5 V to 12 V
White	Signal 2	Black	0 V
Yellow	Signal Z	Shield	N.C

* Take care not to wire an outside device incorrectly as damage to the device may result.

■ Circuit diagram of output stage (collector)



■ Output waveform



When it sees from the direction of an axis and is rotating on the right