

Fiber Optic Sensor Amplifier

FG-1300

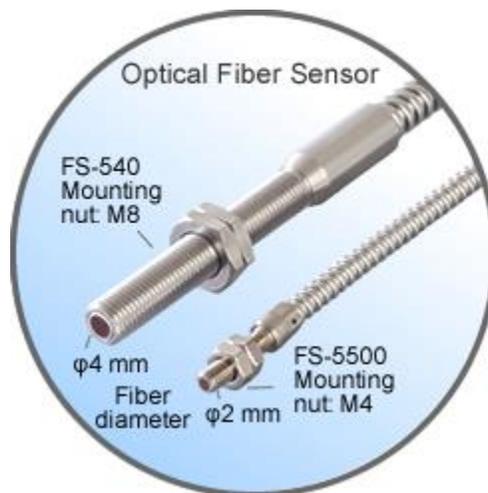
Optical Fiber Sensor

FS-5500/FS-540

CE



FS-5500
Optical Fiber Sensor
(sold separately)



The FG-1300 is a non-contact type high-performance amplifier that emits red light from LED to a rotating object, and detects the variation of the reflected red light amount.

This amplifier is used in combination with an exclusive detector FS-5500*/FS-540 Optical Fiber Sensors which has adopted environment resistant design. The glass fibers are covered with flexible stainless steel tube for rotation measurement in limited space.

NEW

* FS-5500 slim type optical fiber sensor can measure an object hard to be measured and enables the measurement in the limited space, which cannot be measured with previous models.

Features of FG-1300 Fiber Optic Sensor Amplifier

- **Able to measure high speed rotating object. (up to 10 kHz of maximum response frequency)**
- **Red visible light makes it possible to detect the measurement object with thin shaft which is difficult to adjust optical axis position.**
- **Can be detected with minimal change of light amount. Detection without reflection mark is also available.**
- **Selectable gain/trigger level adjustment depending on a use application; manual adjustment using volume control button or auto adjustment using auto trigger.**
- **Provided two measurement distance settings; normal range or adjacent range. Detectable from adjacency to 70 mm max. (when reflection mark used)**

cUnequal interval pulse which is generated in detection without reflection mark can be divided into 1 pulse.

Features of FS-5500 Optical Fiber Sensor **NEW**

- **Able to detect small objects**

Can be detected the rotation of a small object in a limited space such as 2 mm pitch of zebra tape, turbine blades or small motor etc.

- **High resolution**

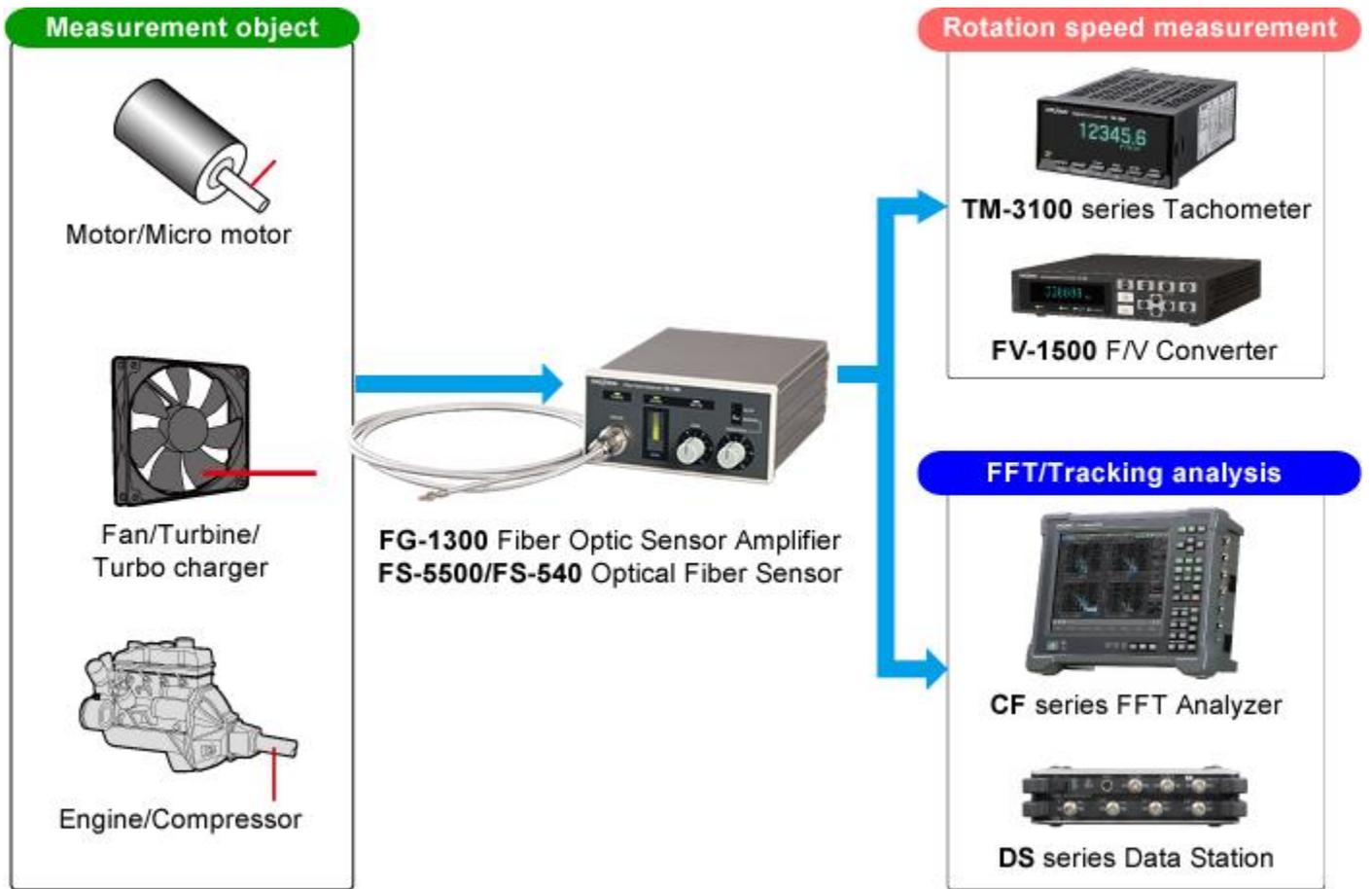
Can be used for crank angle detection that high resolution is required, for tracking analysis, and for balancing measurement. Optimal as measuring unit including FFT Analyzer or tachometer.

- **Environment-resistant design allows measurement under sever or limited conditions.**

Since it has slim body and can be used under very low or high temperature (-40 to 250 °C), it is possible to measure vehicle rotation (engine, shaft, gear, or drive shaft) or measure parts on production line. Even under hard conditions or at limited space, rotation or angle can be measured.

System Configuration

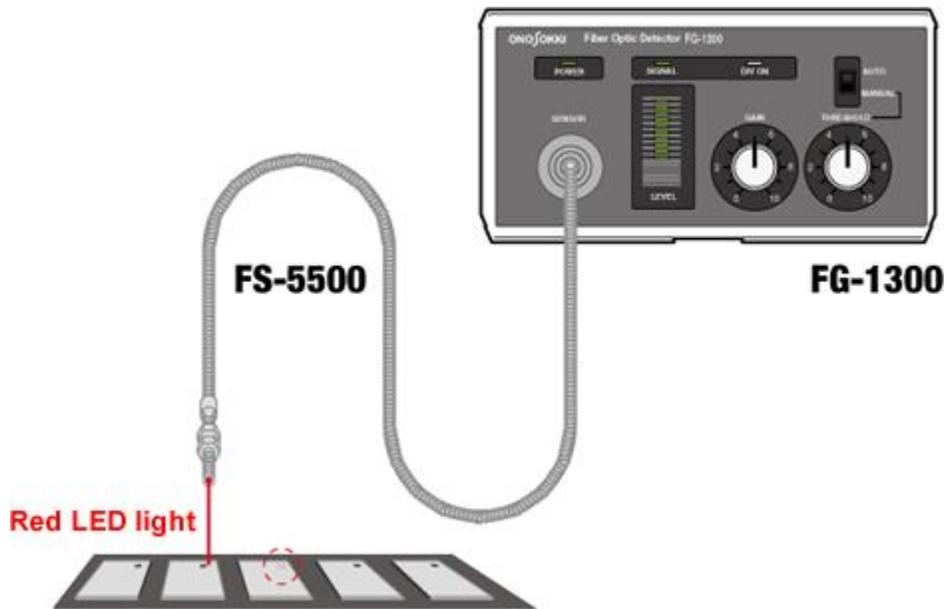
-Wide variety of applications for rotation measurement and analysis.-



Application examples

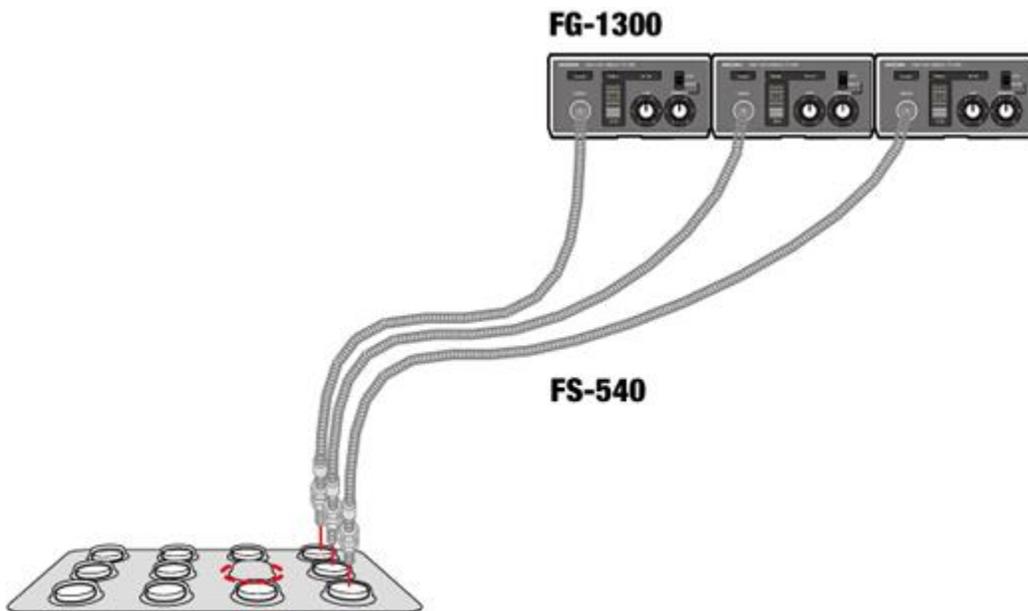
Presence or absence detection of small parts

FS-5500 can project to a small part at a pinpoint with $\phi 2\text{mm}$ of light emission. Presence or absence of a small part flowing on a production line can easily be detected by measuring reflected light amount and judging the level of it by the threshold function.



Inspection of a missing tablet

FG-1300 checks a missing tablet by projecting light onto the production line and comparing the reflection light amount.



FG-1300 Fiber Optic Sensor Amplifier

Detects reflected light amount of red visible light

| | |
|------------------------------------|--|
| Detection method | Light source: Red visible light LED Light receiving element: Phototransistor |
| Maximum response frequency | 10 kHz Analog and pulse |
| Output signal | Analog (MONITOR): Detects reflected light and outputs signal waveform in proportion to the light amount. Output voltage range: 0 to 10 V Pulse (PULS OUT): Output as pulse signal which has been shaped the waveform of reflected light and converted to square wave. Output voltage range: Lo level 0.5 V or less, Hi level 4.5 V or more |
| Load resistance | Signal output connector: BNC 10 k Ω (analog, pulse) |
| Adjustment Function | Gain : Measurement distance can be adjusted by control knob or selection SW. Threshold level : Can be adjusted manually/automatically by control knob or selection SW. Range : Measurement distance can be adjusted by selection SW. Frequency Dividing : Divides the PULSE OUTPUT signal by the range of dividing ratio 1 to 10. Peak hold time constant : Select from 1 s/10 s by selection SW |
| Display | For checking sensitivity : LED bar chart type monitor Others : Display the status by LED indicator |
| Power supply | AC 100 to 240 V(50 Hz/60 Hz) |
| Operating temperature range | 0 to 40 °C |
| Operating humidity range | 5 to 80 %RH(with no condensation) |
| Conforming standard | CE marking, RoHS |
| Applicable detector | FS-5500/FS-540 Optical Fiber Sensors |

Standard Accessory

Power cable (AC100 V), instruction manual, rubber feet (4 pieces) X1 sets

Options

Stand (FG-0131)

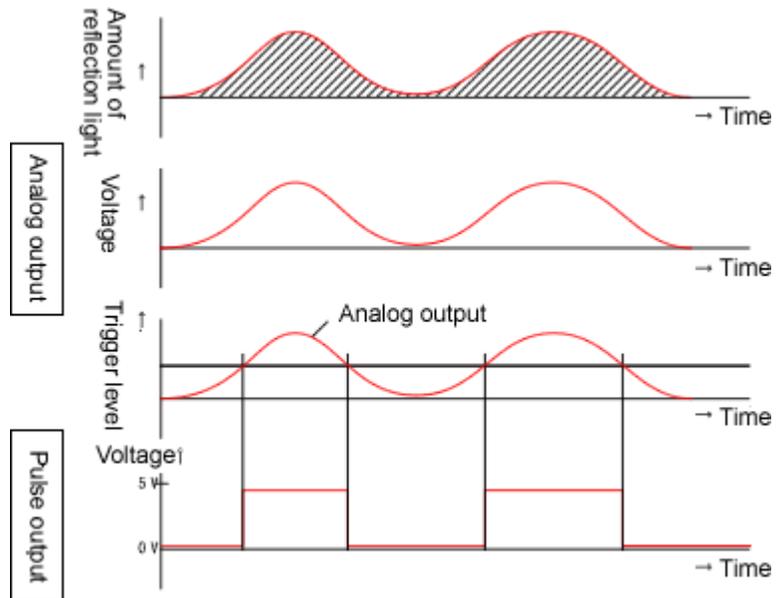
Panel mounting fixture (FG-0132)

Outer dimensions

144 (W) × 72 (H) × 212 (D) mm

Weight

Approx. 1 kg

Relationship between amount of reflected light and signal output**FS-540/542/5500 Optical Fiber Sensor**

| | FS-540 | FS-542 | FS-5500 NEW |
|---|-------------------------------|--------|---|
| Detection type | Optical fiber reflection type | | |
| Emitting port diameter at the tip of Fiber | φ4 mm | | φ2 mm |
| Fiber length | 1 m | 2 m | |
| Mounting nut | M8 | | M4 |
| Operating temperature range | -10 to 250 °C | | -40 to 250 °C |

<Reference> Gap between the Optical Fiber Sensor and the measurement object

(When the output signal is 1 V.)

Optical Fiber Sensor specification (Sold separately)

| FS-540/542 | | Minimum GAIN | Maximum GAIN |
|---------------------------|----------------------------------|--------------|--------------|
| Measurement object | Mat black painted surface | ≒7 mm | ≒14 mm |
| | White copying paper 12X12 | ≒8 mm | ≒15 mm |
| | Reflection mark 12X12 | ≒44 mm | ≒69 mm |

| FS-5500 <small>NEW</small> | | Minimum GAIN | Maximum GAIN |
|-----------------------------------|------------------------------|-------------------------|-------------------------|
| Measurement object | Zebra tape | ≒2 mm | ≒20 mm |
| | Reflection mark 12X12 | ≒2 mm | ≒50 mm |

HT-011 Reflection mark(12 mm square x 25 pcs per sheet, 10 sheets/pack)

Option

*The length of fiber cable can be extended. Please contact your nearest distributor or send us an e-mail (overseas@onosokki.co.jp).