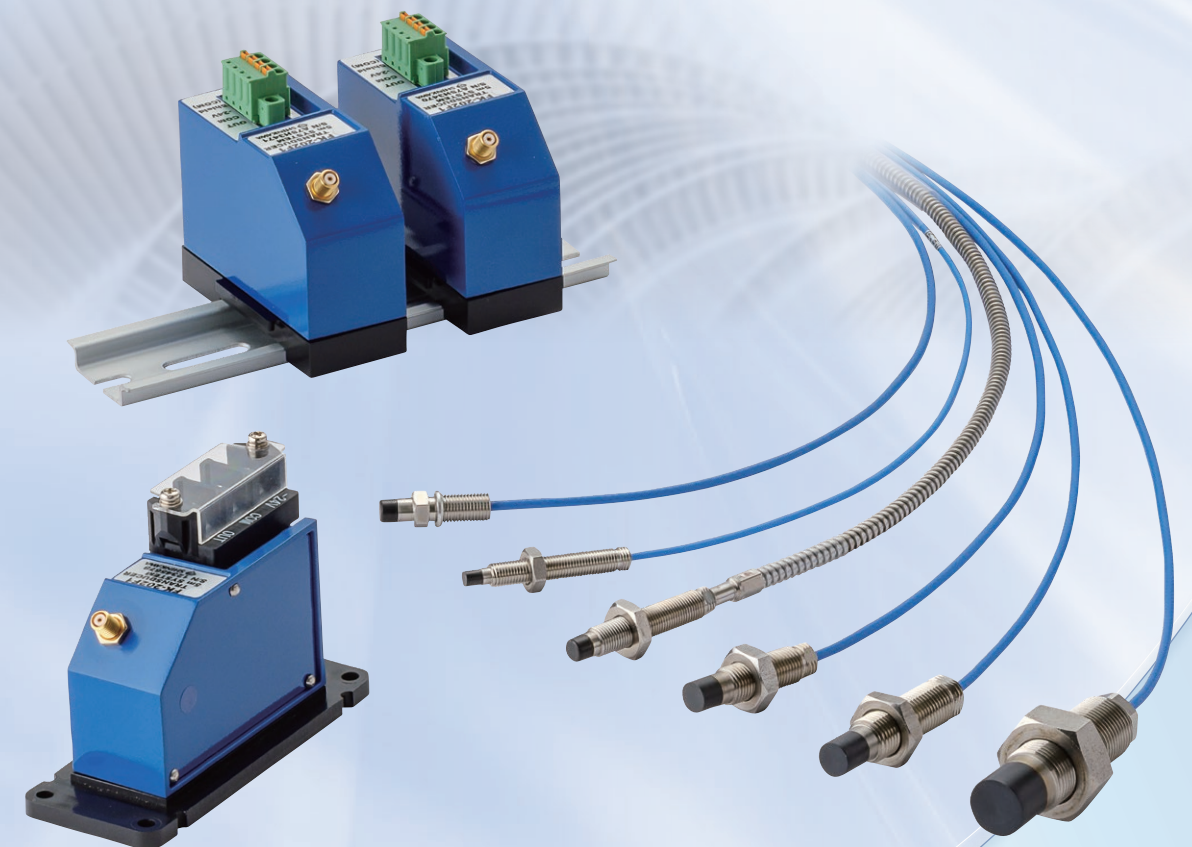


Best solution for the measurement of shaft vibration, shaft position, rotating speed, eccentricity and differential expansion of a Rotating Machine.

FK series



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* Specifications, outline drawings and other written information can be changed without notice.
* When exporting Shinkawa products, permission may be required for export or service transactions, pursuant to the provision of the Foreign Exchange and Foreign Trade Act.
When re-exporting Shinkawa products, permission may be required from the US Department of Commerce, pursuant to the provision of the Export Administration Regulation (EAR).
Please contact our service representatives for further information.

Suitable for measurements of shaft vibration, axial position, rotational speed, phase mark, eccentricity and differential expansion on small high speed rotating machinery to large turbines and compressors

FK series transducer is an eddy current displacement sensor and it can be applied for condition monitoring of critical machines in a plant.

▼Case of Spring lock terminal



Example of DIN rail mounting

▼Case of Screw type terminal block(M4)



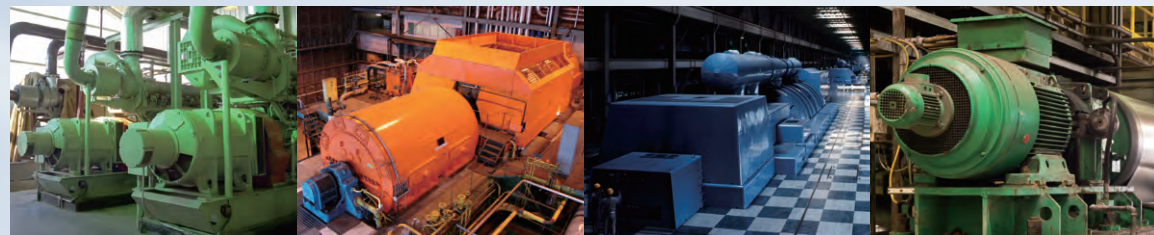
Example of screw mounting

Features

- Environmental friendly design
lead-free soldering, RoHS compliance and reduced footprint
- Flexible mounting options
DIN-rail adaptor, 4-screw-cramp plate adaptor (to replace VK series and others)
- Quality sensor with excellent environmental resistance
sensor without impact of oil droplets and oil mist can be installed in two machines in principle
- API Standard 670(5th Edition)compliant
- Intrinsically safe^{*1}, and marine certified (NK, LR, DNV)
^{*1} Japan, North America, Europe, China, Korea etc.
- CE compliant

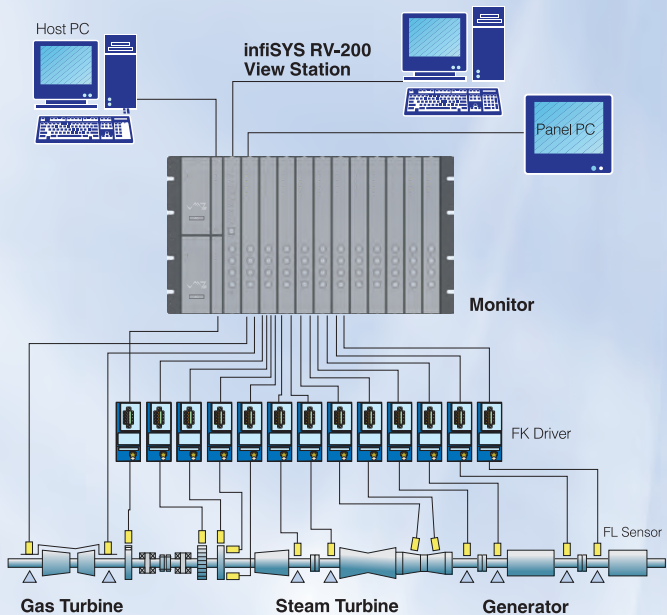
Applications

Condition monitoring of critical machines supported by journal bearings. Such as steam/gas turbines, generators, compressors and so on.



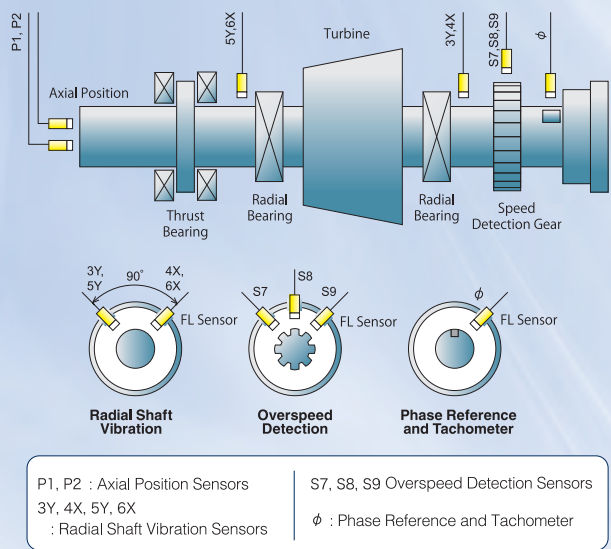
Example of Application

Typical System Configuration

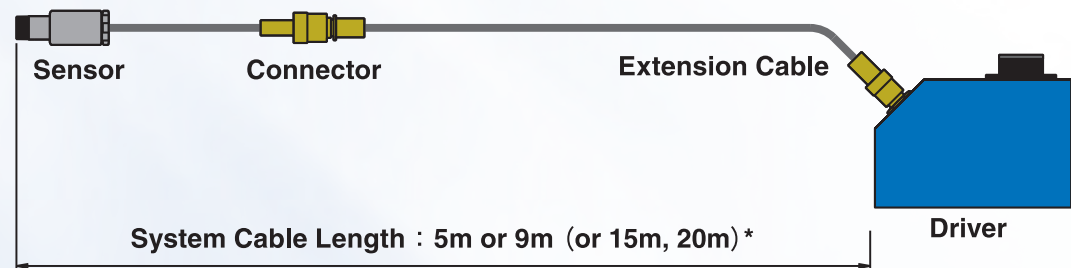


Typical system arrangement for a turbine

(Quotation from API 670 (5th Edition) Annex H)



FK System Configuration



* FK-152R : 15m or 20m
FK-302F3 : 15m

FK-Series

Specifications



	F K - 2 0 2 F (Linear range : 2mm)	F K - 3 0 2 F (Linear range : 3mm)	F K - 4 5 2 F (Linear range : 4.5mm)
System Cable Length	5m, 9m		
Calibration Material	JIS SCM440 flat surface		
Measuring Range	0.25mm to 2.25mm from sensor tip	0.25mm to 3.25mm from sensor tip	0.5mm to 5.0mm from sensor tip
Sensitivity ^{*1}	7.87V/mm	5.0V/mm	3.94V/mm
Scale Factor Error ^{*1}	Within ±5% of 7.87V/mm (for 5m system) Within ±6.5% of 7.87V/mm (for 9m system) (including interchangeability errors) Step : 0.25mm, Linear range : 2mm	Within ±4% of 5.0V/mm (if calibrated as a system) Within ±10% of 5.0V/mm (including interchangeability errors) Step : 0.25mm, Linear range : 3mm	Within ±6% of 3.94V/mm (if calibrated as a system) Within ±10% of 3.94V/mm (including interchangeability errors) Step : 0.5mm, Linear range : 4mm
Linearity ^{*1}	Within ±25μm of 7.87V/mm Straight line: (for 5m system) Within ±38μm of 7.87V/mm Straight line: (for 9m system) (including interchangeability errors) Linear range : 2mm	Within ±30μm of 5.0V/mm Straight line: (if calibrated as a system) Within ±45μm of 5.0V/mm Straight line: (including interchangeability errors) Linear range : 3mm	Within ±50μm of 3.94V/mm Straight line: (if calibrated as a system) Within ±100μm of 3.94V/mm Straight line: (including interchangeability errors) Linear range : 4.5mm
Frequency Responce ^{*1}	DC to 10kHz(-3dB)	DC to 10kHz or more(-3dB)	DC to 10kHz(-3dB)
Sensor Tip Diameter	Approx. 5mm or 8mm dia.	Approx. 10mm dia.	Approx. 11mm dia.
Operating Temperature Range	Sensor : -40 to +177℃ Extension Cable : -40 to +177℃ Driver : -40 to +80℃		
Operating Humidity Range	30 to 95%RH (non-condensing, non-submerged)(Sensor body : 100%RH)		
Power Supply	-24VDC±10%		
Terminal Block	Screw type terminal block (M4) or Spring lock terminal		

Dimensions for typical sensor	<div>■ FL-202F08T : Sensor for 2mm range (Sensor tip diameter ϕ8mm, with armor, with fluoro resin coating)</div>
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FK-Series

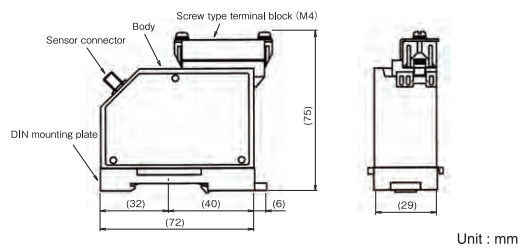
Specifications (Long cable type)

	FK-152R (Linear range : 1.5mm)	FK-302F3 (Linear range : 3mm)																														
System Cable Length	15m, 20m	15m																														
Calibration Material	JIS SCM440 flat surface																															
Measuring Range	0.25mm to 1.75mm from sensor tip	0.25mm to 3.25mm from sensor tip																														
Sensitivity *1	7.87V/mm	5.0V/mm																														
Scale Factor Error*1	Within ±5% of 7.87V/mm (if calibrated as a system) Within ±10% of 7.87V/mm (including interchangeability errors) Step : 0.25mm, Linear range : 1.5mm	Within ±5% of 5.0V/mm (if calibrated as a system) Step : 0.25mm, Linear range : 3mm																														
Linearity*1	Within ±25 μm of 7.87V/mm Straight line : (if calibrated as a system) Within ±45 μm of 7.87V/mm Straight line : (including interchangeability errors) Linear range : 1.5mm	Within ±30 μm of 5.0V/mm Straight line : (if calibrated as a system) Linear range : 3mm																														
Frequency Response*1	DC to 7kHz or more(-3dB)	DC to 8kHz(-3dB)																														
Sensor Tip Diameter	Approx. 8mm dia.	Approx. 10mm dia.																														
Operating Temperature Range	Sensor : -40 to +177°C Extension Cable : -40 to +177°C Driver : -40 to +80°C																															
Operating Humidity Range	30 to 95%RH (non-condensing, non-submerged) (Sensor body : 100%RH)																															
Power Supply	-24VDC±10%																															
Terminal Block	Screw type terminal block (M4) or Spring lock terminal																															
Dimensions for typical sensor	<div>■ FL-152R08T : Sensor for 1.5mm range (Sensor tip diameter φ8mm, with armor, with fluoro resin coating)</div> <div></div> <table><tr><th>Code</th><th>Length to be specified</th><th>FL-152R08T</th></tr><tr><td>—</td><td>Threaded Portion</td><td>M10×1, 3/8-24UNF-2A</td></tr><tr><td>L1</td><td>Unthreaded length</td><td>Maximum length : 230mm</td></tr><tr><td>L2</td><td>Case length</td><td>Maximum length : 250mm</td></tr><tr><td>L3</td><td>Cable length</td><td>0.5m, 1.0m, 15.0m, 20.0m</td></tr></table> <div>L1 and L2 are to be specified by order steps of 10mm. Also order steps of 0.1 inches are available.</div> <div>■ FL-302F10T : Sensor for 3mm range (Sensor tip diameter φ10mm, with armor, with fluoro resin coating)</div> <div></div> <table><tr><th>Code</th><th>Length to be specified</th><th>FL-302F10T</th></tr><tr><td>—</td><td>Threaded Portion</td><td>M12×1.25, 1/2-20UNF</td></tr><tr><td>L1</td><td>Unthreaded length</td><td>Maximum length : 100mm</td></tr><tr><td>L2</td><td>Case length</td><td>Maximum length : 120mm</td></tr><tr><td>L3</td><td>Cable length</td><td>0.5m, 1.0m</td></tr></table> <div>L1 and L2 are to be specified by order steps of 10mm. Also order steps of 0.1 inches are available.</div>		Code	Length to be specified	FL-152R08T	—	Threaded Portion	M10×1, 3/8-24UNF-2A	L1	Unthreaded length	Maximum length : 230mm	L2	Case length	Maximum length : 250mm	L3	Cable length	0.5m, 1.0m, 15.0m, 20.0m	Code	Length to be specified	FL-302F10T	—	Threaded Portion	M12×1.25, 1/2-20UNF	L1	Unthreaded length	Maximum length : 100mm	L2	Case length	Maximum length : 120mm	L3	Cable length	0.5m, 1.0m
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—	Threaded Portion	M10×1, 3/8-24UNF-2A																														
L1	Unthreaded length	Maximum length : 230mm																														
L2	Case length	Maximum length : 250mm																														
L3	Cable length	0.5m, 1.0m, 15.0m, 20.0m																														
Code	Length to be specified	FL-302F10T																														
—	Threaded Portion	M12×1.25, 1/2-20UNF																														
L1	Unthreaded length	Maximum length : 100mm																														
L2	Case length	Maximum length : 120mm																														
L3	Cable length	0.5m, 1.0m																														

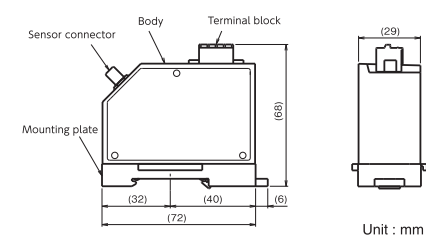
*1 The above specification apply at 25°C with -24VDC power supply and load resistance 10kΩ and JIS SCM440 target.

FK Driver Outline Drawing/FW Extension Cable Outline Drawing

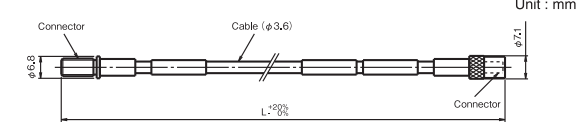
■ FK-□□□F□-1-1 (Screw type terminal block (M4))



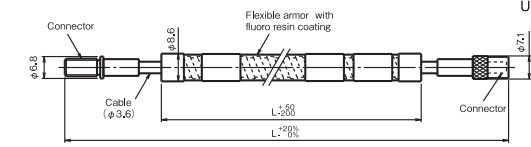
■ FK-□□□F□-1-2 (Spring lock terminal)



■ FW-□□□FL (Without armor)

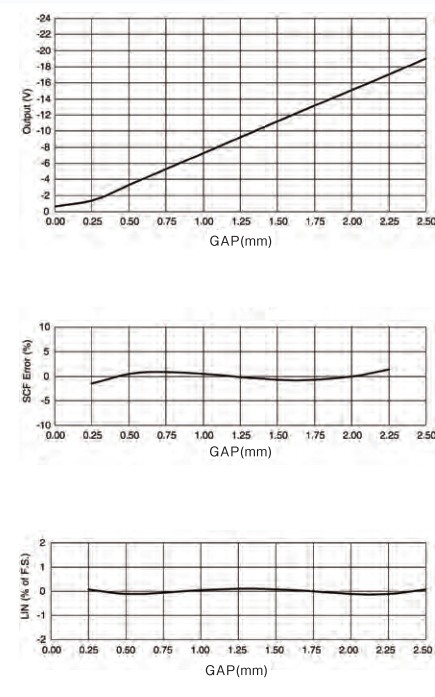


■ FW-□□□FT (With armor (With fluoro resin coating))

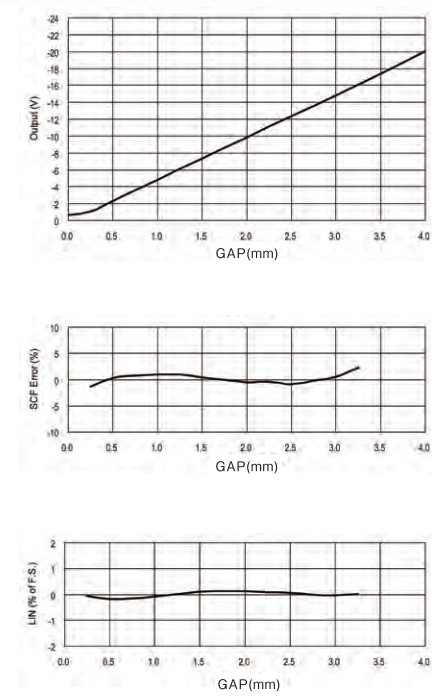


Characteristics Data (Target Material : SCM440 Flat Face Target Size: Triple Diameter or more of Sensor Tip)

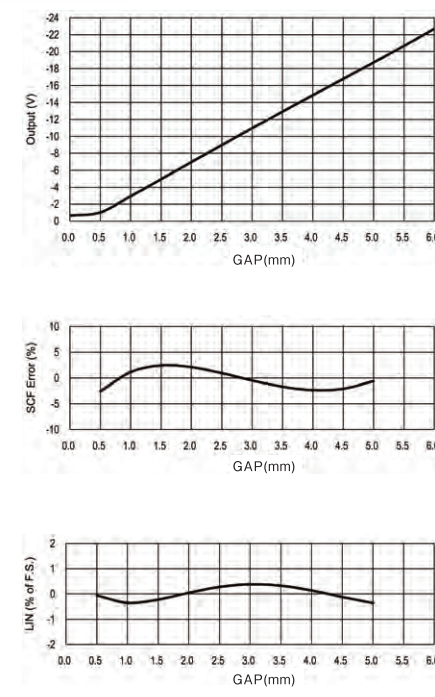
■ FK-202F



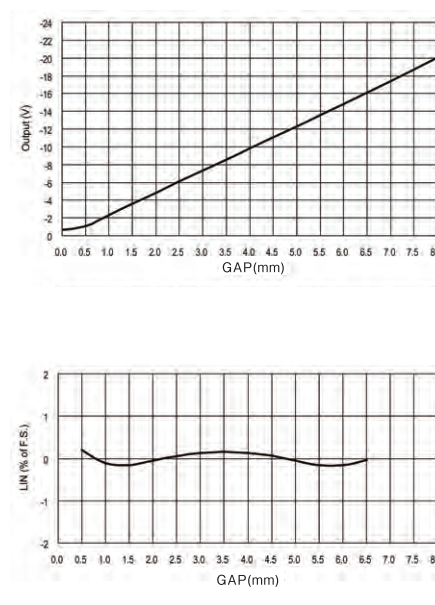
■ FK-302F



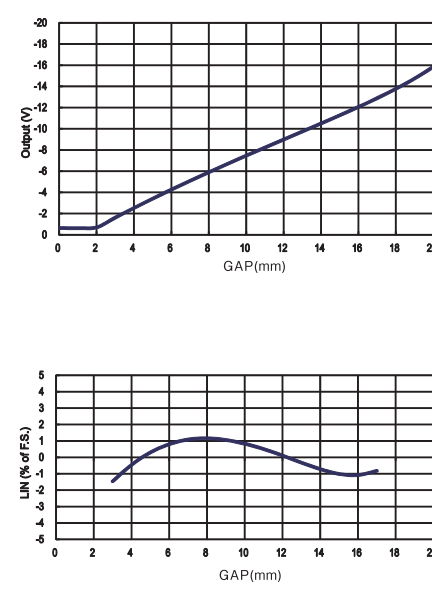
■ FK-452F



■ FK-602F



■ FK-143F



■ FK-263F

