DNV·GL

Certificate No:
**TAA000012A**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Measurement Converter**

with type designation(s)
**FK-F series transducer**

Issued to
**SHINKAWA Sensor Technology, Inc.**
**Higashi-hiroshima City, Japan**

is found to comply with
**DNV GL rules for classification – Ships, offshore units, and high speed and light craft**

## Application :

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

**Location classes:**

| | |
|---|---|
| **Temperature** | **D** |
| **Humidity** | **B** |
| **Vibration** | **B** |
| **EMC** | **B*** |
| **Enclosure** | **B** |

***see page 2 of 3 (Application/Limitation)**

Issued at **Høvik** on **2017-03-08**
This Certificate is valid until **2021-12-31**.
DNV GL local station: **Hiroshima**

Approval Engineer: **Ståle Sneen**

for **DNV GL**

**Odd Magne Nesvåg**
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

## Product description

FK-F series transducers consist of FK driver, FW extension cable, connector and FL inductive sensor to measure distance (between sensor and measuring object). Transducers may be used to measure vibration, position or rotating speed of shafts (turbines, generators, compressors etc.).

Measuring range:
FK-202F – 0.25 mm to 2.25 mm
FK-452F – 0.50 mm to 5.00 mm
FKP-452F – 0.50 mm to 5.00 mm

## Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

## Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

The type approval covers EMC B only when the driver is mounted inside metal case and the extension cable is installed in metal conduit. The type approval does not cover metal case or metal conduit.

## Type Approval documentation

## Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

## Marking of product

The equipment shall be fitted with a rating plate giving information on manufacturer's name, type, current, voltage and power rating.

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE