Certificate No:
TAA0000312

TYPE APPROVAL CERTIFICATE

This is to certify:

That the RPM sensor

with type designation(s)
TSS-KSS-12-074(-1), -091(-1), -097(-1), -118(-1), -157(-1)

Issued to
Kumoh Mach. & Elec. Co. Ltd.
Busan, **Republic of Korea**

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.

Temperature	**B**
Humidity	**B**
Vibration	**B**
EMC	**A**
Enclosure	**B**

Issued at **Busan** on **2021-07-08**
This Certificate is valid until **2026-07-07**.
DNV local station: **Gimhae Station**

Approval Engineer: **Eun Sook Kim**

for **DNV**

Andreas Kristoffersen
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

Speed transmitter for KBB turbochargers: TSS-KSS-12-074, -091, -097, -118, -157
Same with connector integrated: TSS-KSS-12-074-1, -091-1, -097-1, -118-1, -157-1

Power supply:	Active sensor without power supply (magnetic pickup sensor)
Output:	AC signal output
Frequency range:	50 Hz - 20 kHz
Target material:	Ferromagnetic
Target size:	Min. tooth width 6mm
Setting distance:	0.5 - 2.0mm
Housing material:	STS 303F
Cable:	2C x 0.75 SQ shielded with drain wire
Housing length(mm):	74.5 for ST3 / 91 for ST4 / 97 for ST5 / 118 for ST6 / 157 for ST7

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, December 2019.

Marking of product

The products to be marked with model name, manufacturer name and serial number.

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