

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Temperature Controller

with type designation(s)

Combined Temperature and Level Sensor with Alarm Monitor Box ELS-3000 Series

Issued to

KEUMYANG IND. 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 :

Location class:

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

Temperature	B
Humidity	B
Vibration	B
EMC	A
Enclosure	C

Issued at **Busan** on **2019-01-28**

This Certificate is valid until **2023-12-31**.

DNV GL local station: **Busan**

for **DNV GL**

Approval Engineer: **Dong Ho Park**

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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.



Product description

Combined temperature and level sensor with alarm monitor box. Type ELS-3000 Series:

Level sensor

- Medium: liquid/ colloid
- Operating temperature: 0...80 degrees Celsius

Temperature sensor

- Type: B
- Element: RTD
- Range: 0...80 degrees Celsius
- Class: B

Level monitor

- Input power: DC18 ~ 32V
- Power consumption: approximately 3W
- Output contact: SPSTx2EA, 2A/DC 30V
- Power fail voltage: <DC17,5V
- Housing material: Aluminium Die-Casting

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

On board passenger ships, level switches for side mounting are not for applications on tanks containing fuel oil, lubricating oil or other flammable liquids.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

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



Job Id: **262.1-008462-7**
Certificate No: **TAA000025W**

- 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