

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Water Ingress Detection**

with type designation(s)

AU-20...;HR-66...., PR-30.... Series/ PM-12 Series

Issued to

Panasia Co., Ltd.**Busan, Republic of Korea**

is found to comply with

DNV GL rules for classification – Ships and offshore units**DNV GL rules for classification – High speed and light craft****Application :****Protection classes:****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
AU-20...	A	B	A	B	B
HR-66...., PR-30.... Series/ PM-12 Series	D	B	A	B	D

This Certificate is valid until **2021-07-18**.Issued at **Busan** on **2016-07-19**for **DNV GL**DNV GL local station: **Pusan**Approval Engineer: **Jong Yun Kim**

Baeg Soon Choi
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

Water ingress alarm system consisting of:

Alarm Monitors: AU-2032/2032M

Level Switches: HR-66.... , PR-30S/-30EX/30EXD Series, PM-12 Series

For water ingress in cargo holds, physical protection/filters as arranged during suspension test to be installed.

System may also be used for other level monitoring applications according to TA documentation.

Application software/firmware name and version:

LeMon – 32.1 for AU-2032 / 2032M

Application/Limitation

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- Sensor arrangement and installation (responsibility of installer)

The Type Approval covers hardware and software listed under items A to F in Ringbinder "Type Approval for Level Alarm System" issued by PAN-ASIA PRECISION @ ENG.CO., LTD.

Ex installations 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.

As long as the units are covered by the Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 A 202 will not be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.

Clause for application software control.

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV GL for evaluation and approval.

Major changes in the software are to be approved before being installed in the computer.

A Certification of Application Functions may be required for the particular vessel.

Type Approval documentation

Tests carried out

Applicable tests according to DNV Standard for Certification No. 2.4.

Performance testing according to SOLAS Reg.XII/12.

Periodical assessment

Job Id: **262.1-004666-4**
Certificate No: **TAA00000KF**

The scope of the retention/renewal survey 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 survey 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

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE