DNV·GL

Certificate No:
TAA00000J4

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Monitoring System

with type designation(s)
TIP-070WT & TOP-080NT

Issued to
Tetradyne Co., Ltd.
#604, 605 E&C Venture Dream Tower 2, 197-10 Guro-3Dong, Guro-Gu, Seoul, Republic of Korea

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

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

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**IP20**

This Certificate is valid until **2018-09-20**.

Issued at **Busan** on **2016-09-21**

for **DNV GL**

DNV GL local station: **Seoul**

Approval Engineer: **Byoung So Lee**

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.

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Product description

Model	TIP-070WT	TIP-080NT
TFT-LCD	AT070TN94	EJ080NA-05B
Viewable size	7.0 inch	8.0 inch
Resolution	800x480	800x600
CPU	ARM Cortex A8-1GHz	
Memory	SDRAM 512MB	
Storage	NAND FLASH 512MB	
I/O	2 x CAN 2.0 4 x RS-485 1 x RJ45 10/100Mbps Ethernet 2 x USB 2.0 Port 1 x Mini USB Port (internal use only) 1 x Micro SD Card Slot	
Touch screen	4-Wire Resistive	
Power Input	DC 24V (18~36VDC)	

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 GL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate.
Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1.
The certification test is to be performed at the manufacturer of the application system according to an approved test program before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

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 for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation

Tests carried out

Applicable tests according to Class Guidance DNVGL-CG-0339, November 2015.

Periodical assessment

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