

TYPE APPROVAL CERTIFICATE

This is to certify:

That the **Bridge Monitor**

with type designation(s)
ER2701 ECDIS Monitor

Issued to

Orion Technology Co., Ltd.
Gimcheon-si, Gyeong-buk, Korea, Republic of

is found to comply with

MSC.191(79) Performance standards for presentation of navigation-related information on shipborne navigational displays
IMO Res. A.694(17) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids
DNV 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	A
Humidity	A
Vibration	A
EMC	B
Enclosure	IP20

Issued at **Høvik** on **2023-05-23**

This Certificate is valid until **2028-05-22**.

DNV local unit: **Gimhae Station**

for **DNV**

Approval Engineer: **Tommi Juhani Rifaat**

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Frederik Tore Elter
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

ER2701 is a bridge monitor for use as navigational bridge and ECDIS display.

Application/Limitation

- ER2701 ECDIS Monitor shall be installed according to manufacturer's documentation.
- ER2701 ECDIS Monitor may be installed as ECDIS display. Then manufacturer provided colour calibration table shall be installed, interfacing with VGA, DVI-D and HDMI in accordance with the manufacturer's documentation.
- For ECDIS compliant installation display monitor control is to be interfaced with ECDIS computer and ECDIS colour table to be installed as part of ECDIS SW (see manufacturers documentation).

Type Approval documentation

DNV No	Drw No	Rev	Title
39	OT-MA-230162	2023-03-15	Doc: Orion, ER2701 Salt Mist Statement
2	OTD-R21-110-1	01	Drawing: Orion, ER2701 Block Diagram
1	OT-MR-424	Rev.B	Drawing: Orion, ER2701 drawing
31	L39ME0447	1.2	Manual: Orion, 27 Inch ECDIS Marine Monitor
24	KR23-HEZ0021	02	Report: Eurofins, ER2701 DNV-CG-0339 Conducted low frequency immunity test
26	GETEC-E4-22-201	1	Report: GETEC, ER2701 IEC 60945 EMC Test Report (nr.2)
35	GETEC-E4-22-201-R1		Report: GETEC, Radiated Emission Test
25	KOMERI-0601-22T3644	E	Report: Komeri, ER2701 IEC 60945 Acoustic Noise
14	2201-01103-001		Report: KRISS, ER2701 IEC 60945 Compass Safe Distance
28	OTI-MM-083	1.0.1	Report: Orion, ER2701 IEC 62288/61174 Test Procedure and Results
8	OT-MA220421	2022-11-12	Report: Orion, Test plan for monitor, IEC 62288 & 61774
16	SGS-R22-2613-EN00	0	Report: SGS, ER2701 DNV-CG-0339 Cold Test & Insulation Resistance
21	SGS-R22-2612-EN00	0	Report: SGS, ER2701 DNV-CG-0339 Damp Heat and Insulation Resistance Test
15	SGS-R22-2614-EN00	00	Report: SGS, ER2701 DNV-CG-0339 Dry Heat Test
17	SGS-R22-2611-EN00	00	Report: SGS, ER2701 DNV-CG-0339 Insulation Resistance & High Voltage Test
22	SGS-R22-2596-EN00	0	Report: SGS, ER2701 EN 60068 Shock & Inclination Test
20	SGS-R22-2585-EN00	0	Report: SGS, ER2701 IEC 60529 IP2X Test
40	SGS-R22-2619-EN00	0	Report: SGS, ER2701 IEC 60945 Damp Heat Test
19	SGS-R22-2615-EN00	0	Report: SGS, ER2701 IEC 60945 Dry Heat Test
18	SGS-R22-2617-EN00	0	Report: SGS, ER2701 IEC 60945 Low Temperature Test
23	SGS-R22-2595-EN00	0	Report: SGS, ER2701 IEC 60945/DNV-CG-0339 Vibration Test
30	KR23Q5AS 001	2023-04-24	Report: TUV Rheinland, IEC 62288 Flicker Test Report

Tests carried out

- Environmental testing: IEC 60945 (2002) incl. IEC 60945 Corr.1 (2008) for protected environment DNV-CG-0339 Class Guideline (2021)
- Performance testing: Relevant parts of IEC 62288 (2021, Ed.3.0)
Relevant parts of IEC 61174 (2015, Ed.4.0)

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
- 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.