



TYPE APPROVAL CERTIFICATE
No. ELE063021XP

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	Operator Control Panel, Marine Monitor, Panel-PC, HMI Panel
<i>Type</i>	Wave II, SMART and PERFORMANCE Monitors
<i>Applicant</i>	North Invent Norway AS Sørhauggata 128 N-5527 Haugesund NORWAY
<i>Manufacturer</i>	North Invent Norway AS - GPV Asia (Thailand) Co., Ltd.
<i>Place of manufacture</i>	834 Moo4, Bangpoo industrial Estate Soi 11, 12, Sykhumvit Road, Praksa, Muand Dis. 10280 Samutprakarn THAILAND
<i>Reference standards</i>	Rules for the classification of ships.- Part C - Machinery, systems and fire protection. - Ch.3, Sect. 6, Table 1.

Issued in **Gdansk** on **June 24, 2021.** *This Certificate is valid until* **June 23, 2026**

RINA Services S.p.A.



This certificate consists of this page and 1 enclosure



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Wave II, SMART and PERFORMANCE Monitors

Product Description:

The Wave II monitors are a series of rugged TFT LCD Display Monitors available in 18,5", 19", 21,5", 24", 27" and 32" display sizes. The Wave PERFORMANCE monitors are a series of rugged TFT LCD Display Monitors available in 18,5", 19", 21,5", 24", 27" and 32" display sizes and with Intel Core i3/i5/i7 and Celeron CPUs.

All of the Monitors are built following a modular approach and can be console mounted or equipped with stand (hinge).

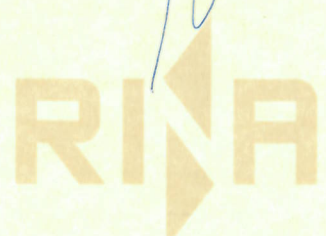
Each Monitor is constituted by the following set of components:

- Display Unit (DIU): Front end of the monitor consisting of the glass (optionally: touch) and display panel in the aluminium frame.
- Electronics Unit (ELU): Back end of the monitor consisting mainly of power supply and controller board, as well as memory.

DIU and ELU are modular and easily separable in order to ensure efficient configuration, maintenance and repair.

Optional accessories such as hinge (tiltable stand), panel mounting kits and HMI units (operator panels) are available.

Model No.	Description
WE185	Wave II 18.5" monitors Wave II 18.5" touch monitors Wave II 18.5" Display Units (DIU) Wave II 18.5" hinge (stands) Wave II 18.5" panel mounting kits Wave SMART 18.5" monitors Wave PERFORMANCE 18.5" monitors (PPC)
WE190	Wave II 19" monitors Wave II 19" touch monitors Wave II 19" Display Units (DIU) Wave II 19" hinge (stands) Wave II 19" panel mounting kits Wave SMART 19" monitors Wave PERFORMANCE 19" monitors (PPC)
WE215	Wave II 21.5" monitors Wave II 21.5" touch monitors Wave II 21.5" Display Units (DIU) Wave II 21.5" hinge (stands) Wave II 21.5" panel mounting kits Wave SMART 21.5" monitors Wave PERFORMANCE 21.5" monitors (PPC)
WE240	Wave II 24" monitors Wave II 24" touch monitors Wave II 24" Display Units (DIU) Wave II 24" hinge (stands) Wave II 24" panel mounting kits Wave SMART 24" monitors Wave PERFORMANCE 24" monitors (PPC)
WE270	Wave II 27" monitors Wave II 27" touch monitors Wave II 27" Display Units (DIU) Wave II 27" hinge (stands) Wave II 27" panel mounting kits Wave SMART 27" monitors Wave PERFORMANCE 27" monitors (PPC)
WE320	Wave II 32" monitors Wave II 32" touch monitors Wave II 32" Display Units (DIU) Wave II 32" hinge (stands) Wave II 32" panel mounting kits Wave SMART 32" monitors Wave PERFORMANCE 32" monitors (PPC)
WE000	Wave II Electronic Units (ELU) Wave II HMI units
WE002	Wave PERFORMANCE Box (ELU)
AA213	21.3" OEM monitor



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Wave II, SMART and PERFORMANCE Monitors

Main characteristics:

The Wave II and Wave PERFORMANCE Monitors use identical Power Supply which can be supplied with 90-264 VAC, 18-36 VDC or as a multipower combination depending on configuration.

The Wave II and Wave PERFORMANCE Monitors come with DVI, Display Port, RS232, 2 x USB, LAN, HMI port and SD slot for Wave II Monitors. Optionally you can get a second DVI, DVI out, a second Display Port, a second LAN and 2 x RS422/485. Details you can find in the User Manuals of the particular Monitors.

Compass safe distances:

- standard compass:
 - 160cm (WE320)
 - 190cm (WE185, WE190, WE215, WE240, WE000, WE002)
 - 200cm (AA213)
 - 220cm (WE270)
- steering compass:
 - 100cm (WE320)
 - 120cm (WE185, WE190, WE215, WE240, WE000, WE002)
 - 130cm (AA213)
 - 145cm (WE270)

The 19", 21,5", 24", 27" and 32" Wave monitors are also tested according to IEC 62288, IEC 62388 and IEC 61174 and thereby ECDIS approved, if installed and configured in accordance to manufacturers documentation.

These monitors have been found in compliance with:

- 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 issued by IMO and
- MSC.191(79) Performance Standards for Presentation of Navigation-Related Information on Shipborne Navigational Displays issued by IMO.

Documents:

User's Manual for Wave II Monitors, dated 2019-10

User's Manual for Wave PERFORMANCE Monitors (PPCs), dated 2020-09

Specifications: Wave PERFORMANCE, WE185, WE190, WE215, WE240, WE270, WE320

ISO 9001 Certificate for GPV ASIA (Thailand) Co., Ltd, No. TH013042 valid till 1/NOV/2021

Test reports:

RISE test report 8P03677-CSD 1 Rev. 1, dated 2018-05-15

RISE test report 8P03677-CSD 2 Rev. 1, dated 2018-05-15

EKTOS test report P17-0120-3 Rev. 1, dated 2018-02-12

EKTOS test report P18-0006 Rev. 2, dated 2019-05-16

EKTOS test report P18-0056 Rev. 1, dated 2019-05-24

North Invent Engineering Judgement, dated 2019-10-03

North Invent report No. WE190_rev_1.0, dated 10/JUN/2020

North Invent report No. WE240_rev_1.0, dated 10/JUN/2020

North Invent report No. WE240HB_rev_1.0, dated 23/APR/2021

North Invent report No. WE270_rev_1.0, dated 10/JUN/2020

North Invent report No. WE320_rev_1.0, dated 23/APR/2021

Applica test report 30473 Rev. 3, dated 2020-10-08

Applica test report 30513 Rev. 0, dated 2021-02-23

Remarks:

When the hardware mentioned in this Type Approval Certificate is used on board the RINA classified vessels, the documentation is to be submitted for review by the system integrator for each particular application, The Society must be kept informed of any changes on the product characteristics.

Gdansk June 24, 2021

RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel +39 010 53851
Fax +39 010 5351000





Gdansk, 06 September 2021

(Encl.: 4) North Invent Norway AS
Sørhauggata 128
N-5527 Haugesund - NORWAY

Our Ref.: PLEL/2021/00116/RADSB File No.: (XP/2021/XP/01/630)
Subject: Type Approval of the Wave II Series of Monitors

Copy to: RINA Hong Kong Ltd. Singapore branch
Singapore, Thailand & Australia Marine
(Encl.: 4) 111 Somerset Road #15-09 Tripleone Somerset
238164 SINGAPORE - SINGAPORE
Copy to: RINA Sweden AB
Scandinavia Marine
(Encl.: 4) Strandbergsgatan 61
SE-112 51 STOCKHOLM - SWEDEN

We send the following approved drawings:

Number	Sheets	Date	Title of Drawing / Your Ref.	Annuls/Replaces
PLEL-1138	38	06 Sep 2021	WaveII and PERFORMANCE Manuals	
PLEL-1139	25	06 Sep 2021	WaveII and PERFORMANCE Monitor Specifications	

The following drawings are kept in file for information:

Number	Sheets	Date	Title of Drawing / Your Ref.	Annuls/Replaces
PLEL-1136	264	06 Sep 2021	Test Reports - Radar and ECDIS Monitors	
PLEL-1137	460	06 Sep 2021	Test Reports and Certificates	

The subject type approval has been issued for North Invent Norway AS Wave II series of monitors. The Wave II series of monitors in association with mentioned in the certificate components creates a state-of-the-art computer concept for marine applications on board RINA classified vessels.

This letter is valid in conjunction with the Type Approval Certificate No.: ELE063021XP.
The field of application and limitations are those mentioned in the Certificate.

In case of any question please contact RADOSLAW SOBOLEWSKI.

Yours faithfully,
RINA Services S.p.A.

