DNV·GL

Certificate No:
A-13963
File No:
899.60
Job Id:
262.1-017320-1

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
FnIO R-Series - Network Remote I/O System

Issued to
CREVIS Co., Ltd.
Gyeonggi-do, Republic of Korea

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application :

Location classes:

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**Required protection according to DNV Rules shall be provided upon installation on board**

This Certificate is valid until **2018-12-31**.
Issued at **Busan** on **2014-11-25**

DNV GL local station: **Seoul**

Approval Engineer: **Eun Sook Kim**

for **DNV GL**
Digitally Signed By: Choi, Baeg Soon
Location: DNV Busan, Korea
Signing Date: 11/27/2014

Baeg Soon Choi
Head of Section

Product description

CREVIS Network Remote I/O System, type FnIO R-Series as listed below:

Type	Catalog Number	Description
Network Adapter Module	RN-9222	ProfiBus Network Adapter
	RN-9289	Modbus-TCP/UDP Network Adapter
I/O Module	RT-1218	Digital Input, Sink, 8-Points, 24V
	RT-1228	Digital Input, Source, 8-Points, 24V
	RT-1238	Digital Input, Universal, 8-Points, 24V
	RT-125F	Digital Input, Sink, 16-Points, 24V
	RT-126F	Digital Input, Source, 16-Points, 24V
	RT-12DF	Digital Input, Universal, 16-Points, 24V
	RT-2318	Digital Output, Sink, 8-Points, 24V
	RT-2328	Digital Output, Source, 8-Points, 24V
	RT-225F	Digital Output, Sink, 16-Points, 24V
	RT-226F	Digital Output, Source, 16-Points, 24V
	RT-3114	Analog Input, 4-Channels, Current 0~20mA, 12bit
	RT-3134	Analog Input, 4-Channels, Current 0~20mA, 14bit
	RT-3154	Analog Input, 4-Channels, Current 0~20mA, 15bit
	RT-3214	Analog Input, 4-Channels, Current 4~20mA, 12bit
	RT-3234	Analog Input, 4-Channels, Current 4~20mA, 14bit
	RT-3254	Analog Input, 4-Channels, Current 4~20mA, 15bit
	RT-3424	Analog Input, 4-Channels, Voltage 0~10V, 12bit
	RT-3444	Analog Input, 4-Channels, Voltage 0~10V, 14bit
	RT-3464	Analog Input, 4-Channels, Voltage 0~10V, 15bit
	RT-3624	Analog Input, 4-Channels, Voltage 0~5V, 12bit
	RT-3644	Analog Input, 4-Channels, Voltage 0~5V, 14bit
	RT-3664	Analog Input, 4-Channels, Voltage 0~5V, 15bit
	RT-3118	Analog Input, 8-Channels, Current 0~20mA, 12bit
	RT-3138	Analog Input, 8-Channels, Current 0~20mA, 14bit
	RT-3158	Analog Input, 8-Channels, Current 0~20mA, 15bit
	RT-3218	Analog Input, 8-Channels, Current 4~20mA, 12bit
	RT-3238	Analog Input, 8-Channels, Current 4~20mA, 14bit
	RT-3258	Analog Input, 8-Channels, Current 4~20mA, 15bit
	RT-3428	Analog Input, 8-Channels, Voltage 0~10V, 12bit
	RT-3448	Analog Input, 8-Channels, Voltage 0~10V, 14bit
	RT-3468	Analog Input, 8-Channels, Voltage 0~10V, 15bit

Type	Catalog Number	Description
I/O Module	RT-3628	Analog Input, 8-Channels, Voltage 0~5V, 12bit
	RT-3648	Analog Input, 8-Channels, Voltage 0~5V, 14bit
	RT-3668	Analog Input, 8-Channels, Voltage 0~5V, 15bit
	RT-4114	Analog Output, 4-Channels, Current 0~20mA, 12bit
	RT-4134	Analog Output, 4-Channels, Current 0~20mA, 14bit
	RT-4154	Analog Output, 4-Channels, Current 0~20mA, 15bit
	RT-4214	Analog Output, 4-Channels, Current 4~20mA, 12bit
	RT-4234	Analog Output, 4-Channels, Current 4~20mA, 14bit
	RT-4254	Analog Output, 4-Channels, Current 4~20mA, 15bit
	RT-4424	Analog Output, 4-Channels, Voltage 0~10V, 12bit
	RT-4444	Analog Output, 4-Channels, Voltage 0~10V, 14bit
	RT-4464	Analog Output, 4-Channels, Voltage 0~10V, 15bit
	RT-4624	Analog Output, 4-Channels, Voltage 0~5V, 12bit
	RT-4644	Analog Output, 4-Channels, Voltage 0~5V, 14bit
	RT-4664	Analog Output, 4-Channels, Voltage 0~5V, 15bit
	RT-4524	Analog Output, 4-Channels, Voltage -10~10V, 12bit
	RT-4544	Analog Output, 4-Channels, Voltage -10~10V, 14bit
	RT-4564	Analog Output, 4-Channels, Voltage -10~10V, 15bit
	RT-4118	Analog Output, 8-Channels, Current 0~20mA, 12bit
	RT-4138	Analog Output, 8-Channels, Current 0~20mA, 14bit
	RT-4158	Analog Output, 8-Channels, Current 0~20mA, 15bit
	RT-4218	Analog Output, 8-Channels, Current 4~20mA, 12bit
	RT-4238	Analog Output, 8-Channels, Current 4~20mA, 14bit
	RT-4258	Analog Output, 8-Channels, Current 4~20mA, 15bit
	RT-4428	Analog Output, 8-Channels, Voltage 0~10V, 12bit
	RT-4448	Analog Output, 8-Channels, Voltage 0~10V, 14bit
	RT-4468	Analog Output, 8-Channels, Voltage 0~10V, 15bit
	RT-4628	Analog Output, 8-Channels, Voltage 0~5V, 12bit
	RT-4648	Analog Output, 8-Channels, Voltage 0~5V, 14bit
	RT-4668	Analog Output, 8-Channels, Voltage 0~5V, 15bit
	RT-7008	Power module, 8-Channels
	RT-7408	Power module, 8-Channels
	RT-7111	Expansion Power Supply (Input DC24V, Output 5VDC/1.0A), 1-Channel
	RT-7511	Expansion Power Supply (Input DC24V, Output 5VDC/1.0A), 1-Channel
Power Noise Filter	NBH-06-432-D	Common Noise Filter

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 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.

The type approval is only valid when the modules are mounted inside a standard metallic cabinet. The power supply port shall be equipped with COSEL model NBH-06-432-D power noise filter.

Type Approval documentation

- Product list, network adaptors, I/O modules and power modules
- Schematic file
- Drawing file
- Test program CVS-Marine-001
- User manuals RN-9XXX v1.21, RT-1XXX v1.1, RT-2XXX v1.1, RT-3XXX v1.1, RT-4XXX v1.1, RT-7XXX v1.0

Test reports:

SGS:	SGS-E14-0020	dated 2014-04-17
SGS:	SGS-R14-0432-R1	dated 2014-06-12

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

Marking of product

All modules are marked with manufacturer name, serial number and catalog number as listed in Product description.

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