DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001NK
Revision No:
1

This is to certify:

That the Network and Communication Components

with type designation(s)
RedFox Industrial Rack Ethernet switches - RedFox 5528 series

Issued to
Westermo Network Technologies AB
STORA SUNDBY, Södermanlands län, Sweden

is found to comply with
DNV GL 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 GL.

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**A / IP40**

Issued at **Høvik** on **2019-06-17**

This Certificate is valid until **2023-03-11**.
DNV GL local station: **Sweden CMC**

Approval Engineer: **Ståle Sneen**

for **DNV GL**
Digitally Signed By: Trond Sjåvåg
Location: DNV GL Høvik, Norway

Trond Sjåvåg
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.

Job Id: **262.1-028147-2**
Certificate No: **TAA00001NK**
Revision No: **1**

Product description

Westermo RedFox Industrial Rack (RFIR) is a high performance industrial Ethernet switch designed for high network traffic applications, comprising the following articles:

Art. No.	Type Designation	Description
3641-4400	RedFox-5528-E-T28G-LV	28x Ethernet TX
3641-4405	RedFox-5528-E-T28G-HV	28x Ethernet TX
3641-4410	RedFox-5528-E-F4G-T24G-LV	24x Ethernet TX + 4x SFP for Ethernet FX
3641-4415	RedFox-5528-E-F4G-T24G-HV	24x Ethernet TX + 4x SFP for Ethernet FX
3641-4420	RedFox-5528-E-F16G-T12G-LV	12x Ethernet TX + 16x SFP for Ethernet FX
3641-4425	RedFox-5528-E-F16G-T12G-HV	12x Ethernet TX + 16x SFP for Ethernet FX
3641-4500	RedFox-5528-T28G-LV	28x Ethernet TX
3641-4505	RedFox-5528-T28G-HV	28x Ethernet TX
3641-4510	RedFox-5528-F4G-T24G-LV	24x Ethernet TX + 4x SFP for Ethernet FX
3641-4515	RedFox-5528-F4G-T24G-HV	24x Ethernet TX + 4x SFP for Ethernet FX
3641-4520	RedFox-5528-F16G-T12G-LV	12x Ethernet TX + 16x SFP for Ethernet FX
3641-4525	RedFox-5528-F16G-T12G-HV	12x Ethernet TX + 16x SFP for Ethernet FX

RFIR-228 series supports OSI layer 3 (network layer)
RFIR-128 series supports OSI layer 2 (data link layer)

LV models are approved for nominal voltage: 24-48 VDC
HV models are approved for nominal voltage: 48-110 VDC

Dielectric strength – signal to other isolated ports: 1.5 kVAC
Dielectric strength – power to other isolated ports: 1.5 kVAC

Hardware revision: 1.0

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, 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 classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

User guide: RedFox Industrial Rack Series, Doc. No. 6641-22820 Rev. B
Drawings: 5013-3260-A Rev. 01,
5013-3280-A Rev. 01,
5013-3500-A Rev. 02,
5013-3510-A Rev. 02,
5013-3520-A Rev. 02.
Test reports: DANAK-19/17874 Rev. A, dated 2017-10-16,
REC-E704837_1, dated 2017-10-09,
REC-E704837_2, dated 2017-10-09.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
Shock tests: 3 tests x 6 directions x 30 g / 11 ms according to IEC 60068-2-27:2008, Test Ea.
Applicable test according to IACS Unified Requirements E10 rev. 7, which includes:

- EMC radiated immunity level of 10 V/m from 80 MHz to 6 GHz
- EMC radiated emission average limit of 54 dBµV/m from 1 GHz to 6 GHz

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.

END OF CERTIFICATE