

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Network and Communication Components**with type designation(s)
FL Switch 2200/2300 Series

Issued to

Phoenix Contact GmbH & Co. KG
Blomberg, Germanyis found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

This Certificate is valid until **2022-04-04**.Issued at **Hamburg** on **2017-04-05**DNV GL local station: **Magdeburg**for **DNV GL**Approval Engineer: **Heinz Scheffler**

Duy Nam Le
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.

Product description

The Managed Switches from the 2200 series are 24VDC Ethernet switches:

- FL SWITCH 2205 (2702326): five 10/100 Mbps RJ45 ports
- FL SWITCH 2208 (2702327): eight 10/100 Mbps RJ45 ports
- FL SWITCH 2207-FX (2702328): seven 10/100 Mbps RJ45 ports, one FO port in SC format for multimode
- FL SWITCH 2207-FX-SM (2702329): seven 10/100 Mbps RJ45 ports, one FO port in SC format for single mode
- FL SWITCH 2206-2FX (2702330): six 10/100 Mbps RJ45 ports, two FO ports in SC format for multimode
- FLSWITCH 2206-2FX SM (2702331): six 10/100 Mbps RJ45 ports, two FO ports in SC format for single mode
- FL SWITCH 2206-2FX ST (2702332): six 10/100 Mbps RJ45 ports, two FO ports in ST format for multimode
- FL SWITCH 2206-2FX SM ST (2702333): six 10/100 Mbps RJ45 ports, two FO ports in ST format for single mode
- FL SWITCH 2204-2TC-2SFX (2702334): four 10/100 Mbps RJ45 ports, two Fast Ethernet combo ports, and two SFX ports
- FL SWITCH 2206-2SFX (2702969): six 10/100 Mbps RJ45 ports, two Fast Ethernet SFX ports

The Managed Switches from the 2300 series are 24VDC Gigabit Ethernet Switches

- FL SWITCH 2308 (2702652): eight 10/100/1000 Mbps RJ45 ports
- FL SWITCH 2304-2GC-2SFP (2702653): four 10/100/1000 Mbps RJ45 ports, two Gigabit combo ports, and two SFP ports
- FL SWITCH 2306-2SFP (2702970): six 10/100/1000 Mbps RJ45 ports and two SFP ports

The Managed Switches/NAT router from the 2200 series are 24VDC Ethernet switches:

- FL NAT 2208 (2702882): eight 10/100 Mbps RJ45 ports

The Managed Switches/NAT router from the 2300 series are 24VDC Ethernet switches:

- FL NAT 2304-2GC-2SFP (2702981): four 10/100/1000 Mbps RJ45 ports, two GigaBit Ethernet combo ports, and two SFP ports

Small form-factor pluggable (SFP)

- FL SFP SX2 (2702397)
- FL SFP FE WDM20-A (2702437)
- FL SFP FE WDM20-B (2702438)
- FL SFP FE WDM20-SET (2702439)
- FL SFP WDM10-A (2702440)
- FL SFP WDM10-B (2702441)
- FL SFP WDM10-SET (2702442)
- FL SFP FX (2891081)
- FL SFP FX SM (2891082)
- FL SFP SX (2891754)
- FL SFP LX (2891767)
- FL SFP LH (2989912)

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNVGL, 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 DNVGL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is

Job Id:
Certificate No: **TAA00000YV**

shipped to the yard. The test shall be done according to an approved test program. 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 DNVGL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation

Test Reports: E161521E1; U161521E1; U161521E1_2nd version; E161521E1, 2nd version; FL Switch 2000 Firmware 1.00 Version 02; FL Switch 2000 Firmware 2.01.

Documents and Datasheets: User manual UM EN FL NAT 2000, Rev. 00; User manual UM EN FL SWITCH 2000 Rev. 00; 2891754_FL SFP SX_7762_en_01; 2891767_FL SFP LX_7762_en_01; FL SFP FE WDM20-A - 2702437; FL SFP FE WDM20-B - 2702438; FL SFP FE WDM20-SET - 2702439; FL SFP FX - 2891081; FL SFP FX SM - 2891082; FL SFP LH - 2989912; FL SFP SX2 - 2702397; FL SFP WDM10-A - 2702440; FL SFP WDM10-B - 2702441; FL SFP WDM10-SET - 2702442.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:

- Model name
- Manufacturer name
- Serial number

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