TYPE APPROVAL CERTIFICATE

This is to certify:

That the Network and Communication Components

with type designation(s)
Industrial Ethernet IE 4000 Series Switches

Issued to
Cisco Systems Inc.
San Jose CA, United States

is found to comply with
DNV GL rules for classification – Ships
DNV GL rules for classification – High speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

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

This Certificate is valid until **2021-08-21**.

Issued at **Hamburg** on **2016-08-22**

for **DNV GL**

DNV GL local station: **Long Beach**

Approval Engineer: **Andrea Grün**

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

Industrial Ethernet IE-4000 Series Switches:

IE-4000-4TC4G-E	4 FE Combo DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-8T4G-E	8 FE Copper DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-8S4G-E	8 FE Fiber DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-4T4P4G-E	4 FE Copper DL ports + 4 FE Copper DL ports with POE, 4 GE combo UL ports, w/FPGA
IE-4000-16T4G-E	16 FE Copper DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-4S8P4G-E	4 FE Fiber DL ports + 8 FE Copper DL ports with POE, 4 GE combo UL ports, w/FPGA
IE-4000-8GT4G-E	8 GE Copper DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-8GS4G-E	8 GE Fiber DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-4GC4GP4G-E	4 GE Combo DL ports + 4 GE Copper DL ports with POE, 4 GE combo UL ports, w/FPGA
IE-4000-16GT4G-E	16 GE Copper DL ports, 4 GE combo UL ports, w/FPGA
IE-4000-8GT8GP4G-E	8 GE Copper DL ports + 8 GE Copper DL ports with POE, 4 GE combo UL ports, w/FPGA
IE-4000-4GS8GP4G-E	4 GE Fiber DL ports + 8 GE Copper DL ports with POE, 4 GE combo UL ports, w/FPGA

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 Ships Pt.4 Ch.9 Control and Monitoring Systems

Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-Certificate issued by a notified/recognized Certification Body.

Type Approval documentation

Test Reports:
- R101359 Environmental Test Report dated 2016-04-18
- R101317 EMC Test Report dated 2016-03-29
- XUD 1430TEL232-A2 Version 1.02 dated 2014-11-12

Technical Data Sheet: C78-733058-06 dated 04/2016
Product Documentation and Compliance / Information for the Cisco IE 4000
Cisco IE 4000 Switch Hardware Installation Guide dated 12/2015
Drawings: 62-25205-01 Size D dated 2013-09-23
92-11422-08 Size B dated 2014-09-07

Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, November 2015.

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 at least every 2.5 year and at renewal of this certificate.

END OF CERTIFICATE