

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electrical Control System**with type designation(s)
UV Power Cabinet Type Eta

Issued to

Eta plus electronic gmbh
Nürtingen, Germany

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft
Resolution MEPC.174(58) – Annex Part 3**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:**

Temperature	A
Humidity	B
Vibration	A
EMC	A
Enclosure	B / IP54

This Certificate is valid until **2024-06-18**.Issued at **Hamburg** on **2019-06-19**DNV GL local station: **Augsburg**for **DNV GL**Approval Engineer: **Dariusz Lesniewski**

Joannis Papanuskas
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 UV Power Cabinet UVPC PE35B is an electrical unit intended to be installed within a ballast water treatment system on board of ships. The UVPC PE35B is conceived for the operation of UV lamps with an electrical power consumption up to 35 kW. Each lamp is operated by one UV Power Cabinet. The UV lamp is located in a reactor designed for treatment of ballast water and is connected to the UV Power Cabinet via electrical cables. The main functions of the cabinet (lamp power setting, switching lamp on and off, reading of lamp voltage value) are controlled by a profibus connection.

The "Eta plus power" cabinet comprises of the following components:

Module/Unit	Type Designation	Manufacturer
Electronic ballast	PE35B-440-215	eta plus electronic GmbH
Cabinet, custom made	Kompakt System Schrank CM	Rittal
Cabinet	-	Baumuller
Power choke	LR3 40-4/63	Block Transformatoren
Heater	LH3002-AL 440VAC/400W	Lm-therm
Fan-and-filter unit	SK3244.140	Rittal
Main switch	NZMB1-A80, NZM1-XSR-R	Eaton (Moeller)
Motor overload switch	PKZM0-0,4	Eaton (Moeller)
Thermostat	ZR011	Stego
Circuit breaker 2 A	FAZ B2/3	Eaton
Circuit breaker 4 A	FAZ-B4/1	Eaton
Circuit breaker 6 A	FAZ C6/2	Eaton
Circuit breaker 10 A	FAZ B10/3	Eaton
Power contactor	DILMC9-01 (24VDC)	Eaton
Indicator lamp, white	M22-CLED-W, M22-LED-W	Eaton
Indicator lamp, green	M22-CLED-G, M22-LED-G	Eaton
Indicator lamp, blue	M22-CLED-B, M22-LED-B	Eaton
Indicator lamp, red	M22-CLED-R, M22-LED-R	Eaton
Fixed adaptor	M22-A	Eaton
Primary-switched power supply, 400AC-24DC	QUINT-PS/3AC/24DC/5	Phoenix Contact
Relay interface module	G2R-1-SND DC24	Omron
Vibration Dampers	J12 40 - 11DG	Sebert Schwingungstechnik

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.

Application/Limitation

The UV Power Cabinet UVPC PE35B has to be installed with vibration dampers, type J12 40 - 11DG. Ref. drawing number: (3)J12 40 00S 01 - 11DG K.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
Resolution MECP.174(58) Guidelines for approval of ballast water management systems (G8) (October 2008), Annex Part 3, Specification for environmental testing for approval of ballast water management systems.

Marking of product

Name of maker: "Eta plus electronic gmbh"
Unit type: UVPC PE35B
Serial number

Job Id: **262.1-015647-3**
Certificate No: **TAA00002C5**

Supply voltage: 3 x 440 V AC
Supply frequency: 50 / 60 Hz
Supply current: 60 A

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