Certificate No:
TAE00004S5

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Power supply unit

with type designation(s)
ELCT_nXpB-V

Issued to
eta plus electronic gmbh
Nürtingen, Baden-Württemberg, Germany

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft
USCG Federal Register 46 CFR part 162, subpart 162.060-30
Resolution MEPC.300(72) – Annex Part 3

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Voltage output	**700-3000 V**
Power	**8-36 kW**
Temperature class	**B**
Vibration class	**A**
Humidity class	**B**
Degree of protection	**B / IP44**

Issued at **Høvik** on **2023-05-30**
This Certificate is valid until **2028-05-29**.
DNV local unit: **Augsburg**

Approval Engineer: **Ståle Sneen**

for **DNV**

Frederik Tore Elter
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

The UV Power Cabinet ELCT nXpB is an electrical unit intended to be installed within a ballast water treatment system on board of ships. The ELCT_nXpB-V is designated for the operation of UV lamps with an electrical power consumption up to 36 kW. Each lamp is powered by a ballast (ELC x-series). 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. In the type designation the n is indicating the number of ballast modules and p is indicating the type of ballast modules (p = 8, 12, 24 or 36 kW).

Table 1: Variant matrix for ELCT_nXpB-V cabinet series

	ELC				
No of modules	X8B-80	X12B-70 or 110	X16B-100 or 140	X24B-145 or 210	X36B-215 or 300
1	ELCT_1X8B-80	ELCT_1X12B-70	ELCT_1X16B-100	ELCT_1X24B-145	ELCT_1X36B-215
		ELCT_1X12B-110	ELCT_1X16B-140	ELCT_1X24B-210	ELCT_1X36B-300
2	ELCT_2X8B-80	ELCT_2X12B-70			
		ELCT_2X12B-110			
3	ELCT_3X8B-80	ELCT_3X12B-70			
		ELCT_3X12B-110			

Table 2: Components in eta plus power cabinet

Module / Unit	**Type Designation**	**Manufacturer**
Electronic ballast	X8B: 1 to 3 units X12B: 1 to 3 units X16B: 1 unit X24B: 1 unit X36B: 1 unit	eta plus electronic gmbh
cabinet, custom made	ELCC_3xXB	eta plus electronic gmbh
heater	808017	lm-therm
fan-and-filter unit	FF-series	lm-therm
main switch	3VA	Siemens
indicator lamp	3SU	Siemens
circuit breaker	5SY, FAZ	Siemens, eaton
indicator lamps	3SU	Siemens
surge suppressor	3RT2916-1DG00-ZX90	Siemens
primary-switched power supply 400AC-24DC	PC-0324-100-0	Block
24V DC fuse	easyB	Block
vibration dampers	GGTC4.8-50/58/10L/BB	WUXI HONGYUAN DEVFLEX CO., LTD.
terminal blocks	tobjob, 285 Serie, 885 Serie	wago
terminal blocks	WF Serie, WEW 35/2	Weidmüller

Application/Limitation

Location classes as listed on page 1. EMC location class A.
The power cabinets are approved for nominal supply voltage 3 x 400-440 V AC, 50/60 Hz.

Type Approval documentation

Tests carried out

Applicable tests according to:
Class guideline DNV-CG-0339, August 2021. EMC class A for all models.
USCG Federal Register 46 CFR part 162, subpart 162.060-30.

Marking of product

Name of maker: eta plus electronic gmbh
Unit type: ELCT_nXpB-V
Serial number
Supply voltage: 3 x 440 V AC
Supply frequency: 50 / 60 Hz
Supply current: Up to 65 A

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and 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