DNV·GL

Certificate No:
TAA00000H4

TYPE APPROVAL CERTIFICATE

This is to certify:

That the DC Power Supply

with type designation(s)
Emparro 5-3x360-500/24, Emparro 10-3x360-500/24, Emparro 20-3x360-500/24, Emparro 40-3x360-500/24

Issued to
Murrelektronik GmbH
Oppenweiler, Germany

is found to comply with
DNV GL rules for classification – Ships

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	**A**
Enclosure	**A**

This Certificate is valid until **2021-07-20**.

Issued at **Hamburg** on **2016-07-21**
DNV GL local station: **Augsburg** for **DNV GL**

Approval Engineer: **Klaus-Peter Schröder**

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.

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Job Id: **262.1-022873-1**
Certificate No: **TAA00000H4**

Product description

Power supply, primary switch, switching frequency changes from 50 kHz to 150 kHz (Part no. 85690, 85691, 85692) and 50 kHz (Part no. 85693).

	Emparro 5-3x360-500/24 (Part no. 85690, no. 87690 with with coated PCB)	Emparro 10-3x360-500/24 (Part no. 85691, no. 87691 with coated PCB)
Input		
Nominal voltage	3x360 … 500 VAC, 50/60 Hz	3x360 … 500 VAC, 50/60 Hz
Nominal current	0.45 A with 3 x 360 VAC 0.30 A with 3 x 500 VAC	0.75 A with 3 x 360 VAC 0.55 A with 3 x 500 VAC
Output		
Voltage	24 VDC	24 VDC
Current	6.0 A / 24 VDC (max. 45°C) 5.0 A / 24 VDC (max. 60°C) 3.7 A / 24 VDC (max. 70 °C)	12.0 A / 24 VDC (max. 45°C) 10.0 A / 24 VDC (max. 60°C) 7.0 A / 24 VDC (max. 70 °C)
Hardware version	1.xx	1.xx

	Emparro 20-3x360-500/24 (Part no. 85692, no. 87692 with coated PCB)	Emparro 40-3x360-500/24 (Part no. 85693, no. 87693 with coated PCB)
Input		
Nominal voltage	3x360 … 500 VAC, 50/60 Hz	3x360 … 500 VAC, 50/60 Hz
Nominal current	1.3 A with 3 x 360 VAC 1.0 A with 3 x 500 VAC	2.3 A with 3 x 360 VAC 1.6 A with 3 x 500 VAC
Output		
Voltage	24 VDC	24 VDC
Current	24.0 A / 24 VDC (max. 45°C) 20.0 A / 24 VDC (max. 60°C) 15.0 A / 24 VDC (max. 70 °C)	48.0 A / 24 VDC (max. 45°C) 40.0 A / 24 VDC (max. 60°C) 30.0 A / 24 VDC (max. 70 °C)
Hardware version	1.xx	1.xx

Application/Limitation

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 RU SHIP Pt.4 Ch.9 Sec. 1.
Customer needs to use suitable external protection.

Type Approval documentation

Tests carried out

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

Marking of product

The products to be marked with:
- device 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 renewal and at least once in the period of the validity of this certificate.

END OF CERTIFICATE