

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Power supply unit**with type designation(s)
FLATPACK S, FPS or SMARTPACK

Issued to

Eltek AS
DRAMMEN, Norwayis found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**

Voltage output	24 & 48 V DC
Power	Up to 8 kW
Temperature class	B
Vibration class	A
Humidity class	B
Degree of protection	A

Issued at **Høvik** on **2018-03-15**This Certificate is valid until **2023-03-14**.for **DNV GL**DNV GL local station: **Oslo Maritime and CAP**Approval Engineer: **Nicolay Horn**

Andreas Kristoffersen
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.



Job Id: **262.1-013232-5**
Certificate No: **TAE00002R8**

Name and place of manufacturer

Delta Electronics (Jiang Su) Ltd.
Wujiang Economoc Development Zone, Suzhou City, Jiangsu
Province, P.R. CHINA

ELTEK S R O
PALENICA 53/79
033 17 LIPTOVSKY HRADOK
SLOVAK REPUBLIC

Product description

Constant voltage charger / Power supplies for different applications. The TA includes single components power supply (PS), power rack (PR), controller and power systems, without battery.

Description	Attributes	Eltek Partnumber
Power Supply:	FLATPACK S	241122.XXX
Controller:	SMARTPACK S	See below
System / Power Rack :	FPS 24V/48V 3.6-8kW	See below
Input Voltage:	100 to 277 VAC/VDC, and 45 to 66 Hz	See below
Protection:	IP 20 (See limitation)	-
System design:	Rack system or individual units.	-

Type designation	Input voltage nominal (VAC/VDC)	Output voltage (VDC)	Output Power (W)	Eltek Partnumber
FLATPACK S 48/1000 HE Marine	100-250	48	1000	241122.105M
FLATPACK S 48/1800 HE Marine	100-250	48	1800	241122.125M
FLATPACK S 24/1000 HE Marine	100-250	24	1000	241122.205M
FLATPACK S 24/500 HE Marine	100-250	24	500	241122.215M
FLATPACK S 24/1000 SIL3 OVP	100-250	24	1000	241122.290
FLATPACK S 24/1000 HE WIR	100-250	24	1000	241122.291M
SMARTPACK S Marine	10-75Vdc	-	-	242100.410M
SMARTPACK S Panel Marine	10-75Vdc	-	-	242100.415M
FPS 24V 3x2kW BULK W/FILTER	100-250	24	6000	CA0603.000
FPS 24V 3x2kW 6x230V BULK	100-277	24	6000	CA0603.001
FPS 3x2kW 6x230V BULK FRONT	100-277	24	6000	CA0603.002
FPS 24V 3x2kW 4x230V BULK	100-277	24	6000	CA0603.003
FPS 24+48V 6kW 6x230V BULK	100-250	24/48	6000	CS0603.000
FPS 24V 6kW 6x230V BD w/filter	100-250	24	6000	CS0606.000
FPS 48V 3kW 230VAC BD	100-250	48	3000	CTOS0301.001
FPS 48V 2kW 230VAC BD	100-250	48	2000	CTOS0201.001
FPS 24V 8kW DF BULK	100-250	24	8000	CS0803.000
FPS 24V 8kW DF BULK	100-250	24	8000	CS0803.001
FPS 24V 8kW 2x230V	100-250	24	8000	CS0806.000
FPS 24V 6kW 2x230V	100-250	24	6000	CMES0606.1000
FPS PS 2R stand alone	100-250	24/48	3600	241122.902
FPS PS 2R stand alone	100-250	24/48	3600	241122.903
FLATPACK S Wallbox marine	100-250	24V	1764	MFGS0208.002

Application/Limitation

For installation in control rooms and dry accommodation spaces onboard ships and mobile offshore units.

The products type approved as listed above have been improved to withstand marine environments. EMC noise in accordance with requirements in IEC 60945 for open deck and bridge installation.

The power systems and the individual items as listed above can operate at full load with an ambient temperature of 45°C - 65°C. After maximum ambient is achieved the output power will derate up to 75°C until the rectifier shuts down. The derating is approx. 10 - 15W/°C depending of type of rectifier. See manufacturer specification for details.

To be installed in an enclosure with an IP degree in accordance with DNV GL Rules w.r.t. location.

Type Approval documentation

Tests carried out

Type / safety tests in accordance with IEC / EN 60950-1. Dry heat test, damp heat test, vibration test, & input supply tests (voltage dips, short interruptions and voltage variation) in accordance with DNV Standard for Certification No. 2.4, high voltage test and insulation resistance. EMC tests in accordance with DNV Standard for Certification No. 2.4 EMC Class B / IEC 60945.

Marking of product

Model number - input voltage - output voltage - maximum current.

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval is 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)
- 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.

Assessment to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE