DNV·GL

Certificate No:
TAA00002JT

TYPE APPROVAL CERTIFICATE

This is to certify:

That the DC Power Supply

with type designation(s)
DIN-Rail Power Supplies

Issued to
PULS GmbH
München, Bayern, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and 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 /*D**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**A**

Issued at **Hamburg** on **2019-12-10**

This Certificate is valid until **2024-09-04**.
DNV GL local station: **Augsburg**

Approval Engineer: **Jens Dietrich**

Digitally Signed By: Rinkel, Marco
for **DNV GL**
Location: Hamburg, on behalf of

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.

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Places of manufacture

Puls Investični s.r.o., Pražská 5639, 43001 Chomutov, Czech Republic;
Puls Electronics Co., Ltd., No.1 Rui'en Lane, Xingpu Road, Suzhou Industrial Park, 215126 Suzhou, PRC

Product description

DIMENSION Series:
QS3.241: Input 100-240V AC, Output 24-28V DC, 80W;
QS5.241: Input 100-240V AC, Output 24-28V DC, 120W;
QS10.241: Input 100-240V AC, Output 24-28V DC, 240W;
QS10.121: Input 100-240V AC, Output 12-15V DC, 180W;
QS10.481: Input 100-240V AC, Output 48-56V DC, 240W;

QT20.241: Input 380-480V 3AC, Output 24-48V DC, 480W;
QT20.361: Input 380-480V 3AC, Output 36-42V DC, 480W;
QT20.481: Input 380-480V 3AC, Output 48-55V DC, 480W;

QS5.DNET: Input 100-240V AC, Output 24V DC, 91W;
QS10.DNET: Input 100-240V AC, Output 24V DC, 192W;
QS40.241: Input 100-240V AC, Output 24-28V DC, 960W;
QS40.361: Input 100-240V AC, Output 36-42V DC, 960W;
QS40.481: Input 100-240V AC, Output 48-54V DC, 960W;

DIMENSION UB-20 Series, DC-UPS:
UB20.241: DC-UPS Control Unit; Input 24V DC, Output: 20A;

Decoupling Module: YR2.DIODE: 10…60V DC, 20A;

SILVER LINE Series:
SL5.300: Input 400-500V 3AC, Output 24-28V DC, 120W;
SL10.300: Input 400-500V 3AC, Output 24-28V DC, 240W;
SL20.310: Input 400-500V 3AC, Output 24-28V DC, 480W.

PIANO Series:
PIC120.241C: Input 200-240V AC, Output 24-28V DC, 120W, DC-ok Signal;
PIC120.242C: Input 200-240V AC, Output 24-28V DC, 120W;
PIC240.241C: Input 200-240V AC, Output 24-28V DC, 240W, DC-ok Signal;

MiniLine series (*Temperature location class D):
ML30.100, Input: 100-240V AC, 47-63Hz; Output: 24-28V DC, 1.3A, 30W;
ML30.101, Input: 100-240V AC, 47-63Hz; Output: 5.0-5.5V DC, 5.0A, 25W;
ML30.106, Input: 100-240V AC, 47-63Hz; Output: +/-12-15V DC, Pmax:36W;
ML50.100, Input: 100-240V AC, 47-63Hz; Output: 24-28V DC, 2.1A, 50W;
ML50.111 (alike ML50.100 but with plug connectors);
ML70.100, Input: 100-120/220-240V AC; 47-63Hz; Output: 24-28V DC, 3.0A, 72W;
ML100.100, Input: 100-120/220-240V AC, 47-63Hz; Output: 24-28V DC, 4.2A, 100W;
ML100.102, Input: 100-120/220-240V AC, 47-63Hz; Output: 12-15V DC, 7.5A, 90W;
ML100.105, Input: 100-120/220-240V AC, 47-63Hz; Output: 48-56V DC, 2.1A, 100W;
MLY02.100, Decoupling Module, Input 10-60V DC, 0-10A.

Optional with suffix –C1 with conformal coated PCBs,
Optional with suffix –S1 with quick-connect spring-clamp terminals.

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.

Product certificate
If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard.

Applications/Limitations

1. Derating of output power due to mounting position and ambient temperature may apply. Manufacturer's specification and mounting instructions are to be observed.
2. Suitability of used battery modules (not covered by this certificate) for the DC-UPS to be verified for the respective application.
3. DC-UPS Modules to be supplied by regulated PULS power supplies only.

Type Approval documentation

Test reports : Puls AN-347.030.00-XV, issue 1, dated 2005-02-22 with appendices; SLG EMV, ESCS 30, Nr.005, dated 2004-12-28;
Puls AN-339.030.00-XV, issue 1, dated 2005-02-22 with appendices.
Additional test reports:
Dry Heat: AN-347.030.00-XV, AN-339.030.00-XV, dated 2015-01-26.
Type Test Report TR2-GL06-BS1_XV_2015-02-18 with appendices.
Test report PULS AN-327.030.00-XV, Issue2, dated 2004-09-04 with Appendices SLG: A9.x, A16.x, A22.x, A22.x-2, Appendices PULS: A20.x, A21.x;
Data sheet and circuit diagram for each type. Add. Test report: PULS AN-327.030.00-XV, rev.1.
TA-Renewal assessment report DNV GL Augsburg dated 2019-04-23.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:
- manufacturer name,
- model type,
- serial number,
- power supply ratings.

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