TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00002YX
Revision No:
3

This is to certify:

that the DC Power Supply

with type designation(s)
MiniLine series, DIMENSION series, PLANET Line

issued to
PULS GmbH
München, **Germany**

is found to comply with
DNV 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.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
MiniLine series	B	B	A	A/(B)*, see page 2	A
DIMENSION series	B	B	A	A/(B)*, see page 2	A
PLANET Line	D	B	A, C	A	A

Issued at **Hamburg** on **2026-11-02**
This Certificate is valid until **2031-02-13**.
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Jens Dietrich**

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 USD 300 000.

Product description

DC/DC-Converters (*EMC class B):
-CD5.241-L1 In: 14…32.4VDC Out: 24VDC, 3.8A
-CD5.243 In: 8.4…16.2VDC Out: 24…28VDC, 4.0A

DC/DC-Converters (*EMC class A):
-CD10.241 In: 24VDC (-25%/+46%); Out: 24VDC, 10A…8.6A (up to 60°C); 7.5…6.4A (at 70°C ambient)
-CD10.242 In: 48VDC (-25%/+25%); Out: 24VDC, 10A…8.6A (up to 60°C); 7.5…6.5A (at 70°C ambient)
-CD10.482 In: 48VDC (-25%/+25%); Out: 48VDC, 5A…4.36A (up to 60°C); 3.8…3.2.4A (at 70°C ambient).

DC-UPS:
-UB10.242 Input range: 22.5..30VDC, Output: 0.23V lower than input voltage, Buffer mode 22.25V DC: (Only suitable for applications where rectified DC voltage with +/-10% is available); For battery capacities between 17Ah and 130Ah

1-Phase Power Supplies:
-ML30.241 In: 100-240VAC Out: 24…28VDC, 1.3A (*EMC class B)
-ML60.121 In: 100-240VAC Out: 12…15VDC, 4.5A (*EMC class A)
-ML60.122 In: 100-240VAC Out: 12…15VDC, 4.5A, low temperature (-40°C) version (*EMC class A)
-ML60.241 In: 100-240VAC Out: 24…28VDC, 2.5A (*EMC class B)
-ML60.242 In: 100-240VAC Out: 24…28VDC, 2.5A (*EMC class B), low temperature (-40°C) version
-QS10.301 In: 100-240VAC Out: 28…32VDC, 8A (*EMC class B)
-QS40.244 In: 200-240VAC Out: 24…28VDC, 40A (*EMC class A)
-QS40.484 In: 200-240VAC Out: 48…54VDC, 20A (*EMC class A)
-QS5.241-A1 In: 100-240VAC Out: 24…28VDC, 5A, ATEX approved version** (*EMC class A)
-QS10.241-A1 In: 100-240VAC Out: 24…28VDC, 10A, ATEX approved version** (*EMC class A)
-QS20.241-A1 In: 100-240VAC Out: 24…28VDC, 20A, ATEX approved version*** (*EMC class A)
-CP10.121 In: 100-240VAC or 110-150VDC Out: 12…15VDC, 16A (*EMC class A)
-CP10.241 In: 100-240VAC or 110-150VDC Out: 24…28VDC, 10A (*EMC class A)
-CP10.241-S1 In: 100-240VAC or 110-150VDC Out: 24…28VDC, 10A, spring-clamp terminals (*EMC class A)
-CP10.242 In: 100-240VAC or 110-300VDC Out: 24…28VDC, 10A (*EMC class A)
-CP10.361 In: 100-240VAC or 110-150VDC Out: 36…42VDC, 6.7A (*EMC class A)
-CP10.481 In: 100-240VAC or 110-150VDC Out: 48…56VDC, 5.4A (*EMC class A)
Optional suffix –C or C1 for versions with conformal coated PCBs.

-SP960.241-S In: 100-240VAC, Out 24…28VDC, 48…41.1A (up to 45°C ambient) (*EMC A)
-SP960.241-SC In: 100-240VAC, Out 24…28VDC, 48…41.1A (up to 45°C ambient) (*EMC A)
-SP960.241-SR In: 100-240VAC, Out 24…28VDC, 48…41.1A (up to 45°C ambient), build-in decoupling (*EMC A)
-SP960.241-SRC In: 100-240VAC, Out 24…28VDC, 48…41.1A (up to 45°C ambient), build-in decoupling (*EMC A)
-SP960.481-S In: 100-240VAC, Out 48…56VDC, 24…20.57A (up to 45°C ambient) (*EMC A)
-SP960.481-SC In: 100-240VAC, Out 48…56VDC, 24…20.57A (up to 45°C ambient) (*EMC A)
SP960 Models showing suffix C with conformal coated PCBs.

** Marking: II 3G Ex ec nC IIC T4 Gc
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2-Phase Power Supplies:
-CT5.121 In: 2x380...480VAC Out: 12…15VDC, 8A (*EMC class B)
-CT5.241 In: 2x380...480VAC Out: 24…28VDC, 5A (*EMC class B)

3-Phase Power Supplies:
-CT10.241 In: 3x380..480VAC Out: 24…28VDC, 10A (*EMC class B)
-CT10.481 In: 3x380..480VAC Out: 48…56VDC, 5A (*EMC class B)
-QT40.241 In: 3x380..480VAC Out: 24…28VDC, 40A (*EMC class A)
-QT40.481 In: 3x380..480VAC Out: 48…54VDC, 20A(*EMC class A)

Redundancy Modules (*EMC class B):
-YR40.241 Dual input, single output; 40A output; input to output voltage drop 140mV @ input 2 x 20A, 72mV @ 20A
-YR80.241 Dual input, single output; 80A output; input to output voltage drop 95mV @ input 2 x 40A, 50mV @ 40A
-MLY10.241 Dual input, single output; 10A output; input to output voltage drop 0,9V @ 10A

Mounting Accessories:
-ZM2.WALL Panel/Wall Mounting Kit
-ZM1.UBC10 Panel/Wall Mounting Kit for UBC10.241.

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 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. The test shall be done according to an approved test program.

Explosion protection markings above are for reference only and are not covered by this type approval certificate.

Conditions and de-ratings in the respective Instruction- and Installation Manuals are to be observed.

Tests carried out

Applicable tests according to DNV CG-0339, August 2021.

Marking of product

Maker, type designation, place of production, ratings, 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE