

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Bus Bar

with type designation(s)

Busbar System Riline60, Busbar System Maxi-PLS, Busbar System Flat-PLS

Issued to

Rittal GmbH & Co. KG

Herborn, Germany

is found to comply with

DNV GL rules for classification – Ships and offshore units

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-05-12**.

Issued at **Hamburg** on **2016-05-13**

DNV GL local station: **Magdeburg**

Approval Engineer: **Harald Amberger**

for **DNV GL**

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.

Product description

Busbar System Riline60:

Rated voltage Un: 690V AC, 1500V DC
Rated frequency fn: 50Hz
Rated insulation voltage Ui: 1000V
Rated impulse withstand voltage Uimp: 8kV
Rated current In (40°C): up to 1600A
Rated peak withstand current Ipk: up to 105kA
Rated short-time withstand current Icw: up to 50kA for 1s/3s

Busbar supports:

SV 9340.000/004/010/050 Busbar supports flat copper busbars
SV 9340.030/040 Busbar support for flat copper bars, 1-/2-pole
SV 9340.090 Spacers for RiLine busbar supports (flat busbar system)
SV 3504/05/14/15.000 PLS busbar connectors

OM adapters / supports:

SV 9340.260/270/300 OM supports without contact system
SV 9340.760 OM adaptors with connection cables, 3-pole, 16A
SV 9340.310/320/340/370 OM adaptors with connection cables, 3-pole, 25A, width 45mm
SV 9340.400 OM adaptors with connection cables, 3-pole, 25A, width 90mm
SV 9340.350/380/390/770 OM adaptors with connection cables, 3-pole, 32A, width 45mm
SV 9340.460/470 OM adaptors with connection cables, 3-pole, 32A, width 55mm
SV 9340.710 - 750 OM adaptors with connection cables, 3-pole, 40A
SV 9340.410 - 450/700 OM adaptors with connection cables, 3-pole, 65A
SV 9340.510 - 560/660 OM adaptors with tension spring clamp, 3-pole, 32A
SV 9340.610 - 650 OM adaptors with tension spring clamp, 3-pole, 65A
SV 9340.900 - 930 OM adaptors with with plug-in cable outlet, 3pole, 25A

Connection adaptors / block:

SV 9342.200/210 Connection adaptors, 3-pole, 63A
SV 9342.220/240 Connection adaptors, 3-pole, 125A
SV 9342.250/270 Connection adaptors, 3-pole, 250A
SV 9342.280/300 Connection adaptors, 3-pole, 800A
SV 9342.224 Connection adaptors, 4-pole, 125A
SV 9342.254 Connection adaptors, 4-pole, 250A
SV 9342.310/314 Connection adaptors, 3-pole, expansion set for 4-pole, 800A
SV 9342.320/324 Connection adaptors, 3-pole, expansion set for 4-pole, 1600A
SV 9342.311/312 Connection block, 1-pole, 800A, 1600A

Circuit-breaker component adaptors

SV 9342.400/410 Circuit-breaker component adaptors, 3-pole, 100A
SV 9342.540/550 Circuit-breaker component adaptors, 3-pole, 125A
SV 9342.500/510 Circuit-breaker component adaptors, 3-pole, 160A
SV 9345.600/610 Circuit-breaker component adaptors, 3-pole, 250A
SV 9345.720/730 Circuit-breaker component adaptors, 3-pole, 400A
SV 9345.700/710 Circuit-breaker component adaptors, 3-pole, 630A
SV 9342.504/514 Circuit-breaker component adaptors, 4-pole, 160A
SV 9345.604/614 Circuit-breaker component adaptors, 4-pole, 250A

Bus-mounting fuse bases

SV 3418.010/040 Bus-mounting fuse bases, D 02-E 18, 63A
SV 3427.010/040 Bus-mounting fuse bases, D II-E 27, 25A
SV 3433.010/040 Bus-mounting fuse bases, D III-E 33, 63A

Hardware busbar system Maxi-PLS:

Rated voltage U_n : 690 V AC, 1500V DC
Rated frequency f_n : 50 Hz
Rated insulation voltage U_i : 1000V
Rated impulse withstand voltage U_{imp} : 8 kV
Rated current I_n (40°C): up to 4000A
Rated peak withstand current I_{pk} : up to 154kA
Rated short-time withstand current I_{cw} : up to 70kA for 1s

Busbar supports:

SV 9649.000/9659.000	Busbar support
SV 9649.160/9659.160	Busbar support, suitable for top mounting
SV 9649.010/9659.010	End support

Hardware busbar system Flat-PLS:

Rated voltage U_n : 690 V AC, 1500V DC
Rated frequency f_n : 50 Hz
Rated insulation voltage U_i : 1000V
Rated impulse withstand voltage U_{imp} : 12 kV
Rated current I_n (40°C): up to 5500A
Rated peak withstand current I_{pk} : up to 220kA
Rated short-time withstand current I_{cw} : up to 100kA for 1s

Busbar supports:

SV 9676.002/004	Busbar support Flat-PLS
SV 9676.020/021	Busbar support for stabiliser bar
SV 9676.503/504/505	Spacer rolls for Maxi PLS busbar and flat copper bars
SV 9676.621/641	Longitudinal connectors
SV 9676.700/710	Connection plates with studs
SV 9676.007/008	Spacers and filler pieces

Application/Limitation

GL Environmental Category: EMC1; C/H

Type Approval documentation

Tests carried out

Test standard acc.:

GL Guidelines for the Performance of Type approvals Part 2 Edition 2012
IEC 61439-2012, DIN EN 61439-2012

Marking of product

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:



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Certificate No: **TAE0000138**

- Inspection on factory samples, selected at random from the production line (where practicable).
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Assessment to be performed at least every 2½ year.

END OF CERTIFICATE