DNV·GL

Certificate No:
TAE0000138

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** for **DNV GL**

Approval Engineer: **Harald Amberger**

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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Product description

Busbar System Riline60:
Rated voltage Un: 690V AC, 1500V DC
Rated frequenzy 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 frequenzy 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 frequenzy 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

Location classes / Test:
Insulation resistance test:500 VDC, Test a 100 MOhm, Test B 10 MOhm
High voltage test: 2000 VAC, 50 Hz
Performance test: IEC60439-1, IEC61439-2
Vibration:Location classes A
The selection of material in the enclosure and IP degree is to be in accordance with the Rules requirements for the actual application.

Type Approval documentation

U145928E1, U145928E2
1579.0522.1.318e, 1579.0797.5.292d, 1579.0797.5.293e, 1579.0797.5.294e
1579.0930.6.858e, 1579.0930.6.862e, 1579.0948.6.867e, 1579.2080837.420, 1579.2080904.435e
1579.2081382.1180e, 1579.2081382.1181e
2012-00139e, 2012-00204e, 2012-00206e
ASTA_16700, ASTA_16701, ASTA_16940, ASTA_16942, ASTA_16943, ASTA_16945, ASTA_17110
ASTA_17111, ASTA_17112, ASTA_17151, ASTA_17163, ASTA_17165, ASTA_17166, ASTA_17230
ASTA_17603, ASTA_17604, ASTA_17744, ASTA_17745, ASTA_17917, ASTA_17918, ASTA_19629
ASTA_19630, ASTA_20105
TR 8000--231-001e, TR 8000--231-002e, TR 8000--231-004e, TR 8000--231-005e,TR 8000--231-008e
TR 8000--231-010e
Brochure Technical System Catalogue Ri4Power
Brochure Technical System Catalogue RiLine60
Technical details - 2nd edition 2015, pages 2-100 to 2-129
General Instruction rules for Power distribution solutions of Rittal.doc

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

Rittal, manufacturing place and type number.

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:

- 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