

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Rittal GmbH & Co. KG
Address	Auf dem Stuetzelberg, Herborn, 35745, Germany
Type	Switchboard Accessories
Description	Busbar System
Trade Name	RiLine60, Maxi-PLS, Flat-PLS
Application	Marine, offshore and industrial applications
Specified Standard	IEC 61439-1 Edition 3.0 2020-05/ EN 61439-1: 2011 IEC 61439-2 Edition 3.0 2020-07/ EN 61439-2: 2011
Ratings	see appendix

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document HTS/ETS 41944-21 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Jochen Koerner

Senior Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group

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Appendix

TYPES

Busbar System RiLine60

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
- SV 9341.000/9341.050 Busbar support PLS
- SV 9342.000/9342.004/9342.030/9342.050 Busbar support PLS

OM adaptors / supports:

- SV 9340.260/270/300 OM supports without contact system
- SV 9340.760/780 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 9340.350/380/390/770/790 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 plug-in cable outlet, 3pole, 25A

Remark: Switchgear fitted on the OM adaptors is to be selected according table "Allocation of switchgear "in section OTHER CONDITIONS.

TYPES continued

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 9342.311/321 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

Busbar System Maxi-PLS

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

TYPES continued

Busbar System Flat-PLS
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

RATINGS

Busbar system RiLine60:
Rated operational voltage U_e : 690V AC, 1500V DC
Rated insulation voltage U_i : 1000V
Rated impulse withstand voltage U_{imp} : 8kV
Rated current I_n (40°C): up to 1600A
Rated short-time withstand current I_{cw} : up to 50kA for 1s/3s
Rated peak withstand current I_{pk} : up to 105kA
Rated frequency f : 50Hz

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

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

ADDITIONAL TESTS

Vibration test
High voltage test
Insulation resistance test
in accordance with LR Type Approval Test Specification No. 1 –2013

OTHER CONDITIONS

Allocation of switchgear – OM adaptors for a prospective short-circuit-resistance Icc up to 50kA at AC 400V ²⁾

Type of appliance	rated current Ie [A]	OM adaptors for switchgear types:				Additional requirements
		circuit breaker	starter	reversing starter	soft starter	
ABB						
MS116	≤ 10A	9340.340 9340.530	9340.350 9340.530	9340.370+ 9340.260 9340.550+ 9340.260	9340.390 9340.560	
MS116	>10A ≤ 32A	9340.340 9340.530	9340.350 9340.530	9340.370+ 340.260 9340.550+ 9340.260	9340.390 9340.560	Reduction of the resistance to short-circuiting to a maximum of 10kA
MS132	≤ 16A	9340.340 9340.530	9340.390 9340.560	9340.390+ 9340.260 9340.560+ 9340.260		
MS132	20A ≤ 32A	9340.340 9340.530	9340.390 9340.560	9340.390+ 9340.260 9340.560+ 9340.260		For switchgears >16A a current limiter ¹⁾ type S800S-SCL-SR or S803W-SCL-SR as a group-preliminary fuse is required according to manufacturer's demand.
MS165	≤ 65A	9340.430 9340.630	9340.450 9340.650	9340.450+ 9340.270 9340.650+ 9340.270	9340.450 9340.650	For switchgears >32A a current limiter ¹⁾ type S800S-SCL-SR or S803W-SCL-SR as a group-preliminary fuse is required according to manufacturer's demand.

Type of appliance	rated current I _e [A]	OM adaptors for switchgear types:				Additional requirements
		circuit breaker	starter	reversing starter	soft starter	
EATON						
PKE12	≤12A	9340.340 9340.530			9340.390 9340.560	
PKZM01	≤ 25A	9340.340 9340.530				
PKZM0	≤ 32A	9340.350 9340.530	9340.370 9340.380 9340.550			9340.370 up to a maximum current of 25A
PKE32	≤ 12A	9340.340 9340.530	9340.390 9340.560	9340.370+ 9340.260 9340.380+ 9340.260 9340.550+ 9340.260		
PKE32	17A ≤ 32A	9340.340 9340.530	9340.390 9340.560	9340.370+ 9340.260 9340.380+ 9340.260 9340.550+ 9340.260		Current limiter ¹⁾ CL-PKZ0
PKZM4	≤ 65A	9340.430 9340.630	9340.450 9340.650			

Type of appliance	rated current I _e [A]	OM adaptors for switchgear types:				Additional requirements
		circuit breaker	starter	reversing starter	soft starter	
Siemens						
3RV1011... (S00)	≤ 16A	9340.340 9340.530				
3RV2011... (S00)	≤ 16A	9340.340 9340.530	9340.760 9340.770			
3RA2120... (S0)	≤ 25A		9340.350 9340.550			
3RA2210... (S00)	≤ 25A			9340.370+ 9340.260 9340.550+ 9340.260		
3RA2220... (S0)	≤ 25A			9340.350+ 9340.270 9340.550+ 9340.260		
3RV1021... (S0)	≤ 25A	9340.340 9340.530				
3RV2021... (S0)	≤ 32A	9340.350 9340.530				
3RV2021... (S0)	≤ 40A	9340.720 9340.630				For switchgears >32A a current limiter ¹⁾ is required, according to manufacturer's demand.
3RV2031... (S2)	≤ 65A	9340.430 9340.630				For switchgears >65A a current limiter ¹⁾ is required, according to manufacturer's demand.

Type of appliance	rated current I _e [A]	OM adaptors for switchgear types:				Additional requirements
		circuit breaker	starter	reversing starter	soft starter	
Schneider Electric						
GV2 P	≤ 25A	9340.340/ 9340.350 9340.530	9340.350 9340.550	9340.350+ 9340.260 9340.550+ 9340.260	9340.390 9340.560	
GV2 P	>25 ≤ 32A	9340.340/ 9340.350 9340.530	9340.350 9340.550	9340.350+ 9340.260 9340.550+ 9340.260	9340.390 9340.560	9340.340 up to a maximum current of 25A Current limiter ¹⁾ GV1L3 or LA9 LB920
GV2 ME	< 14A	9340.340/ 9340.350 9340.530	9340.350 9340.550	9340.350+ 9340.260 9340.550+ 9340.260	9340.390 9340.560	
GV2 ME	14A ≤ 25A	9340.340/ 9340.350 9340.530	9340.350 9340.550	9340.350+ 9340.260 9340.550+ 9340.260	9340.390 9340.560	Current limiter ¹⁾ GV1L3 or LA9 LB920
GV3	≤ 25A	9340.430 9340.630	9340.430 9340.450 9340.650			
GV3	>25 ≤ 65A	9340.430 9340.630	9340.430 9340.450 9340.650			Reduction of the resistance to short-circuiting to a maximum of 35kA

¹⁾ The short-circuit resistance depends on the height of the rated operation current of a switchgear. Therefore some switchgears with higher rated operation currents need to be protected by a current limiter.

²⁾ For higher voltages than 400V AC a reduction of the resistance to short-circuiting is to be considered, according to switchgear manufacturer's demand. The maximum resistance to short-circuiting of the OM adaptors is unattached of that, because the adaptors do not fulfil any switching function.