Rittal – The System.

Faster – better – everywhere.

Machine approvals in North America

Easy to obtain with Rittal components

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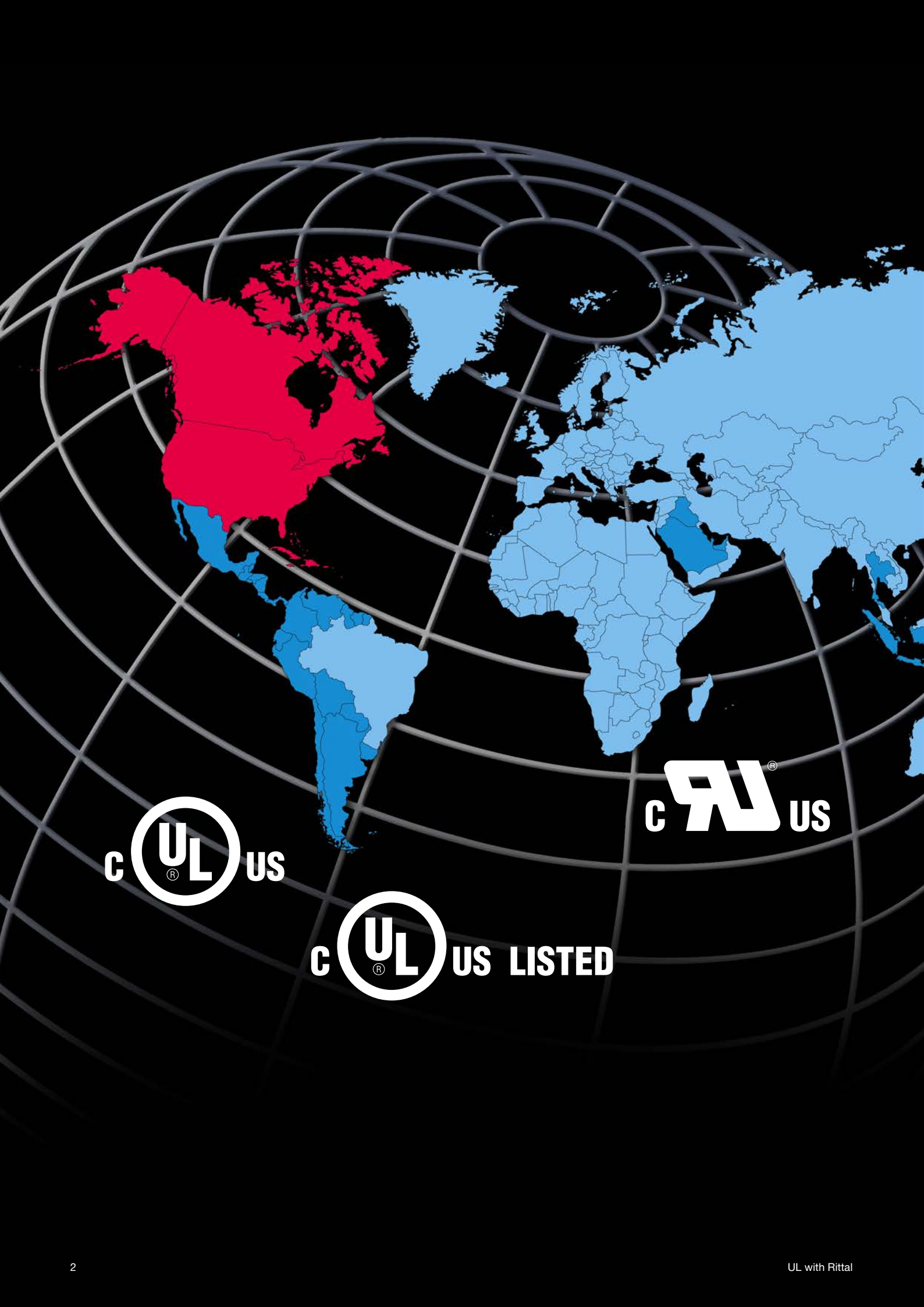
c UL US
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The North American market has special requirements

Rittal has long been prepared

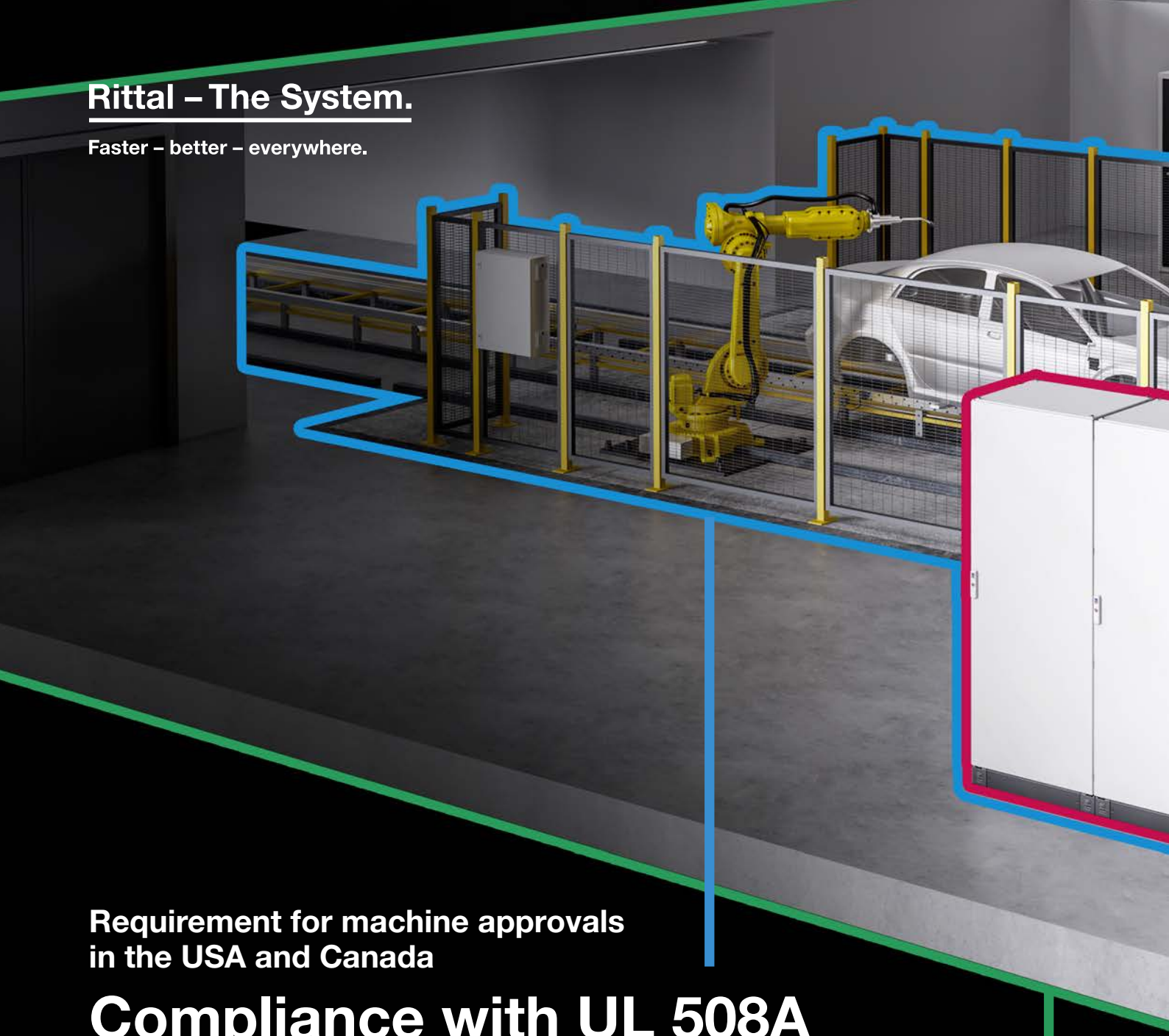
Rittal is always quick to respond to the latest international requirements with suitably adapted, standard-compliant products and up-to-date knowledge for seamless compliance with the latest standards in enclosure manufacturing.

In the USA and Canada, a machine or plant cannot be commissioned until approved by the AHJ (Authority Having Jurisdiction). It verifies compliance with the valid regulations in that state, such as the National Electric Code NEC (NFPA 70).

In practice, approval of the equipment to standard UL 508A is accepted as verification of compliance. Without this verification, the AHJ will not usually issue an operating permit.

UL 508A combines the applicable requirements from the NEPA codes into a “product standard” for enclosures. Compliance with this standard assures the machine or plant manufacturer that the superordinate requirements of the NFPA have been met.
A UL 508A certificate is generally accepted by an AHJ as evidence of compliance.

- Market segment IEC/UL
- Market segment IEC
- Market segment UL



Requirement for machine approvals in the USA and Canada

Compliance with UL 508A

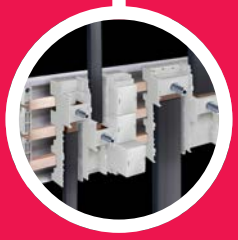
National Fire Protection Association

NFPA 79 applies to the area marked in blue. It outlines the requirements governing the electrical equipment of machines.

NEC

The area outlined in green identifies the area of application of the NEC. The NEC (also published as NFPA 70) is revised by NFPA every three years, and as the National Electrical Code, sets out the fundamental requirements for electrical installations.

All components used in the enclosure, including the climate control and the housing, must have suitable UL approval.



UL 508A

The area outlined in TeamRed specifically considers the requirements of UL 508A for electrical control cabinets. The method outlined in Supplement SB is a recognised procedure for determining the SCCR.

NEC requirement for short-circuit withstand strength of enclosures at the infeed point

The system's SCCR must be greater than or equal to the SCCR at the supply end.

UL enclosure requirements

The optimum protection solution

The UL enclosure requirements should not be underestimated. Enclosures must protect the electronic components inside from environmental factors such as dirt, dust, humidity and electromagnetic interference.
As such, control gear and switchgear manufacturers should always take care to ensure that these safety standards are met.
Compliance with the UL 508A enclosure requirements is an important basis for the swift commissioning and approval of equipment and machinery.
Rittal offers a broad spectrum of industrial enclosures with UL approval. Most have UL approval with a Type 12 protection category (NEMA12). Some of the enclosures with enhanced sealing protection even support Type 4X applications.

All enclosures – small, compact or large

- Available in sheet steel, stainless steel, polycarbonate and cast aluminium
- Widths up to 1800 mm and heights up to 2200 mm
- High-quality surface treatment
- Up to 1500 kg load capacity

Many accessory parts must also be approved to UL 508A, such as cable glands and enclosure lighting. Here too, “Rittal – The System” meets UL requirements and offers perfectly coordinated system components.

Cable gland

- High level of protection from dust, dirt and liquids
- Available in sizes M12 – M63
- Polyamide, brass, and stainless steel
- cULus approved
- Brass to NEMA/UL Type 4X Polyamide cCSAus approved

LED system light

- Tool-free assembly with a latching hook system
- Lighting from 400 to 1200 lumens
- Optionally with socket and motion detector
- Suitable for global use with wide-range voltage 100 – 240 V AC and 24 V DC
- Light, cable and connector suitable for use in the UL 508A range

Rittal isolator door cover

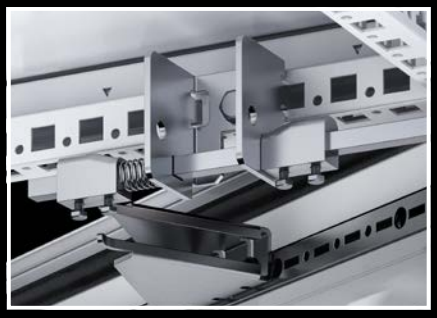
Cleverly conceived solutions

Unlike the IEC world, industrial control panels to UL 508A must have a door latch to prevent the system being switched on while the doors are open, or conversely, prevent the doors being opened with the system switched on.

For commissioning and servicing, UL 508A requires the following:

- A device to open the latch with a tool without interrupting the power supply (deliberate action)
- A device to restore the power supply when the doors are open
- Automatic reactivation of the device when the doors are closed

The Rittal isolator door cover, developed especially for the US market, when used in conjunction with the operating mechanism, adjacent door latch and interconnecting rods, meets the requirements of UL 508A and offers maximum protection.



Operating mechanism

- Fitted in the enclosure with main switch and additionally in every fourth adjacent enclosure

Adjacent door latch

- Installation in adjacent enclosure

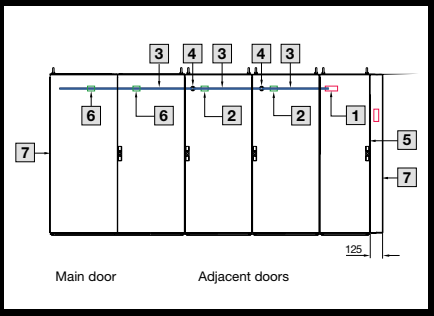
Interconnecting rods

- To extend locking from the main enclosure to the adjacent enclosures of a bayed suite
- One interconnecting rod corresponding to the width of the enclosure is required for each adjacent enclosure

Overview of door latch

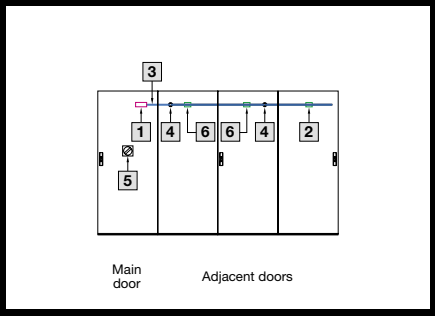
1 Operating mechanism
2 Adjacent door latch (single-door)
3 Interconnecting rod
4 Connection component
5 Main door latch
6 Adjacent door latch (two-door)
7 Electric lock (security lock)
8 Door limit switch

Further information can be found on the Internet:
https://www.rittal.com/isolator-door-cover



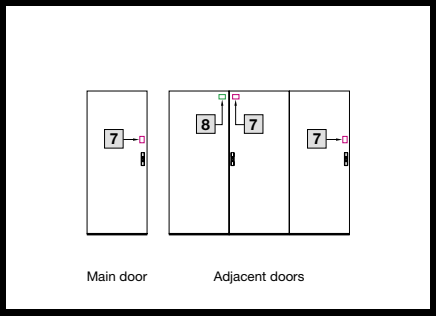
Mechanical main and adjacent door latch

- Supports the use of standard market actuators (actuator levers)



Main door latch with rotational axis and mechanical adjacent door latch

- No additional isolator door cover required



Electrical main and adjacent door latch

- Independent from the plant length
- Doors are supported at the front and rear

Climate Control

Rittal climate control components – the perfect choice for UL 508A panels

Rittal products for enclosure climate control are perfectly suited to applications with industrial control panels to UL 508A. The challenge here is to support safety requirements and the type rating of the application (protection category) with suitable approvals.
The solution? Rittal fan-and-filter units, heat exchangers and cooling units have already been suitably pre-tested and approved. All required information for users can be taken from the relevant assembly, installation and operating instructions. Up-to-date certificates can be found on the product homepage.

Additional approval under the category “environmental-rated accessories for enclosures (CCN: FTTA)”. This ensures that the type rating of the application (enclosure protection category) is retained even if the enclosure has a mounting cut-out for installation of a climate control component. This is a clear benefit which facilitates use in the 508A zone and eliminates potential discussions about reducing the type rating.

Security

With classification to cUR and cUL standard

Our climate control components in all series have passed all applicable tests to US standards for use on enclosures, and are labelled with the corresponding UL test symbol. Depending on the product group, UL “recognized” or “listed” is appropriate.

The test symbol “UL Listed” is displayed on end products. Products with this label meet the valid normative safety standards in full, and are classified as safe free-standing devices as defined in the US guidelines (such as the National Electric Code NEC).

The test symbol “UL Recognized” is awarded to sub-components in larger systems, such as our fan-and-filter solutions, which are approved as filter fan kits as tested accessories in switchgear category NITW2 . Please note that a test symbol for sub-components does not equate to approval of the complete end product. “Recognized” devices or components are admissible. However, “recognized” approval is an important basis for signing off the complete control panel.

All safety-related information for the application, the so-called “Conditions of Acceptability” (CoA), must be made available to the user. If the user follows the assembly, installation and operating instructions for our products, they can be sure of complying with the CoA.

Protection category

UL approval process with no additional effort

National Electrical Manufacturers Association

The National Electrical Manufacturers Association (NEMA) is a standards organisation in Washington, USA, which publishes a number of technical standards but does not test or certify products itself. Essentially, NEMA classification outlines the protection of individuals from accidental contact with equipment and the protection of an enclosure from external factors.

An enclosure for an industrial control panel needs an approved protection category (type rating). For example, if a cooling unit is used, a cut-out will need to be made in an enclosure.

If the supplied state of the enclosure is changed (e.g. by a cut-out), the enclosure's protection category will no longer apply.

Additional UL listing under category FTTA

Additional approval under the category control number "FTTA" is particularly beneficial for users. This ensures that the type rating (protection category) is retained even if the enclosure has a mounting cut-out for installation of accessories (VX, AX or KX) or a climate control component. As such, further testing of NEMA-classified enclosures is no longer required.

At minimum, all Rittal climate control components comply with Type 12 rating for switchgear in the indoor zone, or Type 4X rating for use in so-called "wash down areas". This is a clear benefit which simplifies use in the 508A zone and eliminates discussions about reducing the type rating. The additional "FTTA" approval of Rittal climate control products as well as various accessories (VX, AX or KX) saves time and money, and streamlines the UL certification process.

Optimum climate control solutions with Rittal products

From planning through to sign-off, you can play it safe with Rittal.

Planning → **Procure-ment** → **Mounting** → **Sign-off by NRTL[1]** → **Export** → **Sign-off by AHJ[2]** → **Commissioning**

[1] National Recognized Testing Laboratory
[2] Authority Having Jurisdiction

Climate control solutions to UL-FTTA

	Security				Protection category	
Product	Approvals	Standard	File	CCN	FTTA File	Protection category NEMA
Air cooling						
Fan-and-filter unit	c UL us	UL 508A CSA C22.2	E76083	NITW2 NITW8	E491171[1)]	Type 3 Type 3R Type 4X Type 12
Roof-mounted fan	c UL us	UL 508A UL 50 UL 50E CSA C22.2	E76083	NITW2 NITW8	E491171[1)]	Type 12
Rack-mounted fan	c UL us	UL 507 CSA C22.2	E171385	GPWV2 GPWV8	–	–
Air/air heat exchanger (wall/roof)	c UL us	UL1995 CSA C22.2	E117603	LZFE2 LZFE8	–	–
Cooling units						
Blue e cooling units (wall/roof)	c UL us	UL 484 CSA C22.2	SA8250	ACVS2 ACVS8	E491171[1)]	Type 12 and 4X for products ending in 4
Blue e+ cooling units (wall)	c UL us LISTED	UL 60335-2-40 CSA C22.2	SA8250	ACVS ACVS7	E491171[1)]	Type 12
Modular climate control concept	c UL us	UL 484 CSA C22.2	SA8250	ACVS2 ACVS8	–	NEMA 12
Liquid cooling						
Air/water heat exchangers (wall/roof)	c UL us	UL 1995 CSA C22.2	E117603	LZFE2 LZFE8	E491171[1)]	Type 1 and 3R for products ending in 3
Liquid Cooling Package	c UL us LISTED	UL 1995 CSA C22.2	E117603	LZFE LZFE7	–	NEMA 12
Blue e+ chillers	c UL us LISTED	UL 60335-1 CSA C22.2 No. 60335-1-11 UL 60335-2-40 CSA C22.2 No. 60335-2-40-12	E117603	LZFE LZFE7	–	–
Enclosure heaters						
Enclosure heaters	c UL us	UL 508 CSA C22.2	E76083	NITW2 NITW8	–	–
Climate control accessories						
Filter technology	c UL us	UL 508A CSA C22.2	E76083	NITW2 NITW8	E491171[1)]	Type 3 Type 3R Type 4 Type 4X Type 12
Control/regulation	c UL us	UL 873	E203342	XAPX XAPX2 XAPX7	–	–

Up-to-date information based on Model Numbers is available on the Internet. Note on recognized: CoA included in assembly instructions.
[1)] Applied standards: UL 50, UL 50E, UL 508A and CSA C22.2

Note:
Rittal climate control components need not additionally be included in the file of listed panel builders (see UL 508A, table SA1.1, section 26.3). All relevant application information can be found in the assembly, installation and operating instructions.

All RiLine systems have been tested for an SCCR of 65 kA, eliminating the need for time-consuming verification.
The user need only be concerned with SCCR compliance of the top-mounted equipment.

UL-tested Rittal components

RiLine busbars

Ideal for international use with an approved, cULus-listed 60 mm busbar system.

The RiLine 60 mm busbar system from Rittal has cULus-listed approval. This approval offers clear advantages for international machinery and plant manufacturers with target markets in the USA or Canada: Minimal design input, streamlined sign-off of plant by UL (Underwriters Laboratories) and CSA (Canadian Standards Association), and therefore most importantly, no need to test for compliance with the Conditions of Acceptability (COA) of all the UL-recognized components used.

Consistently tested for an SCCR of 65 kA

For effective support of RiLine busbar technology in enclosures, Rittal has conducted comprehensive testing of all RiLine busbar systems and components, and generated a uniform SCCR of 65 kA. When planning and designing enclosures to UL 508A, users benefit from simple, time-saving design of the busbar systems and components. They need only ensure that the top-mounted equipment used, such as circuit-breakers, motor circuit-breakers and fuses, meet the specified requirements. Tables are included in the Appendix for this purpose, and clearly define the measures needed to meet this condition.

Our expertise – your benefit.

- **Simple and fast**
  Data is clearly set out in a table, with uniform SCCR
- **Effective**
  Clear, uniform representation of the SCCR; every component has the same SCCR
- **Efficient**
  No additional effort needed to increase the SCCR in various applications

Fundamental principles

Key terms and regulations

When determining the SCCR, for example in conjunction with the use of busbars, the first aspect to consider is familiarisation with the commonly used components, terms and regulations. The following sections therefore address these framework parameters, with reference to Standard UL 508A Second Edition, including revisions, dated July 31, 2017.

SCCR terminology

Feeder Circuit
The feeder circuit is subject to increased requirements on creepage distances and clearances. The feeder circuit includes all devices which, viewed from the load side, are positioned after the last Branch Circuit Protective Device (BCPD).

Branch Circuit
There are no increased requirements on branch circuits with regard to creepage distances and clearances. Viewed from the load side, the branch circuit extends as far as the first Branch Circuit Protective Device (BCPD).

SCCR
The Short Circuit Current Rating refers to the short-circuit withstand strength of a component, distributor, system, machine or device. Reference is often made to an overall SCCR for enclosures. As a minimum requirement, this figure must comply with the short-circuit rating of the available power supply.

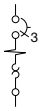
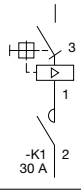
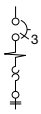
SCPD
A Short Circuit Protective Device can be used to increase the SCCR under certain conditions.

BCPD
Branch Circuit Protective Devices include fuses to UL 248, circuit-breakers to UL 489, and manual and combination motor controllers type E/F to UL 508. They perform protective functions with regard to overcurrent, short-circuits and earth faults, and must be approved to a suitable standard. In terms of load, the last BCPD represents the boundary between the feeder and branch circuit.

CCN
The Category Control Number classifies devices and components into categories. Which categories may be used in the application are defined, for example, in UL 508A under Table SA1.1.

I_p
The peak let-through is the maximum current which a current-limiting device will allow through, in relation to a defined SCCR.

Key and common devices for busbar systems

Device name (IEC)	Device name (UL)	UL Category Control Number (CCN)	Symbol	
			IEC	UL
Circuit-breaker	Circuit breaker, moulded case and circuit breaker enclosures	DIVQ		
Motor circuit-breaker	Motor controllers, manual (Type E)	NLRV		
Motor-starter combination	Combination motor controllers (Type F)	NKJH		
Fuse	Cartridge fuses, non-renewable	JDDZ		

SCCR regulations

1

Which short circuit-limiting protective and switching devices SCPD can be used in the feeder circuit to increase the SCCR?

Short circuit-limiting protective devices (SCPDs) may be used to increase the SCCR value of an enclosure. If the peak let-through of an SCPD (feeder fuse/feeder breaker) is less than the SCCR of the relevant component in the branch circuit, that component's SCCR may be raised to the feeder SCCR under consideration.

The following components may be used as SCPDs:

I **Circuit breaker, moulded case and circuit breaker enclosures "current limiting"**
Only MCCBs specifically labelled as "current limiting" may be used, because the current-limiting function must be part of the approval. This current-limiting property must be verified at regular intervals by the manufacturer.

II **Cartridge fuses**
Here too, the manufacturer must provide regular verification of the peak let-throughs.

For example, the fuse type must be a fuse class CC, class J... listed under UL 248. The peak let-throughs (I_p) shown in Table SB4.2 of UL 508A apply. In this connection, it is important to note that the selected current-limiting protective device (SCPD) may only be used to increase the SCCR of components in the branch circuit.
The SCCR of components in the feed circuit cannot be improved.

2

The following components may be used as BCPD:

I Fuse with UL Category Control Number JDDZ
II Circuit breaker, moulded case circuit breaker enclosures with UL Category Control Number DIVQ
III Manual motor controller with UL Category Control Number NLRV
IV Combination motor controller with UL Category Control Number NKJH

3

Use of a "Serial Rating"

A serial rating cannot be applied to any random combination of a current-limiting device with another device, such as a contactor.
Such untested combinations are not classed as a combination motor controller in accordance with UL 508.

A serial rating of two or more devices must be tested in this combination, and can only be used to increase the SCCR in this exact combination of devices. If no serial rating exists for this combination, the lowest SCCR of the two individual devices applies.

4

What is a "high fault" SCCR?

A High Fault Short Circuit Rating is the SCCR specified on or in the device documentation, and is greater than the Standard Fault Short Circuit Current Rating shown in UL 508A, Table SB 4.1.

Compliance with the high fault SCCR may be conditional upon a current-limiting protective device being positioned upstream of the components or system.

Important for UL 508A: Short-circuit withstand strength

SCCR to the lowest common denominator

Determining the overall SCCR in the enclosure

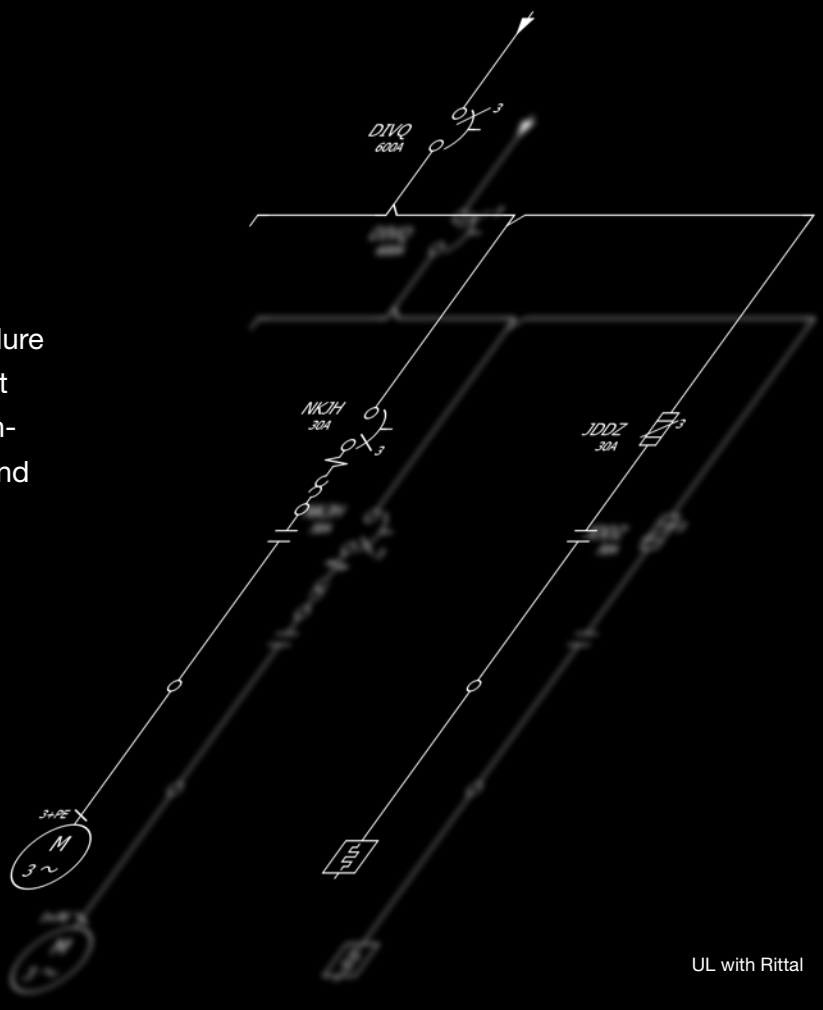
Determining the SCCR (Short Circuit Current Rating) entails ascertaining which components or tested combinations in the main circuits inside the enclosure have the lowest SCCR. The lowest individual SCCR determines the SCCR of the overall enclosure (overall SCCR). An enclosure's SCCR ultimately determines whether the application's short-circuit withstand strength requirements match the available SCCR from the power supply. This usually affects power circuits. With control circuits, it is not necessary to determine the SCCR, because transformers are usually connected upstream. To calculate the overall SCCR of an enclosure, the planner must consider the individual SCCR value of each component and device, from the load side through to the feed-in point.

Plan ahead, ensure a high level of efficiency

The overall SCCR should be taken into account at the planning stage, since by selecting correct components and devices, and also by using suitable application techniques for short circuit current-limiting devices, it is usually possible to achieve a cost-effective solution with the required SCCR. Considering the SCCR at a later date, for example at the time of commissioning, could lead to higher material and modification costs if the required SCCR is not met, causing costs to rise exponentially.

The verification procedure as set out in the SB supplement to UL 508A

The NEC offers two verification options. The first of these is by having the system tested to a recognised verification procedure such as that set out in the SB supplement to UL 508A. As testing is always time-consuming and costly in terms of materials and personnel, this verification procedure has emerged as an important tool.



Diagrammatic representation of the procedure for determining the overall SCCR of an enclosure to UL 508A

SB4.2

Ascertain the SCCR of the individual components in the power circuit

- 4.2.1 List those devices that are not covered by the SCCR approach
- 4.2.2 a) Determine the SCCR using the rating plate or manufacturer documentation of the device/component
- 4.2.2 b) Determine the SCCR in accordance with Table SB4.1
- 4.2.2 c) Determine the SCCR by testing to UL 508

SB4.3

Ascertain the feeder components that may be used to limit the short-circuit

- 4.3.1 Limit the short circuit current with a transformer in the feeder
- 4.3.2 Increase the SCCR by using a current-limiting circuit-breaker in the feeder
- 4.3.3 Increase the SCCR by using current-limiting fuses in the feeder

SB4.4

Determine the overall SCCR of the enclosure

- 4.4.1 Determine the smallest SCCR of all power circuits including a control current protective device
- 4.4.4 a) For enclosures with only one power circuit and no outgoing protective device (BCPD) within the enclosure
- 4.4.4 b) For enclosures with only one power circuit and an outgoing protective device (BCPD) within the enclosure
- 4.4.4 c) For enclosures with multiple outgoing circuits and feeder components such as circuit-breakers, disconnectors, busbar systems, terminal blocks, overcurrent protective devices

Further information on calculation of the SCCR can be found in the SB Supplement to UL 508A.

Consideration of SCCR to UL 508A

Practical example

Consideration of SCCR incorporating a busbar assembly

Busbars are a standard feature in modern enclosure assembly.

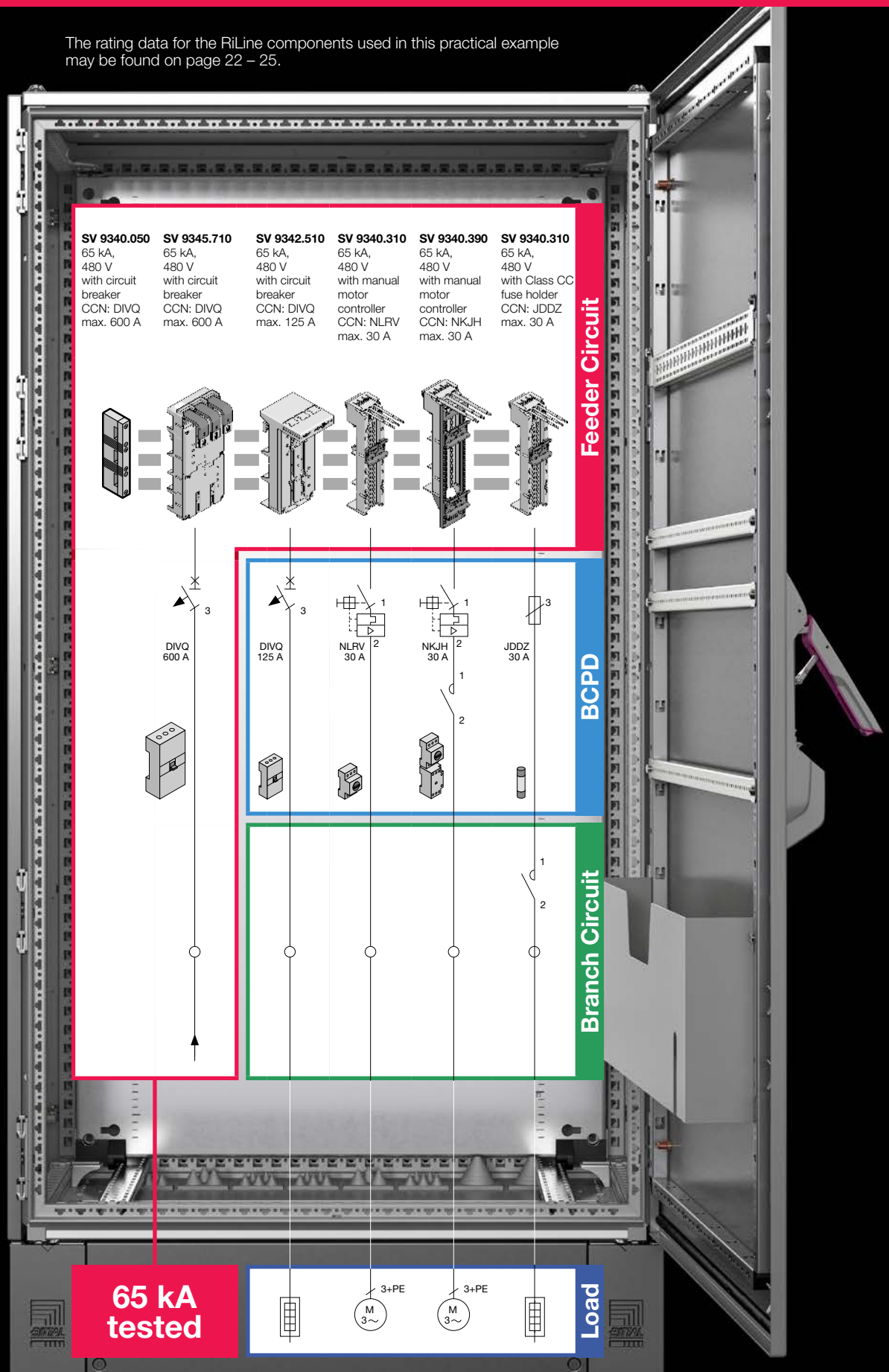
RiLine systems are all tested for an SCCR of 65 kA. This therefore eliminates the need for time-consuming verification.

The user need only be concerned with the SCCR compliance of the top-mounted equipment.

Here is an example of SCCR in busbar systems.

SCCR in a busbar assembly

The rating data for the RiLine components used in this practical example may be found on page 22 – 25.



RiLine busbars

Overview of SCCR

Initial overview of UL 508A-compliant RiLine busbars and components

The following table lists all the key products covered by the 65 kA short circuit current rating, but does not include all UL-listed items in the RiLine product range.

Selection of RiLine UL busbar systems and components compliant with UL 508A

RiLine Compact busbar system

Model No.	Code	Short Circuit Current Rating (SCCR) kA	Voltage AC max. V	Branch Circuit Protective Device (BCPD)		
				Type	Category Control No. (CCN)	Rating max. A
Busbar system						
9635.000	Board 125 A, 3-pole, 225 mm	10	600	–	–	–
		65	600	Circuit breaker	DIVQ/7	100
		100	480	Circuit breaker	DIVQ/7	100
		100	600	Fuse Class J	JDDZ	175
9635.010	Board 125 A, 3-pole, 405 mm	10	600	–	–	–
		65	600	Circuit breaker	DIVQ/7	100
		100	480	Circuit breaker	DIVQ/7	100
		100	600	Fuse Class J	JDDZ	175
9635.020	Board 160 A, 3-pole, 500 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
9635.025	Board 160 A, 3-pole, 600 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
9635.030	Board 160 A, 3-pole, 700 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
9635.035	Board 160 A, 3-pole, 800 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
9635.040	Board 160 A, 3-pole, 900 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
9635.045	Board 160 A, 3-pole, 1000 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
9635.050	Board 160 A, 3-pole, 1100 mm	10	600	–	–	–
		65	480	Circuit breaker	DIVQ/7	400
		100	600	Fuse Class J	JDDZ	400
Connection adaptors						
9635.200	Connection adaptor 63 A, 3-pole	6	600	–	–	–
		50	600	Fuse Class J	JDDZ	60
9635.210	Connection adaptor 125 A, 3-pole	10	600	–	–	–
		65	600	Circuit breaker	DIVQ/7	100
		100	480	Circuit breaker	DIVQ/7	100
		100	600	Fuse Class J	JDDZ	175

Further details can be found at www.rittal.com

For clarity, other tested short-circuit ratings and accessory components such as covers, base trays, busbars etc. are not shown here.

This information can be viewed in Rittal UL-File E191125 or at www.rittal.com on the relevant product pages, or in the online certificate for UL-File E191125.

RiLine Compact busbar system

Model No.	Code	Short Circuit Current Rating (SCCR) kA	Voltage AC max. V	Branch Circuit Protective Device (BCPD)		
				Type	Category Control No. (CCN)	Rating max. A
Component adaptors						
9635.371 **9635.372** **9635.273**	Component adaptor 16 A, L1 Component adaptor 16 A, L2 Component adaptor 16 A, L3	6	600	–	–	–
		14	480	Circuit breaker	DIVQ/7	16
		50	600	Fuse Class CC	JDDZ	20
		65	277	Combination motor controller	NKJH/7	16
		65	480	Combination motor controller	NKJH/7	16
9635.381 **9635.382** **9635.383**	Component adaptor 63 A, L1 Component adaptor 63 A, L2 Component adaptor 63 A, L3	6	600	–	–	–
		10	480	Circuit breaker	DIVQ/7	63
		65	277	Combination motor controller	NKJH/7	30
		65	480	Combination motor controller	NKJH/7	63
		200	600	Fuse Class CC, CF, J or T	JDDZ	60
9635.300	Component adaptor 16 A, 3-pole, with integrated fuse holder (Class CC)	50	600	Fuse Class CC	JDDZ	20
9635.310	Component adaptor 16 A, 3-pole (basic)	5	600	–	–	–
		65	480	Combination motor controller	NKJH/7	12
9635.320	Component adaptor 32 A, 3-pole (basic)	5	600	–	–	–
		65	480	Combination motor controller	NKJH/7	32
9635.330	Component adaptor 16 A, 3-pole (comfort)	5	600	–	–	–
		50	600	Fuse Class CC	JDDZ	20
		65	480	Combination motor controller	NKJH/7	12
9635.340	Component adaptor 25 A, 3-pole (comfort)	5	600	–	–	–
		65	480	Combination motor controller	NKJH/7	32
9635.350	Component adaptor 32 A, 3-pole (comfort)	5	600	–	–	–
		65	480	Combination motor controller	NKJH/7	32
9635.360	Component adaptor 45 A, 3-pole (comfort)	6	600	–	–	–
		65	480	Combination motor controller	NKJH/7	55
Circuit-breaker component adaptor						
9635.100	Circuit-breaker component adaptor 160 A, 3-pole	10	600	–	–	–
		42	600	Circuit breaker	DIVQ/7	125
		100	480	Circuit breaker	DIVQ/7	125
9635.110	Circuit-breaker component adaptor 160 A, 3-pole	10	600	–	–	–
		42	600	Circuit breaker	DIVQ/7	125
		100	480	Circuit breaker	DIVQ/7	125
Motor controller						
9635.400	Motor controller 0.6 A, 3-pole	5	500	Fuse RK5	JDDZ	20
		100	500	Fuse Class CC/J	JDDZ	30
		100	500	–	–	–
9635.410	Motor controller 2.4 A, 3-pole	5	500	Fuse RK5	JDDZ	20
		100	500	Fuse Class CC/J	JDDZ	30
		100	500	–	–	–
9635.420	Motor controller 9 A, 3-pole	5	500	Fuse RK5	JDDZ	20
		100	500	Fuse Class CC/J	JDDZ	30
		100	500	–	–	–

RiLine busbars

Overview of SCCR

Selection of RiLine UL busbar systems and components compliant with UL 508A

RiLine busbar system

Model No.	Code	Short Circuit Current Rating (SCCR) kA	Voltage AC max. V	Branch Circuit Protective Device (BCPD)			Support spacing mm	Busbars W x H mm/ PLS busbar
				Type	Category Control No. (CCN)	Rating max. A		
Busbar supports								
9340.050	Busbar support, 3-pole, 60 mm bar centre distance	14	600	–	–	–	500	12 x 5/10
		22	600	–	–	–	500	15/20/25 x 5/10
		25	600	–	–	–	250	12 x 5/10
		25	600	–	–	–	500	30 x 5/10
		30	600	–	–	–	250	15/20/25 x 5/10
		50	600	Fuse Class L	JDDZ/7	800	350	30 x 5/10
		54	600	Circuit breaker	DIVQ/7	600	500	30 x 5/10
		65	480	Circuit breaker	DIVQ/7	600	250	30 x 5/10
		73	600	Fuse Class L	JDDZ/7	800	250	30 x 5/10
9340.004	Busbar support, 4-pole, 60 mm bar centre distance	22	600	–	–	–	500	15/20/25 x 5/10
		25	600	–	–	–	500	30 x 5/10
		30	600	–	–	–	250	15/20/25 x 5/10
		65	600	Fuse Class L	JDDZ/7	800	250	15/20/25 x 5/10
9341.050	Busbar support PLS 800, 3-pole, 60 mm bar centre distance	14	600	–	–	–	500	PLS 800
		22	600	–	–	–	200	PLS 800
		50	600	Circuit breaker	DIVQ/7	600	250	PLS 800
		50	600	Fuse Class L	JDDZ/7	800	250	PLS 800
		65	480	Circuit breaker	DIVQ/7	600	150	PLS 800
		65	600	Fuse Class J	JDDZ/7	600	150	PLS 800
9342.050	Busbar support PLS 1600, 3-pole, 60 mm bar centre distance	25	600	–	–	–	500	PLS 1600
		30	600	–	–	–	250	PLS 1600
		35	600	–	–	–	150	PLS 1600
		65	600	Fuse Class L	JDDZ/7	1400	250	PLS 1600
		65	600	Fuse Class L	JDDZ/7	1600	100	PLS 1600
9342.004	Busbar support PLS 1600 PLUS, 4-pole, 60 mm bar centre distance	35	600	–	–	–	500	PLS 1600
		50	600	–	–	–	250	PLS 1600
		65	480	Circuit breaker	DIVQ/7	1200	250	PLS 1600
		65	600	Fuse Class L	JDDZ/7	1600	250	PLS 1600
Connection adaptor								
9342.200 9342.210	Connection adaptor 63 A, 3-pole	65	600	Fuse Class J	JDDZ/7	60	–	–
		65	480	Manual motor controller	NLRV/7	65	–	–
9342.240	Connection adaptor 125 A, 3-pole	50	600	Fuse Class K5	JDDZ/7	125	–	–
		65	480	Circuit breaker	DIVQ/7	125	–	–
		65	600	Fuse Class J	JDDZ/7	400	–	–
9342.224	Connection adaptor 125 A, 4-pole	50	600	Fuse Class K5	JDDZ/7	125	–	–
		65	480	Circuit breaker	DIVQ/7	125	–	–
		65	600	Fuse Class J	JDDZ/7	400	–	–
9342.250 9342.270	Connection adaptor 250 A, 3-pole	50	600	Fuse Class K5	JDDZ/7	250	–	–
		50	600	Combination motor controller	NKJH/7	250	–	–
		65	480	Circuit breaker	DIVQ/7	250	–	–
		65	600	Fuse Class J	JDDZ/7	400	–	–
9342.254	Connection adaptor 250 A, 4-pole	50	600	Fuse Class K5	JDDZ/7	250	–	–
		50	600	Combination motor controller	NKJH/7	250	–	–
		65	480	Circuit breaker	DIVQ/7	250	–	–
		65	600	Fuse Class J	JDDZ/7	400	–	–
9342.300	Connection adaptor 800 A, 3-pole	50	60	Fuse Class K5	JDDZ/7	600	–	–
		65	480	Circuit breaker	DIVQ/7	600	–	–
		65	600	Fuse Class L	JDDZ/7	800	–	–
9342.310 9342.311 9342.314	Connection adaptor 800 A (3 x 1-pole) Connection block 800 A, 1-pole Expansion set for 9342.310 (4-pole)	65	480	Circuit breaker	DIVQ/7	600	–	–
		65	600	Fuse Class L	JDDZ/7	800	–	–
9342.320 9342.321 9342.324	Connection adaptor 1600 A (3 x 1-pole) Connection block 1600 A, 1-pole Expansion set for 9342.320 (4-pole)	65	480	Circuit breaker	DIVQ/7	1200	–	–
		65	600	Fuse Class L	JDDZ/7	1600	–	–
Fuse holders								
9345.040	Fuse holder Class CC, 30 A, 3-pole	200	600	Fuse Class CC	JDDZ/7	30	–	–
9345.005	Fuse holder Class CC, 30 A, 3-pole	200	600	Fuse Class CC	JDDZ/7	30	–	–

RiLine busbar system

Model No.	Code	Short Circuit Current Rating (SCCR) kA	Voltage AC max. V	Branch Circuit Protective Device (BCPD)			Support spacing mm	Busbars W x H mm/ PLS busbar
				Type	Category Control No. (CCN)	Rating max. A		
9345.015	Fuse holder Class J, 30 A, 3-pole	200	600	Fuse Class J	JDDZ/7	30	–	–
9345.035	Fuse holder Class J, 60 A, 3-pole	200	600	Fuse Class J	JDDZ/7	60	–	–
9345.100	Fuse holder Class J, 61 – 100 A, 3-pole	100	600	Fuse Class J	JDDZ/7	100	–	–
9345.200	Fuse holder Class J, 101 – 200 A, 3-pole	100	600	Fuse Class J	JDDZ/7	200	–	–
9345.400	Fuse holder Class J, 201 – 400 A, 3-pole	100	600	Fuse Class J	JDDZ/7	400	–	–
OM adaptors								
9340.760 9340.780	OM adaptor 16 A, AWG 12, 3-pole	30	600	Fuse Class K5	JDDZ/7	60	–	–
		50	600	Fuse Class K5	JDDZ/7	35	–	–
		65	600	Fuse Class J	JDDZ/7	30	–	–
		65	600	Fuse Class K5	JDDZ/7	30	–	–
		50	600	Combination motor controller	NKJH/7	27	–	–
		65	480	Combination motor controller	NKJH/7	32	–	–
9340.310 9340.320 9340.340 9340.370 9340.400	OM adaptor 25 A, AWG 12, 3-pole	30	480	Fuse Class K5	JDDZ/7	60	–	–
		50	600	Fuse Class K5	JDDZ/7	35	–	–
		65	600	Fuse Class J	JDDZ/7	30	–	–
		65	600	Fuse Class K5	JDDZ/7	30	–	–
		50	600	Combination motor controller	NKJH/7	27	–	–
		65	480	Combination motor controller	NKJH/7	32	–	–
9340.350 9340.380 9340.390 9340.770 9340.790	OM adaptor 32 A, AWG 10, 3-pole	30	480	Fuse Class K5	JDDZ/7	60	–	–
		50	600	Fuse Class K5	JDDZ/7	35	–	–
		65	600	Fuse Class J	JDDZ/7	30	–	–
		65	600	Fuse Class K5	JDDZ/7	30	–	–
		50	600	Combination motor controller	NKJH/7	27	–	–
		65	480	Combination motor controller	NKJH/7	32	–	–
9340.460 9340.470	OM adaptor 32 A, AWG 10, 3-pole	30	480	Fuse Class K5	JDDZ/7	60	–	–
		30	600	Combination motor controller	NKJH/7	63	–	–
		65	480	Fuse Class J	JDDZ/7	60	–	–
		65	600	Manual motor controller	NLRV/7	63	–	–
		65	480	Combination motor controller	NKJH/7	63	–	–
9340.710 9340.720 9340.730 9340.740 9340.750	OM adaptor 40 A, AWG 8, 3-pole	30	600	Fuse Class K5	JDDZ/7	60	–	–
		30	480	Combination motor controller	NKJH/7	63	–	–
		65	600	Fuse Class J	JDDZ/7	60	–	–
		65	480	Manual motor controller	NLRV/7	63	–	–
		65	480	Combination motor controller	NKJH/7	63	–	–
9340.410 9340.430 9340.450 9340.700	OM adaptor 65 A, AWG 6, 3-pole	30	600	Fuse Class K5	JDDZ/7	60	–	–
		30	480	Combination motor controller	NKJH/7	63	–	–
		65	600	Fuse Class J	JDDZ/7	60	–	–
		65	480	Manual motor controller	NLRV/7	63	–	–
		65	480	Combination motor controller	NKJH/7	63	–	–
Circuit-breaker component adaptor								
9342.400 9342.410	Circuit-breaker component adaptor 100 A, 3-pole	65	480	Manual motor controller	NLRV/7	100	–	–
9342.540 9342.550	Circuit-breaker component adaptor 125 A, 3-pole	65	480	Circuit breaker	DIVQ/7	125	–	–
9342.504 9342.514	Circuit-breaker component adaptor 125 A, 4-pole	65	480	Circuit breaker	DIVQ/7	125	–	–
9342.610 9345.600 9345.610	Circuit-breaker component adaptor 250 A, 3-pole	65	480	Circuit breaker	DIVQ/7	250	–	–
9345.604 9345.614	Circuit-breaker component adaptor 250 A, 4-pole	65	480	Circuit breaker	DIVQ/7	250	–	–
9345.720 9345.730	Circuit-breaker component adaptor 400 A, 3-pole	65	480	Circuit breaker	DIVQ/7	400	–	–
9345.700 9345.710	Circuit-breaker component adaptor 630 A, 3-pole	65	480	Circuit breaker	DIVQ/7	600	–	–

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