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**Fast Bus busbar adapter system**

![Diagram of Fast Bus busbar adapter system]

**60 mm system**

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**FBCB Fast Bus circuit breakers**

![Diagram of FBCB Fast Bus circuit breakers]

**Selection and ordering data**

- Fast Bus circuit breakers assemblies and kits 5/7
- Fast Bus adapter shoes for VL breakers 5/8

**Fast Bus combination starters**

![Diagram of Fast Bus combination starters]

**3RA1 Fast Bus combination starters**

**3RA2 Fast Bus combinations starters**

**3RA6 Fast Bus compact starters**

**Selection and ordering data**

- See Section 4
Fast Bus
Fast Bus Busbar Adapter System

Overview

Busbar adapter systems

Busbar adapter systems
with busbar centerline spacing of 60 mm

60 mm busbar system

<table>
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<tr>
<th>Item</th>
<th>Description</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Busbar holder End and intermediate holders for flat copper profiles</td>
<td>5/6</td>
</tr>
<tr>
<td>2</td>
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<td>5/7</td>
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<tr>
<td>3</td>
<td>Fast Bus circuit breakers from 15 to 600A</td>
<td>5/7</td>
</tr>
<tr>
<td>4</td>
<td>3RA1 Combination Starters see section 4</td>
<td>5/7</td>
</tr>
<tr>
<td>5</td>
<td>Incoming supply terminals</td>
<td>5/6</td>
</tr>
</tbody>
</table>

for sharp-edged copper busbars to DIN 46 433, width 20 mm to 30 mm, thickness 5 mm and 10 mm
General Features

- Simple economical installation
- Compact design
- Requires fewer mounting holes
- Domestic and International approvals
- Touch safe
- Modular design
- Provision for system expansion
- Clip-on shoes provide mechanical and electrical connections to panel mounted busbars
- Main and Feeder breakers mount to busbars

Benefits

- Saves installation time
- Reduces space requirements
- Minimizes layout time
- Allows flexibility for domestic and export business
- Protection for maintenance personnel
- Improves equipment mounting density
- Reduces time and costs associated with system expansion
- Reduces mounting and wiring time and provides trouble free connections
- Allows for quick retrofitting of breakers

How to Select Fast Bus

1) Determine the required load.
2) Select method to power Fastbus.
   —Main lug up to 800A
   —Circuit breakers, 15A to 500A
If load exceeds 500A, the CB must be separately panel mounted and fed to a main lug infeed module.
3) Select 3RV MSP & 3RT contactor components and appropriate adapter shoe or select preassembled 3RA starters. See section 4.
4) Select appropriate length busbar, busbar holders, insulation covers and any other required components.

General Ratings of Fastbus System

<table>
<thead>
<tr>
<th>IEC</th>
<th>Domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating voltage</td>
<td>690V</td>
</tr>
<tr>
<td>Rated insulation voltage, IEC VDE</td>
<td>600V</td>
</tr>
<tr>
<td>Temperature stability</td>
<td>AC 1000V</td>
</tr>
<tr>
<td></td>
<td>Up to 105 degrees C</td>
</tr>
<tr>
<td>Busbar support and adapter shoe material</td>
<td>Glass-reinforced polyamide</td>
</tr>
<tr>
<td>Color</td>
<td>RAL 7035, light gray</td>
</tr>
</tbody>
</table>

Ampacity

<table>
<thead>
<tr>
<th>Busbar thickness and width</th>
<th>IEC</th>
<th>Domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 x 20 mm</td>
<td>3/16&quot; x 3/4&quot;</td>
<td>362A</td>
</tr>
<tr>
<td>5 x 25 mm</td>
<td>3/16&quot; x 1&quot;</td>
<td>432A</td>
</tr>
<tr>
<td>5 x 30 mm</td>
<td>3/16&quot; x 1 1/8&quot;</td>
<td>500A</td>
</tr>
<tr>
<td>10 x 20 mm</td>
<td>3/8&quot; x 3/4&quot;</td>
<td>564A</td>
</tr>
<tr>
<td>10 x 25 mm</td>
<td>3/8&quot; x 1&quot;</td>
<td>660A</td>
</tr>
<tr>
<td>10 x 30 mm</td>
<td>3/8&quot; x 1 1/8&quot;</td>
<td>756A</td>
</tr>
<tr>
<td>720mm²</td>
<td>---</td>
<td>1400A</td>
</tr>
</tbody>
</table>

For technical information on E and F frame circuit breakers used as main and feeder breakers, see section 17

Thermal busbar currents, E-Cu, bare, at 35 °C ambient temperature in accordance with DIN 43671

<table>
<thead>
<tr>
<th>Busbar dimensions</th>
<th>System</th>
<th>Thermal current at 65 °C</th>
<th>85 °C</th>
<th>105 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>mm</td>
<td>Busbar temperature A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>20 x 5</td>
<td>60</td>
<td>274</td>
<td>362</td>
<td>430</td>
</tr>
<tr>
<td>25 x 5</td>
<td>60</td>
<td>307</td>
<td>432</td>
<td>513</td>
</tr>
<tr>
<td>30 x 5</td>
<td>60</td>
<td>379</td>
<td>500</td>
<td>595</td>
</tr>
<tr>
<td>20 x 10</td>
<td>60</td>
<td>427</td>
<td>564</td>
<td>670</td>
</tr>
<tr>
<td>30 x 10</td>
<td>60</td>
<td>573</td>
<td>756</td>
<td>900</td>
</tr>
</tbody>
</table>
Fast Bus
Fast Bus Busbar Adapter System

Introduction

**Fast Bus set-up**
The Fast Bus system is designed to be easy to use and to save set up time.

**8US Busbar holders**
The 8US busbar holders are designed to accommodate ampacities up to 1400A. In some cases, the busbar holder will accept busbars in either 5mm or 10mm widths. Refer to page 5/6 for selection details.

**High quality material**
Busbar supports and fuse bases are manufactured from glass-fiber reinforced, thermoplastic polyester with the color RAL 7035, light gray. The material ensures excellent mechanical, chemical and electrical properties. Furthermore, the material has an extremely low flammability and meets the requirements of UL 94 V0.

**8WC Busbar and busbar systems**
The most common size busbar for applications in the US is the 8WC5053 (20 mm x 5 mm), however there are other styles available depending on your application.

Busbar systems with 60 mm busbar center-to-center clearance have now become firmly established in the US market.

The permissible busbar temperature is a decisive factor when dimensioning the busbars. The busbar temperature is dependent on the current, the current distribution, the busbar cross-section, the busbar surface, the position of the busbar, the convection and the ambient temperature. The values stated in the table on page 5/3 can only be considered as reference values because the conditions vary with each location. The values are based on constant current over the whole busbar length.

The trend toward busbars proves most advantageous when the incoming supply is centrally located and the load is distributed symmetrically on both sides. For the assemblies of a busbar system in the feeder circuit the UL directives specify components with large clearance in air and creepage distances (see the table below). Components of the 8US1 busbar system which meet this requirement can be found in this chapter.

**Feeder/branch circuit according to UL 508A**
The feeder circuit is that part of a circuit which comes in front of the last short circuit protection device (SCPD). The branch circuit is that part of the circuit which follows after the last short circuit protection device. When the 8US1 busbar system is used in a switchgear which must comply with UL directives, it is important to establish whether it is to be used in the feeder circuit or the branch circuit. Components used in the feeder circuit require larger clearance in air and creepage distances than in the branch circuit.

**Simple Fast Bus system**
The two illustrations above show the very basic items needed when setting up a Fast bus system.

1. 8US1 Busbar holder (5/6)
2. 8US1 Ground busbar support (shown attached however can be mounted separately 5/6)
3. Ground busbar available in 5 x 20 mm to 10 x 30 mm
4. 8WC Busbar (8WC5053 shown) FBB36 Busbar (5/6)

**Short-circuit strength**
The short-circuit strength of the busbar system is dependent on the spacing of the busbar holders and on the busbar cross-section.

The short-circuit strength of the whole system is dependent on the short-circuit strength of the busbar system and the components that are mounted to the system.

**Applications**
The 8US Fast Bus distribution system is ideal for control panel builders with multiple motor applications. These applications are most common in the material handling, automotive, food processing, pharmaceutical and paper processing industries.

<table>
<thead>
<tr>
<th>Clearance in air</th>
<th>Creepage distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between live parts</td>
<td>25.4 mm (1 inch)</td>
</tr>
<tr>
<td>Between live parts and grounded, non-insulated metal parts</td>
<td>25.4 mm (1 inch)</td>
</tr>
</tbody>
</table>
Fast Bus combination starters and group installation assemblies

**Ratings for Group Installations per NEC 430-53**

Group Installation is an approach to building multiple motor control systems in accordance with Section 430-53 of the National Electrical Code. In Group installation, multiple motor starters can be grouped under one short circuit protective device. The 3RV MSP’s have been UL listed for use in Group Installations both with and without 3RT contactors when mounted on the Fast Bus system. A 3RT contactor is added when remote operation of the motor is required.

<table>
<thead>
<tr>
<th>MSP Type</th>
<th>FLA Amp Range</th>
<th>FLA Amp Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>3RV201</td>
<td>S00 0.11-12.5</td>
<td>0.11-12.5</td>
</tr>
<tr>
<td>3RV201</td>
<td>S00 0.11-16</td>
<td>0.11-16</td>
</tr>
<tr>
<td>3RV201</td>
<td>S0 3.5-12.5</td>
<td>3.5-12.5</td>
</tr>
<tr>
<td>3RV202</td>
<td>S0 3.5-25</td>
<td>3.5-25</td>
</tr>
<tr>
<td>3RV202</td>
<td>S0 28-32</td>
<td>28-32</td>
</tr>
<tr>
<td>3RV202</td>
<td>S0 36-40</td>
<td>36-40</td>
</tr>
<tr>
<td>3RV103</td>
<td>S2 11-50</td>
<td>11-50</td>
</tr>
<tr>
<td>3RV104</td>
<td>S3 28-100</td>
<td>28-100</td>
</tr>
</tbody>
</table>

**Standard Installation, NEC 430-52**

The main fuse should be selected based on the FUSE selection procedure listed below.

**Group Installation, NEC 430-53**

The main CB should be selected based on the CIRCUIT BREAKER selection procedure listed below.

**The selection of components for Group Installation is a simple process of the following three steps:**

1. Selection of the Branch Circuit Protective Device, fuse or circuit breaker.
2. Selection of the 3RA Motor Starter based on the motor Full Load Amps.

**Circuit Breaker Selection**

Select a circuit breaker (CB) between:

- Minimum CB size (per NEC430-110): Sum of all motor FLC (per NEC table 430-150) x115%.
- Maximum CB size (per NEC430-53c): 250% x FLC of the largest motor + FLC of all other motors.

**Fuse Selection**

Calculate the maximum fuse size per NEC430-53c. Max Fuse Size =175% x FLC of largest motor + FLC of all other motors (FLC’s from NEC table 430-150).

<table>
<thead>
<tr>
<th>Assembled Starter Type</th>
<th>Starter Frame Size</th>
<th>FLA Amp Range</th>
<th>240V</th>
<th>480V/277V</th>
<th>600V/347V</th>
</tr>
</thead>
<tbody>
<tr>
<td>3RA201</td>
<td>S00</td>
<td>0.11-12.5</td>
<td>—</td>
<td>65kA</td>
<td>65kA</td>
</tr>
<tr>
<td>3RA201</td>
<td>S00</td>
<td>0.11-16</td>
<td>—</td>
<td>65kA</td>
<td>65kA</td>
</tr>
<tr>
<td>3RA202</td>
<td>S0 0.45-12.5</td>
<td>—</td>
<td>65kA</td>
<td>65kA</td>
<td>65kA</td>
</tr>
<tr>
<td>3RA202</td>
<td>S0 0.45-25</td>
<td>65kA</td>
<td>65kA</td>
<td>65kA</td>
<td></td>
</tr>
<tr>
<td>3RA202</td>
<td>S0 28-32</td>
<td>65kA</td>
<td>65kA</td>
<td>65kA</td>
<td></td>
</tr>
<tr>
<td>3RA103</td>
<td>S2 11-50</td>
<td>65kA</td>
<td>65kA</td>
<td>65kA</td>
<td></td>
</tr>
<tr>
<td>3RA104</td>
<td>S3 28-75</td>
<td>—</td>
<td>—</td>
<td>30kA</td>
<td></td>
</tr>
<tr>
<td>3RA104</td>
<td>S3 28-100</td>
<td>65kA</td>
<td>65kA</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

1) Branch Circuit Protective Device for 480V-Ratings: The appropriate BCPD need to be determined in accordance with the National Electrical Code, Article 430-53 and the application. The following devices are permitted:
   - Fuses: Classes RK1, RK5, J, G, T, CC or Circuit breakers: Listed Siemens type, with a marked short-circuit rating equal or larger than the available short-circuit current rating. These devices were tested for group installation use at the above levels without any upstream branch circuit device.

2) 3RA2 used as Manual Motor Controller; Branch Circuit Protective Device for 600V-Ratings: Max. Class J 50A

3) Starter sizes S00, S0 and S3 require additional type E line side terminal adaptors on the MSP for type F applications. See section 1 accessories.
## Selection and ordering data

### Base plate

- **36 mm system flat**
  - 230 mm x 1100 mm
  - UL Current rating: required
  - UL508A Compliance: 8US19 22-2UA01

### Copper Busbar with tin plating

- **20 mm x 5 mm x 914 mm (36")**
  - for 60 mm systems
  - 362A, yes
  - FBB36
  - 3 pcs

- **20 mm x 5 mm x 1524 mm (60")**
  - for 60 mm systems
  - 362A, yes
  - 8WC5053
  - 3 pcs

- **20 mm x 5 mm x 2000 mm (78.74")**
  - for 60 mm systems
  - 432A, yes
  - 8WC5054

- **30 mm x 5 mm x 2000 mm (78.74")**
  - for 60 mm systems
  - 500A, yes
  - 8WC5055

- **20 mm x 10 mm x 2000 mm (78.74")**
  - for 60 mm systems
  - 564A, yes
  - 8WC5063

- **30 mm x 10 mm x 2000 mm (78.74")**
  - for 60 mm systems
  - 756A, yes
  - 8WC5065

- **720 mm x 2400 mm (94.49")**
  - Twin T (TT) Busbar
  - 1400A, yes
  - 8US19 48-2AA00

### Busbar holder (end and intermediate)

- **3-pole with inside mounting**
  - for 20 mm and 30 mm x 5 mm or 10 mm
  - 362A, yes
  - 8US19 23-3UA01

- **3-pole with inside mounting**
  - for 25mm x 5mm or 10mm
  - 362A, yes
  - 8US19 23-3AA00

### Busbar holder end cover

- **3-pole end cover**
  - fits 8US19 23-3UA01 and 8US1923-3AA01
  - 8US19 22-1AC00

### Ground Busbar holder

- **1-pole with inside mounting**
  - for 20 mm - 30 mm x 5 mm or 10 mm
  - n/a
  - 8US19 23-1AA01

### Cover profiles for Busbars

- **for 5 mm busbars up to 30 mm wide**
  - 1000 mm length
  - 8US19 22-2AA00

- **for 10 mm busbars up to 30 mm**
  - 1000 mm length
  - 8US19 22-2BA00

### Reserve Space Cover (for covering round terminals placed on 3-phase busbar)

- **Holder for reserve space cover**
  - 107 mm length
  - 8US19 22-2AA00

- **Reserve space cover**
  - 195mm height / 700mm length
  - 8US19 22-2EB00

### Feeder Lugs (mounts to all busbar sizes on this page)

- **3-pole terminal plate with cover**
  - 20 mm x 200 mm 16-4 AWG
  - 80A, yes
  - 5SH3538

- **3-pole terminal plate with cover**
  - 54 mm x 200 mm 10-20 AWG
  - 300A, yes
  - 8US19 21-1BA00

- **3-pole terminal plate with cover**
  - 81 mm x 200 mm 2 AWG-250 MCM
  - 440A, yes
  - 8US19 21-1AA00

- **3-pole terminal plate with cover**
  - 180 mm x 200 mm 250-600 MCM
  - 560A, yes
  - FBT600F

- **3-pole terminal plate**
  - 154 mm x 184 mm 300-600 MCM
  - 560A, yes
  - 8US19 41-2AA03

- **3-pole terminal plate**
  - 160 mm x 184 mm for flat bars up to 32 mm x 20 mm
  - 800A, yes
  - 8US19 41-2AA04

- **Cover for 8US19 41-2AA03 and 04**
  - 180 mm x 200 mm x 90 mm
  - 8US19 22-1GC00

---

1. UL 508A labeled panels require the use of components that meet the creepage and air distances of 1” air clearance and 2” creepage distance. N/A = not applicable for given item.
2. Current rating dependent on size of busbar used. Refer to busbar selection data.
Selection and ordering data

Description

FBCB Fast Bus circuit breakers

Offer a full range of feeder circuit breakers from 15A to 250A. All kits 125A and under are pre-assembled on 60 mm Fast Bus adaptor shoes and ready to place on the busbar. Circuit breakers 150A and higher are pre-packaged kits for fast user assembly and must be torqued down to the busbar prior to assembly. For VL breakers, adaptors are available for up to 500A breakers (both main and feeder orientation). See page 5/8.

Available in 2014

<table>
<thead>
<tr>
<th>Design</th>
<th>UL Current Rating</th>
<th>Breaker Frame (SCCR Rating)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ED (25kA)</td>
<td>HNED (65kA)</td>
</tr>
<tr>
<td><strong>Feeders Circuit Breakers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 pole/600V fully assembled breakers and adaptors that quickly snap onto the Busbar.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15A</td>
<td>FBCB015</td>
<td>—</td>
</tr>
<tr>
<td>20A</td>
<td>FBCB020</td>
<td>FBCB020H</td>
</tr>
<tr>
<td>25A</td>
<td>FBCB025</td>
<td>FBCB025H</td>
</tr>
<tr>
<td>30A</td>
<td>FBCB030</td>
<td>FBCB030H</td>
</tr>
<tr>
<td>35A</td>
<td>FBCB035</td>
<td>FBCB035H</td>
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<td>40A</td>
<td>FBCB040</td>
<td>FBCB040H</td>
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<td>45A</td>
<td>FBCB045</td>
<td>FBCB045H</td>
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<td>50A</td>
<td>FBCB050</td>
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<tr>
<td>55A</td>
<td>FBCB055</td>
<td>—</td>
</tr>
<tr>
<td>60A</td>
<td>FBCB060</td>
<td>—</td>
</tr>
<tr>
<td>70A</td>
<td>FBCB070</td>
<td>—</td>
</tr>
<tr>
<td>80A</td>
<td>FBCB080</td>
<td>—</td>
</tr>
<tr>
<td>90A</td>
<td>FBCB090</td>
<td>—</td>
</tr>
<tr>
<td>100A</td>
<td>FBCB100</td>
<td>—</td>
</tr>
<tr>
<td>110A</td>
<td>FBCB110</td>
<td>—</td>
</tr>
<tr>
<td>125A</td>
<td>FBCB125</td>
<td>—</td>
</tr>
<tr>
<td>3 pole/600V kitted components for customer assembly that require the adaptor to be torqued down to the Busbars prior to assembly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150A</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>175A</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>200A</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>225A</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>250A</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design</th>
<th>UL Current Rating</th>
<th>Breaker Frame (SCCR Rating)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Circuit Breakers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 pole/600V kitted components for customer assembly that require the adaptor to be torqued down to the Busbars prior to assembly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100A</td>
<td>FBCB100M</td>
<td>FBCB100M-HB</td>
</tr>
<tr>
<td>125A</td>
<td>FBCB125M</td>
<td>FBCB125M-HB</td>
</tr>
<tr>
<td>150A</td>
<td>FBCB150M</td>
<td>FBCB150M-HB</td>
</tr>
<tr>
<td>175A</td>
<td>FBCB175M</td>
<td>FBCB175M-HB</td>
</tr>
<tr>
<td>200A</td>
<td>FBCB200M</td>
<td>FBCB200M-HB</td>
</tr>
<tr>
<td>225A</td>
<td>FBCB225M</td>
<td>FBCB225M-HB</td>
</tr>
<tr>
<td>250A</td>
<td>FBCB250M</td>
<td>FBCB250M-HB</td>
</tr>
</tbody>
</table>

1) UL Short Circuit Current ratings are based on 480V. Contact Siemens for 600 V ratings.
2) Check Industry Mall for availability.
3) FBCB100M - 125M SCCR = 25kA @ 480V
   FBCB150M - 250M SCCR = 65kA @ 480V
## Fast Bus
### Fast Bus Busbar Adapter System

**60 mm system**  
**Busbar adapters and device holders**

### Selection and ordering data

<table>
<thead>
<tr>
<th>Busbar device adapters</th>
<th>Number of mounting rails (35 mm)</th>
<th>Rated current</th>
<th>Connecting cables</th>
<th>Adapter length</th>
<th>Adapter width</th>
<th>Rated voltage UL</th>
<th>UL508A 1) compliance</th>
<th>Order No.</th>
<th>Pack units</th>
<th>Weight per PU approx.</th>
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<td>Size S0/50</td>
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<tr>
<td>MSP's</td>
<td>1 25 12 182 45 600yes</td>
<td>8US12 51-5DM07</td>
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<tr>
<td>+ Overload relays</td>
<td></td>
<td>8US12 51-5DM07</td>
<td>0.183</td>
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<td>0.183</td>
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<tr>
<td>+ Device holders</td>
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<tr>
<td>+ Connecting plates</td>
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<td>8US19 99-1AA00</td>
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| Size S0/50            |                                  |               |                   |                |              |                |                   |           |            |                       |
| Cage Clamp            |                                  |               |                   |                |              |                |                   |           |            |                       |
| Direct start load feeders |                          | 8US12 51-5CM47 | 0.190             |               |              |                |                   |           |            |                       |

| Size S2               |                                  |               |                   |                |              |                |                   |           |            |                       |
| MSP's                 | 1 50 8 182 55 600yes             | 8US12 61-5FM08 | 0.263             |               |              |                |                   |           |            |                       |
| + Overload relays     |                                  | 8US12 61-5FM08 | 0.263             |               |              |                |                   |           |            |                       |
| Direct start load feeders |                          | 8US12 61-5FP08 | 0.292             |               |              |                |                   |           |            |                       |
| Reversing feeders     |                                  |               |                   |                |              |                |                   |           |            |                       |
| Busbar adapters       | 1 50 8 242 55 600yes             | 8US12 61-5FP08 | 0.292             |               |              |                |                   |           |            |                       |
| Busbar adapters       | 1 50 8 242 55 600yes             | 8US12 60-5AM00 | 0.202             |               |              |                |                   |           |            |                       |
| + Device holders      |                                  | 8US12 60-5AP00 | 0.243             |               |              |                |                   |           |            |                       |
| + Connecting plates   |                                  | 8US19 99-1AA00 | 0.100             |               |              |                |                   |           |            |                       |

| Size S3               |                                  |               |                   |                |              |                |                   |           |            |                       |
|                       | 80 4 215 72 600yes               | 8US12 11-4TR00 | 0.659             |               |              |                |                   |           |            |                       |
|                       | 1 100 -- 200 72 600yes           | FBS100723R    | 0.590             |               |              |                |                   |           |            |                       |
|                       | 1 100 -- 200 72 600yes           | FBS100722     | 0.610             |               |              |                |                   |           |            |                       |

| For VL UL circuit breakers 2) |                               |               |                   |                |              |                |                   |           |            |                       |
|-------------------------------|-----------------------------|---------------|-------------------|----------------|---------------|----------------|-------------------|-----------|------------|                       |
| VL150 UL, DG frame           | -- 150 Tubular contacts     | 8US12 13-4AQ03 | 1.020             |               |              |                |                   |           |            |                       |
| VL250 UL, FG frame           | -- 250 Tubular contacts     | 8US12 13-4AQ03 | 1.020             |               |              |                |                   |           |            |                       |
| VL400 UL, JG frame           | -- 400 Tubular contacts     | 8US12 13-4AH00 | 1.900             |               |              |                |                   |           |            |                       |
| VL400X UL, LG frame          | -- 540 Tubular contacts     | 8US12 13-4AH00 | 1.900             |               |              |                |                   |           |            |                       |

1) UL 508A labeled panels require the use of components that meet the creepage and air distances of 1” air clearance and 2” creepage distance. N/A = not applicable for given item.

2) For use with 10mm x 30mm and twin T (TT) busbars only. Adaptors can be configured for main or feeder breakers applications.

3) For use with maximum 500A circuit breaker. Circuit breakers greater than 500A must be panel mounted off the busbar system and fed to the busbars via an infeed module. See page 5/6.
# Selection and ordering data

## Terminals for round conductors

<table>
<thead>
<tr>
<th>Description</th>
<th>Max Amps</th>
<th>Width</th>
<th>UL508A Compliance</th>
<th>Order No.</th>
<th>List Price $</th>
<th>Pack Units</th>
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<tr>
<td>12 mm x 5 mm</td>
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<td>16 - 6 AWG</td>
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<tr>
<td>15 mm x 5 mm</td>
<td>270</td>
<td>12 - 2 AWG</td>
<td></td>
<td>8US19 21-2AB00</td>
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</tr>
<tr>
<td>20 mm x 5 mm</td>
<td>400</td>
<td>6 - 20 AWG</td>
<td></td>
<td>8US19 21-2AD00</td>
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</tr>
<tr>
<td>25 mm x 5 mm</td>
<td>440</td>
<td>6 - 250 MCM</td>
<td></td>
<td>8US19 21-2AC00</td>
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<tr>
<td>30 mm x 5 mm</td>
<td>180</td>
<td>16 - 6 AWG</td>
<td></td>
<td>8US19 21-2AB01</td>
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</tr>
<tr>
<td></td>
<td>270</td>
<td>12 - 2 AWG</td>
<td></td>
<td>8US19 21-2AC01</td>
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<tr>
<td>20 mm x 5 mm, 25 mm x 5 mm</td>
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<td>30 - 350 MCM</td>
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<tr>
<td>12 mm x 10 mm&lt;sup&gt;3)&lt;/sup&gt;, 20 mm x 10 mm</td>
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<tr>
<td>15 mm x 10 mm&lt;sup&gt;3)&lt;/sup&gt;, 20 mm x 10 mm</td>
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</tr>
<tr>
<td>25 mm x 10 mm, 30 mm x 10 mm</td>
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<td>6 - 20 AWG</td>
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<td>8US19 21-2BD00</td>
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<tr>
<td>20 mm x 10 mm, 25 mm x 10 mm</td>
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<td>6 - 250 MCM</td>
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<td>8US19 21-2BC00</td>
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</tr>
<tr>
<td></td>
<td>180</td>
<td>16 - 6 AWG</td>
<td></td>
<td>8US19 21-2CA01</td>
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</tr>
<tr>
<td></td>
<td>270</td>
<td>12 - 2 AWG</td>
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<td>8US19 21-2CB01</td>
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<tr>
<td>12 mm x 10 mm&lt;sup&gt;3)&lt;/sup&gt;</td>
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<td></td>
<td>8US19 41-2AA01</td>
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<tr>
<td>20 mm x 10 mm&lt;sup&gt;3)&lt;/sup&gt;</td>
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<td></td>
<td></td>
<td>8US19 41-2AA02</td>
<td>3</td>
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</tbody>
</table>

## Terminal covers for circular conductors (mounts to busbars)

- For terminals up to 250 MCM: 200 mm long, 84 mm wide (Order No. 8US19 22-1GA00, 10 units at $10 each)
- For terminals up to 600 MCM: 200 mm long, 270 mm wide (Order No. 8US19 22-1GA02, 1 unit at $10)

## Accessories for busbar adapters and device holders

- Mounting rail (35 mm) - plastic (Order No. 8US1998-7CA15, 10 units at $10 each)
- Complete with mounting screws (Order No. 8US1998-7CA16, 10 units at $10 each)
- 70 mm n/a (Order No. 8US1998-4AA00, 10 units at $10 each)
- 90 mm n/a (Order No. 8US1998-7CA08, 10 units at $10 each)
- 110 mm n/a (Order No. 8US1998-7CA10, 10 units at $10 each)

- Connection holder (for vertical busbar assembly)
- (for SIRIUS sizes S00/S0) (Order No. 8US1998-1DA00, 20 units at $20 each)

- Screw holder
- (for supplementary screw fixing of the feeder)
- (for SIRIUS sizes S00/S0) (Order No. 8US1998-1CA00, 20 units at $20 each)

- Spacer
- (for SIRIUS sizes S00/S0) (Order No. 8US1998-1BA00, 100 units at $1 each)

- Connection wedges
- (for mechanical linking of adapters and switching device holders)
- (2 units required per combination) (Order No. FBC20, 20 units at $20 each)

## Outgoing terminal rail for busbar adapters

- Plug-type terminal
- (complete with supporting element for attaching to busbar adapter and switching device holder. Spring loaded terminals.)
- 3 x 14 AWG (400 V) and 4 x 16 AWG (250 V) (Order No. 8US1998-8AM07, 1 unit at $6.90 each)
- 7 x 14 AWG (400 V) (Order No. 8US1998-8AA10, 1 unit at $6.90 each)

## Accessories for busbar adapters and device holders

- Side module for busbar adapter expansion For adapters w/182 mm
- Side module for busbar adapter expansion For adapters w/200 mm (Order No. 8US1998-2BM00, 1 unit at $8 each)

---

<sup>1</sup> UL508A labeled panels require the use of components that meet the creepage and air distances of 1” air clearance and 2” creepage distance.

<sup>2</sup> UL508A labeled panels require the use of components that meet the creepage and air distances of 1” air clearance and 2” creepage distance.

<sup>3</sup> Cannot be used on Twin T (TT) profile up to 1400 A.

---

*Revised 09/30/14*
**Fast Bus**

**Fast Bus Busbar Adapter System**

**60 mm system**

### Dimension drawings

**FBB36/FBB60 Copper Busbar**

<table>
<thead>
<tr>
<th>Dimension</th>
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<td>FBB36</td>
<td>36 (914)</td>
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<tr>
<td>FBB60</td>
<td>60 (1524)</td>
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</table>

**Copper Busbar/TT profile, 8US19 48-2AA00**

**8US19 22-2AC00 with 8US19 23-3UA01**

**8US19 22-1AC00 with 8US19 23-3AA01**

**Support for blanking covers, 8US1922-2EA00**

**8US19 23-1AA01**

**8US19 22-2AA00**

**8US19 22-2BA00**

**Blanking cover, 8US1922-2EB00**
Fast Bus
Fast Bus Busbar Adapter System

60 mm system

- Dimension drawings

Busbar device adapter, 8US12 50-5AM00

Busbar device adapter, 8US12 60-5AP00

Busbar device adapter, 8US12 61-5FM08

Busbar device adapter, 8US12 11-4TR00

Busbar device adapter, 8US12 51-5DM07

Busbar device adapter, 8US12 61-5FP08
### Dimension drawings

**Busbar device adapter, 8US12 51-5CM47**

![Dimension drawing](image_1)

**Busbar device adapter, 8US12 13-4AQ01**

![Dimension drawing](image_2)

**Busbar device adapter, 8US12 13-4AQ03**

![Dimension drawing](image_3)

**Busbar device adapter, 8US12 13-4AH00**

![Dimension drawing](image_4)
Fast Bus
Fast Bus Busbar Adapter System

60 mm system

Dimension drawings

<table>
<thead>
<tr>
<th>Type</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>Max tightening torque</th>
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8US1941-2AA01

8US1941-2AA02

FBC135

8US1922-1GA00

8US1921-2A / -2B

8US19 22-1GA02
Dimension drawings

8US19 98-1CA00
8US19 98-1DA00
8US19 98-4AA00
8US19 98-7CA08
8US19 98-7CA10
8US19 98-7CA15
8US19 98-7CA16
8US19 98-1BA00
8US19 98-8AM07
8US19 98-8AA10
8US19 98-1CA00
8US19 98-1DA00
## Fast Bus

SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

### General data

#### Order No. scheme

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<th>Digit of the Order No.</th>
<th>1st-3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>9th</th>
<th>10th</th>
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<th>12th</th>
<th>13th</th>
<th>14th</th>
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</table>

**Example**

3 RA 2 1 1 0 – 0 B A 1 5 – 1 A K 6

**Note:**
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers. For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

### Technical specifications

<table>
<thead>
<tr>
<th>Direct-on-line starters/ reversing starters</th>
<th>Size</th>
<th>Connection methods</th>
<th>Mounting</th>
<th>Control voltage</th>
<th>Width W</th>
<th>Height H</th>
<th>Depth D</th>
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<td>mm</td>
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<td>AC/DC</td>
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<td>155</td>
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<td>Reversing starters</td>
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<td>S00</td>
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<td>Screw terminals</td>
<td>Standard mounting rails</td>
<td>AC/DC</td>
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<td>Standard mounting rails</td>
<td>AC/DC</td>
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<tr>
<td>3RA2.2</td>
<td>S0</td>
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### Mechanics and environment

#### Permissible ambient temperature
- During operation: -20 ... +60 °C
- Storage and transport: -55 ... +80 °C

**Weight**
- kg: 0.6 ... 1.5
- 0.8 ... 2.3

#### Permissible mounting positions

**Important:** Acc. to DIN 43602 start command "I" at the right or top

#### Shock resistance (sine-wave pulse)
- Acc. to IEC 60086 Part 2-27: Up to 6
- Acc. to DIN 43602: Up to 6

#### Degree of protection
- Acc. to IEC 60947-1: IP20
Combination Starters & Starters for Group Installation

SIRIUS 3RA Motor Starters

**General data**

*Direct-on-line starting • For 60 mm busbar systems • Sizes S00 and S0*

- **60 mm busbar adapter**
  - for screw terminals
  - 8US12 51-5DS10 for S00
  - 8US12 51-5NT10 for S0

- **Motor starter protector**
  - Size S00/S0
  - Screw terminals

- **Link module**
  - 3RA19 21-1DA00 for S00
  - 3RA29 21-1AA00 for S0, AC contactor
  - 3RA29 21-1BA00 for S0, DC contactor

- **Contactor**
  - Size S00/S0
  - Screw terminals

- **60 mm busbar adapter**
  - for spring-type terminals
  - 8US12 51-5DT11 for S00
  - 8US12 51-5NT11 for S0

- **Motor starter protector**
  - Size S00/S0
  - Spring-type terminals

- **Link module**
  - 3RA29 11-2AA00 for S00
  - 3RA29 21-2AA00 for S0

- **Contactor**
  - Size S00/S0
  - Spring-type terminals

1) Additional 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

Left: 3RA21 motor starter for direct-on-line starting with busbar adapters with screw connection

Right: 3RA21 motor starter for direct-on-line starting with busbar adapters with spring-type connection

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**3RV03 with 3RT03**

- **Adapter Shoe**
  - 8US1261-5FP08

- **MSP**
  - 3RV03

- **Link Module**
  - for AC: 3RA1931-1A
  - for DC: 3RA1931-1B

- **Contactor**
  - 3RT03

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**3RV104 with 3RT104**

- **Adapter Shoe**
  - 8US1211-4TR00

- **MSP**
  - 3RV104

- **Link Module**
  - for AC: 3RA1941-1A
  - for DC: 3RA1941-1B

- **Contactor**
  - 3RT104

- **Bracket**
  - FB50070B
Fast Bus
SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

Reversing duty • For 60 mm busbar systems • Sizes S00 and S0

RS assembly kit for reversing duty and busbar mounting
Screw connection:
3RA29 13-1DB1 for S00
3RA29 23-1DB1 for S0
For spring-type connection:
3RA29 13-1DB2 for S00
3RA29 23-1DB2 for S0
Comprising:
1 wiring kit
1 busbar adapter
2 connecting wedges
1) Also includes 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

Motor starter protector
Size S00/S0
Screw terminals/spring-type terminals

Link module
For screw terminals:
3RA19 21-1DA00 for S00
3RA29 21-1AA00 for S0, AC contactor
3RA29 21-1BA00 for S0, DC contactor
For spring-type terminals:
3RA29 11-2AA00 for S00
3RA29 21-2AA00 for S0

Wiring kit
Screw connection:
3RA29 13-2AA1 for S00
3RA29 23-2AA1 for S0
Spring-type connection:
3RA29 13-2AA2 for S00
3RA29 23-2AA2 for S0
1) Upper wiring module
2) Lower wiring module
3) 2 connecting clips
4) Mechanical interlock (can be removed if necessary)

3RA22 motor starter for reversing duty and 60 mm standard mounting rail in size S00/S0
(the version with screw connection is shown in the picture)
Required Components for Fast Bus Mounting

1. Link Module
   - for AC: 3RA1931-1A
   - for DC: 3RA1931-1B
2. Mechanical Interlock
   - 3RA1924-2B
3. Fast Clips
   - FBC20

**3RV103 with Reversing 3RT103**
- 2 Contactors 3RT103
- MSP 3RV103
- Contactor Support 8US1260-5AP00 (without DIN rail) and with 8US1988-2BP00
- Adapter Shoe 8US1261-5FP00

**3RA1933-2A Wiring Kit**
- Upper Wiring Module
- Lower Wiring Module

**3RV104 with Reversing 3RT104**
- 2 Contactors 3RT104
- MSP 3RV104
- Adapter Shoe 8US1211-4TR00

1. Link Module
   - for AC: 3RA1941-1A
   - for DC: 3RA1941-1B
2. Mechanical Interlock
   - 3RA1924-2B

**3RA1943-2A Wiring Kit**
- Upper Wiring Module
- Lower Wiring Module

**2 Brackets FBS0070B**

Siemens Industry, Inc.
Industrial Controls Catalog
Fast Bus
SIRIUS 3RA Fast Bus Combination Starters and Group Installation Assemblies

Dimensions

Dimensions, 3RV101 with 3RT101

3RA2110
Fast Bus Non-reversing

Dimensions, 3RV102 with 3RT101

3RA2120
Fast Bus Non-reversing

3RA2210
Fast Bus Reversing

3RA2220
Fast Bus Reversing

1) Lockable in OFF position. Padlock diameter 5 mm.
2) When a front auxiliary is installed on the contactor, add 44 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.
Lateral clearance to grounded components minimum 6 mm.
1) Arcing space
2) Lockable in OFF position with padlock diameter 5 mm.
3) When a front mount auxiliary is installed on the contactor, add 49 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.
Lateral clearance to grounded components minimum 6 mm.
1) Arcing space
2) Lockable in OFF position with padlock diameter 5 mm.
3) When a front mount auxiliary is installed on the contactor, add 48 mm to the depth of the contactor.

All dimensions shown in millimeters. For reference purposes only. Not to be used for design or construction purposes.