

3RV1 Circuit-Breakers for Motor Protection · up to 25 A

SIRIUS 3R



Selection and ordering data

With screw connection

Auxiliary switches should be ordered separately acc. to the table on page 2/9.

| Rated current I_n | Suitable for 3-phase induction motors ¹⁾ P_n | Current setting range | | Short-circuit breaking capacity at AC 400 V I_{cu} | 3RV10 .1 circuit-breakers Standard breaking capacity: 100/50 kA at AC 400 V | Order No. | Price | Weight approx. kg |
|------------------------|--|--------------------------|-------------------------------------|---|--|-----------|-------|----------------------|
| | | Thermal overload release | Instantaneous short-circuit release | | | | | |
| A | kW | A | A | kA | ▶ Preferred type | 1 unit | | |

CLASS 10, size S00



| | | | | | | |
|------|------|-------------|-----|-----|-----------------------|------|
| 0.16 | | 0.11 – 0.16 | 1.9 | 100 | 3RV10 11-0AA1. | 0.21 |
| 0.2 | | 0.14 – 0.2 | 2.4 | 100 | 3RV10 11-0BA1. | |
| 0.25 | 0.06 | 0.18 – 0.25 | 3 | 100 | 3RV10 11-0CA1. | |
| 0.32 | 0.09 | 0.22 – 0.32 | 3.8 | 100 | 3RV10 11-0DA1. | |
| 0.4 | | 0.28 – 0.4 | 4.8 | 100 | 3RV10 11-0EA1. | |
| 0.5 | 0.12 | 0.35 – 0.5 | 6 | 100 | 3RV10 11-0FA1. | |
| 0.63 | 0.18 | 0.45 – 0.63 | 7.6 | 100 | 3RV10 11-0GA1. | |
| 0.8 | | 0.55 – 0.8 | 9.6 | 100 | 3RV10 11-0HA1. | |
| 1 | 0.25 | 0.7 – 1 | 12 | 100 | 3RV10 11-0JA1. | |
| 1.25 | 0.37 | 0.9 – 1.25 | 15 | 100 | 3RV10 11-0KA1. | |
| 1.6 | 0.55 | 1.1 – 1.6 | 19 | 100 | 3RV10 11-1AA1. | |
| 2 | 0.75 | 1.4 – 2 | 24 | 100 | 3RV10 11-1BA1. | |
| 2.5 | | 1.8 – 2.5 | 30 | 100 | 3RV10 11-1CA1. | |
| 3.2 | 1.1 | 2.2 – 3.2 | 38 | 100 | 3RV10 11-1DA1. | |
| 4 | 1.5 | 2.8 – 4 | 48 | 100 | 3RV10 11-1EA1. | |
| 5 | | 3.5 – 5 | 60 | 100 | 3RV10 11-1FA1. | |
| 6.3 | 2.2 | 4.5 – 6.3 | 76 | 100 | 3RV10 11-1GA1. | |
| 8 | 3 | 5.5 – 8 | 96 | 50 | 3RV10 11-1HA1. | |
| 10 | 4 | 7 – 10 | 120 | 50 | 3RV10 11-1JA1. | |
| 12 | 5.5 | 9 – 12 | 144 | 50 | 3RV10 11-1KA1. | |

CLASS 10, size S0



| | | | | | | |
|------|------|-------------|-----|-----|-----------------------|------|
| 0.16 | | 0.11 – 0.16 | 1.9 | 100 | 3RV10 21-0AA1. | 0.32 |
| 0.2 | | 0.14 – 0.2 | 2.4 | 100 | 3RV10 21-0BA1. | |
| 0.25 | 0.06 | 0.18 – 0.25 | 3 | 100 | 3RV10 21-0CA1. | |
| 0.32 | 0.09 | 0.22 – 0.32 | 3.8 | 100 | 3RV10 21-0DA1. | |
| 0.4 | | 0.28 – 0.4 | 4.8 | 100 | 3RV10 21-0EA1. | |
| 0.5 | 0.12 | 0.35 – 0.5 | 6 | 100 | 3RV10 21-0FA1. | |
| 0.63 | 0.18 | 0.45 – 0.63 | 7.6 | 100 | 3RV10 21-0GA1. | |
| 0.8 | | 0.55 – 0.8 | 9.6 | 100 | 3RV10 21-0HA1. | |
| 1 | 0.25 | 0.7 – 1 | 12 | 100 | 3RV10 21-0JA1. | |
| 1.25 | 0.37 | 0.9 – 1.25 | 15 | 100 | 3RV10 21-0KA1. | |
| 1.6 | 0.55 | 1.1 – 1.6 | 19 | 100 | 3RV10 21-1AA1. | |
| 2 | 0.75 | 1.4 – 2 | 24 | 100 | 3RV10 21-1BA1. | |
| 2.5 | | 1.8 – 2.5 | 30 | 100 | 3RV10 21-1CA1. | |
| 3.2 | 1.1 | 2.2 – 3.2 | 38 | 100 | 3RV10 21-1DA1. | |
| 4 | 1.5 | 2.8 – 4 | 48 | 100 | 3RV10 21-1EA1. | |
| 5 | | 3.5 – 5 | 60 | 100 | 3RV10 21-1FA1. | |
| 6.3 | 2.2 | 4.5 – 6.3 | 76 | 100 | 3RV10 21-1GA1. | |
| 8 | 3 | 5.5 – 8 | 96 | 100 | 3RV10 21-1HA1. | |
| 10 | 4 | 7 – 10 | 120 | 100 | 3RV10 21-1JA1. | |
| 12.5 | 5.5 | 9 – 12.5 | 150 | 100 | 3RV10 21-1KA1. | |
| 16 | 7.5 | 11 – 16 | 192 | 50 | 3RV10 21-4AA1. | |
| 20 | | 14 – 20 | 240 | 50 | 3RV10 21-4BA1. | |
| 22 | | 17 – 22 | 264 | 50 | 3RV10 21-4CA1. | |
| 25 | 11 | 20 – 25 | 300 | 50 | 3RV10 21-4DA1. | |

Order No. supplement for transverse auxiliary switch

without
1NO + 1NC

▶ 0
5

Additional price

Transverse auxiliary switch

1 NO + 1 NC separately

3RV19 01-1E

0.02

For multi-unit packing see Part 17.

1) Recommended values for standard 4-pole motors at AC 50 Hz 400 V. The actual start-up data and ratings for the motor to be protected are relevant.



With screw connection

Auxiliary switches should be ordered separately acc. to the table on page 2/9.

| Rated current I_n | Suitable for 3-ph. induction motors ¹⁾ P_n | Current setting range | | 3RV10.1 circuit-breakers Standard breaking capacity: 50 kA at AC 400 V | Weight approx. kg | 3RV10.4 circuit-breakers Increased breaking capacity: 100 kA at AC 400 V |
|------------------------|--|--------------------------|-------------------------------------|--|----------------------|--|
| | | Thermal overload release | Instantaneous short-circuit release | | | |
| A | kW | A | A | Preferred type | 1 unit | 1 unit |

CLASS 10, size S2



| | | | | | | |
|----|------|---------|-----|------------------|------|---|
| 16 | 7.5 | 11 – 16 | 192 | ▶ 3RV10 31-4AA10 | 0.96 | – |
| 20 | | 14 – 20 | 240 | ▶ 3RV10 31-4BA10 | | – |
| 25 | 11 | 18 – 25 | 300 | ▶ 3RV10 31-4DA10 | | – |
| 32 | 15 | 22 – 32 | 384 | ▶ 3RV10 31-4EA10 | | – |
| 40 | 18.5 | 28 – 40 | 480 | ▶ 3RV10 31-4FA10 | – | – |
| 45 | | 36 – 45 | 540 | ▶ 3RV10 31-4GA10 | | – |
| 50 | 22 | 40 – 50 | 600 | ▶ 3RV10 31-4HA10 | | – |

CLASS 10, size S3



| | | | | | | | |
|-----|------|------------------------|------|------------------|-----|----------------|-----|
| 16 | 7.5 | 11 – 16 | 192 | – | 2.1 | 3RV10 42-4AA10 | 2.1 |
| 20 | | 14 – 20 | 240 | – | | 3RV10 42-4BA10 | |
| 25 | 11 | 18 – 25 | 300 | – | | 3RV10 42-4DA10 | |
| 32 | 15 | 22 – 32 | 384 | – | | 3RV10 42-4EA10 | |
| 40 | 18.5 | 28 – 40 | 480 | ▶ 3RV10 41-4FA10 | 2.1 | 3RV10 42-4FA10 | – |
| 50 | 22 | 36 – 50 | 600 | ▶ 3RV10 41-4HA10 | | 3RV10 42-4HA10 | |
| 63 | 30 | 45 – 63 | 756 | ▶ 3RV10 41-4JA10 | | 3RV10 42-4JA10 | |
| 75 | 37 | 57 – 75 | 900 | ▶ 3RV10 41-4KA10 | – | 3RV10 42-4KA10 | – |
| 90 | | 70 – 90 | 1080 | ▶ 3RV10 41-4LA10 | | 3RV10 42-4LA10 | |
| 100 | 45 | 80 – 100 ³⁾ | 1140 | ▶ 3RV10 41-4MA10 | | 3RV10 42-4MA10 | |

CLASS 10, size S3, fits into plug-in socket ²⁾



| | | | | | | | |
|-----|------|------------------------|------|---|-----|----------------|-----|
| 16 | 7.5 | 11 – 16 | 192 | – | 2.1 | 3RV10 44-4AA10 | 2.1 |
| 20 | | 14 – 20 | 240 | – | | 3RV10 44-4BA10 | |
| 25 | 11 | 18 – 25 | 300 | – | | 3RV10 44-4DA10 | |
| 32 | 15 | 22 – 32 | 384 | – | | 3RV10 44-4EA10 | |
| 40 | 18.5 | 28 – 40 | 480 | – | – | 3RV10 44-4FA10 | – |
| 50 | 22 | 36 – 50 | 600 | – | | 3RV10 44-4HA10 | |
| 63 | 30 | 45 – 63 | 756 | – | | 3RV10 44-4JA10 | |
| 75 | 37 | 57 – 75 | 900 | – | – | 3RV10 44-4KA10 | – |
| 90 | | 70 – 90 | 1080 | – | | 3RV10 44-4LA10 | |
| 100 | 45 | 80 – 100 ³⁾ | 1140 | – | | 3RV10 44-4MA10 | |

CLASS 20, size S2

| | | | | | | |
|----|------|---------|-----|----------------|------|---|
| 16 | 7.5 | 11 – 16 | 192 | 3RV10 31-4AB10 | 0.96 | – |
| 20 | | 14 – 20 | 240 | 3RV10 31-4BB10 | | – |
| 25 | 11 | 18 – 25 | 300 | 3RV10 31-4DB10 | | – |
| 32 | 15 | 22 – 32 | 384 | 3RV10 31-4EB10 | | – |
| 40 | 18.5 | 28 – 40 | 480 | 3RV10 31-4FB10 | – | – |
| 45 | | 36 – 45 | 540 | 3RV10 31-4GB10 | | – |
| 50 | 22 | 40 – 50 | 600 | 3RV10 31-4HB10 | | – |

CLASS 20, size S3

| | | | | | | | |
|-----|------|------------------------|------|---|-----|----------------|-----|
| 40 | 18.5 | 28 – 40 | 480 | – | 2.1 | 3RV10 42-4FB10 | 2.1 |
| 50 | 22 | 36 – 50 | 600 | – | | 3RV10 42-4HB10 | |
| 63 | 30 | 45 – 63 | 756 | – | | 3RV10 42-4JB10 | |
| 75 | 37 | 57 – 75 | 900 | – | – | 3RV10 42-4KB10 | – |
| 90 | | 70 – 90 | 1080 | – | | 3RV10 42-4LB10 | |
| 100 | 45 | 80 – 100 ³⁾ | 1140 | – | | 3RV10 42-4MB10 | |

For multi-unit packing see Part 17.

1) Recommended values for standard 4-pole motors at AC 50 Hz 400 V. The actual start-up data and ratings for the motor to be protected are relevant.

2) See page 2/10.

3) Max. motor current 95 A.

3RV1 Circuit-Breakers for Motor Protection · up to 100 A

SIRIUS 3R



Selection and ordering data

With overload relay function · screw connection · without aux. switches

Auxiliary switches should be ordered separately acc. to the table on page 2/9.

| Rated current I_n | Suitable for 3-ph. induct. motors ¹⁾ P_n | Current setting range | | Short-circuit breaking capacity at AC 400 V I_{cu} | 3RV11 21 circuit-breakers | | |
|------------------------|--|--------------------------|-------------------------------------|---|---|-----------|-------|
| | | Thermal overload release | Instantaneous short-circuit release | | Standard breaking capacity: 100/50 kA at AC 400 V | Order No. | Price |
| A | kW | A | A | kA | | 1 unit | kg |

CLASS 10, size S0

without auxiliary switches



| | | | | | | | |
|------|------|-----------|-----|-----|-----------------------|--|-----|
| 0.16 | | 0.11–0.16 | 1.9 | 100 | 3RV11 21-0AA10 | | 0.4 |
| 0.2 | | 0.14–0.2 | 2.4 | 100 | 3RV11 21-0BA10 | | |
| 0.25 | 0.06 | 0.18–0.25 | 3 | 100 | 3RV11 21-0CA10 | | |
| 0.32 | 0.09 | 0.22–0.32 | 3.8 | 100 | 3RV11 21-0DA10 | | |
| 0.4 | | 0.28–0.4 | 4.8 | 100 | 3RV11 21-0EA10 | | |
| 0.5 | 0.12 | 0.35–0.5 | 6 | 100 | 3RV11 21-0FA10 | | |
| 0.63 | 0.18 | 0.45–0.63 | 7.6 | 100 | 3RV11 21-0GA10 | | |
| 0.8 | | 0.55–0.8 | 9.6 | 100 | 3RV11 21-0HA10 | | |
| 1 | 0.25 | 0.7–1 | 12 | 100 | 3RV11 21-0JA10 | | |
| 1.25 | 0.37 | 0.9–1.25 | 15 | 100 | 3RV11 21-0KA10 | | |
| 1.6 | 0.55 | 1.1–1.6 | 19 | 100 | 3RV11 21-1AA10 | | |
| 2 | 0.75 | 1.4–2 | 24 | 100 | 3RV11 21-1BA10 | | |
| 2.5 | | 1.8–2.5 | 30 | 100 | 3RV11 21-1CA10 | | |
| 3.2 | 1.1 | 2.2–3.2 | 38 | 100 | 3RV11 21-1DA10 | | |
| 4 | 1.5 | 2.8–4 | 48 | 100 | 3RV11 21-1EA10 | | |
| 5 | | 3.5–5 | 60 | 100 | 3RV11 21-1FA10 | | |
| 6.3 | 2.2 | 4.5–6.3 | 76 | 100 | 3RV11 21-1GA10 | | |
| 8 | 3 | 5.5–8 | 96 | 100 | 3RV11 21-1HA10 | | |
| 10 | 4 | 7–10 | 120 | 100 | 3RV11 21-1JA10 | | |
| 12.5 | 5.5 | 9–12.5 | 150 | 100 | 3RV11 21-1KA10 | | |
| 16 | 7.5 | 11–16 | 192 | 50 | 3RV11 21-4AA10 | | |
| 20 | | 14–20 | 240 | 50 | 3RV11 21-4BA10 | | |
| 22 | | 17–22 | 264 | 50 | 3RV11 21-4CA10 | | |
| 25 | 11 | 20–25 | 300 | 50 | 3RV11 21-4DA10 | | |

| Rated current I_n | Suitable for 3-ph. induction motors ¹⁾ P_n | Current setting range | | Short-circuit breaking capacity at AC 400 V I_{cu} | 3RV11 31 circuit-breakers | | | 3RV11 42 circuit-breakers | | |
|------------------------|--|--------------------------|-------------------------------------|---|---|-----------|-------|---------------------------|-----------|-------|
| | | Thermal overload release | Instantaneous short-circuit release | | Standard breaking capacity: 50 kA at AC 400 V | Order No. | Price | Weight approx. | Order No. | Price |
| A | kW | A | A | kA | | 1 unit | kg | | 1 unit | kg |

CLASS 10, size S2

without auxiliary switches



| | | | | | | | | | | |
|----|------|-------|-----|--|-----------------------|------|---|--|--|--|
| 16 | 7.5 | 11–16 | 192 | | 3RV11 31-4AA10 | 1.05 | – | | | |
| 20 | | 14–20 | 240 | | 3RV11 31-4BA10 | | – | | | |
| 25 | 11 | 18–25 | 300 | | 3RV11 31-4DA10 | | – | | | |
| 32 | 15 | 22–32 | 384 | | 3RV11 31-4EA10 | | – | | | |
| 40 | 18.5 | 28–40 | 480 | | 3RV11 31-4FA10 | | – | | | |
| 45 | | 36–45 | 540 | | 3RV11 31-4GA10 | | – | | | |
| 50 | 22 | 40–50 | 600 | | 3RV11 31-4HA10 | | – | | | |

CLASS 10, size S3

without auxiliary switches



| | | | | | | | | | | |
|-----|------|----------------------|------|---|--|--|--|-----------------------|--|-----|
| 16 | 7.5 | 11–16 | 192 | – | | | | 3RV11 42-4AA10 | | 2.2 |
| 20 | | 14–20 | 240 | – | | | | 3RV11 42-4BA10 | | |
| 25 | 11 | 18–25 | 300 | – | | | | 3RV11 42-4DA10 | | |
| 32 | 15 | 22–32 | 384 | – | | | | 3RV11 42-4EA10 | | |
| 40 | 18.5 | 28–40 | 480 | – | | | | 3RV11 42-4FA10 | | |
| 50 | 22 | 36–50 | 600 | – | | | | 3RV11 42-4HA10 | | |
| 63 | 30 | 45–63 | 756 | – | | | | 3RV11 42-4JA10 | | |
| 75 | 37 | 57–75 | 900 | – | | | | 3RV11 42-4KA10 | | |
| 90 | | 70–90 | 1080 | – | | | | 3RV11 42-4LA10 | | |
| 100 | 45 | 80–100 ²⁾ | 1140 | – | | | | 3RV11 42-4MA10 | | |

For multi-unit packing see Part 17.

1) Recommended values for standard 4-pole motors at AC 50 Hz 400 V. The actual start-up data and ratings for the motor to be protected are relevant.

2) Max. motor current 95 A.

**With screw connection - without auxiliary switches**

Auxiliary switches should be ordered separately acc. to the table on page 2/9.

| Rated current I_n | Suitable for 3-ph. induction motors ¹⁾ P_n | Current setting range | | 3RV13.1 circuit-breakers Standard breaking capacity: 50 kA at AC 400 V ³⁾ | Order No. | Price | Weight approx. kg | 3RV13.2 circuit-breakers Increased breaking capacity: 100 kA at AC 400 V | Order No. | Price | Weight approx. kg |
|------------------------|--|--|-------------------------------------|--|-----------|--------|----------------------|--|-----------|-------|----------------------|
| | | Thermal overload release ²⁾ | Instantaneous short-circuit release | | | | | | | | |
| A | kW | A | A | | | 1 unit | | | 1 unit | | |

Class 10, size S0

| | | | | | | | | | | | |
|------|------|---------|-----|-----------------------|--|------|---|--|--|--|--|
| 0.16 | | without | 1.9 | 3RV13 21-0AC10 | | 0.32 | — | | | | |
| 0.2 | | without | 2.4 | 3RV13 21-0BC10 | | | — | | | | |
| 0.25 | 0.06 | without | 3 | 3RV13 21-0CC10 | | | — | | | | |
| 0.32 | 0.09 | without | 3.8 | 3RV13 21-0DC10 | | | — | | | | |
| 0.4 | | without | 4.8 | 3RV13 21-0EC10 | | | — | | | | |
| 0.5 | 0.12 | without | 6 | 3RV13 21-0FC10 | | | — | | | | |
| 0.63 | 0.18 | without | 7.6 | 3RV13 21-0GC10 | | | — | | | | |
| 0.8 | | without | 9.6 | 3RV13 21-0HC10 | | | — | | | | |
| 1 | 0.25 | without | 12 | 3RV13 21-0JC10 | | | — | | | | |
| 1.25 | 0.37 | without | 15 | 3RV13 21-0KC10 | | | — | | | | |
| 1.6 | 0.55 | without | 19 | 3RV13 21-1AC10 | | | — | | | | |
| 2 | 0.75 | without | 24 | 3RV13 21-1BC10 | | | — | | | | |
| 2.5 | | without | 30 | 3RV13 21-1CC10 | | | — | | | | |
| 3.2 | | without | 38 | 3RV13 21-1DC10 | | | — | | | | |
| 4 | 1.1 | without | 48 | 3RV13 21-1EC10 | | | — | | | | |
| 5 | 1.5 | without | 60 | 3RV13 21-1FC10 | | | — | | | | |
| 6.3 | 2.2 | without | 76 | 3RV13 21-1GC10 | | | — | | | | |
| 8 | 3 | without | 96 | 3RV13 21-1HC10 | | | — | | | | |
| 10 | 4 | without | 120 | 3RV13 21-1JC10 | | | — | | | | |
| 12.5 | 5.5 | without | 150 | 3RV13 21-1KC10 | | | — | | | | |
| 16 | 7.5 | without | 192 | 3RV13 21-4AC10 | | | — | | | | |
| 20 | | without | 240 | 3RV13 21-4BC10 | | | — | | | | |
| 22 | | without | 264 | 3RV13 21-4CC10 | | | — | | | | |
| 25 | 11 | without | 300 | 3RV13 21-4DC10 | | | — | | | | |

Class 10, size S2

| | | | | | | | | | | | |
|----|------|---------|-----|-----------------------|--|------|---|--|--|--|--|
| 16 | 7.5 | without | 192 | 3RV13 31-4AC10 | | 0.96 | — | | | | |
| 20 | | without | 240 | 3RV13 31-4BC10 | | | — | | | | |
| 25 | 11 | without | 300 | 3RV13 31-4DC10 | | | — | | | | |
| 32 | 15 | without | 384 | 3RV13 31-4EC10 | | | — | | | | |
| 40 | 18.5 | without | 480 | 3RV13 31-4FC10 | | | — | | | | |
| 45 | | without | 540 | 3RV13 31-4GC10 | | | — | | | | |
| 50 | 22 | without | 600 | 3RV13 31-4HC10 | | | — | | | | |

Class 10, size S3

| | | | | | | | | | | | |
|-------------------|------|---------|------|-----------------------|--|-----|--|-----------------------|--|--|-----|
| 16 | 7.5 | without | 192 | — | | | | 3RV13 42-4AC10 | | | 2.1 |
| 20 | | without | 240 | — | | | | 3RV13 42-4BC10 | | | |
| 25 | 11 | without | 300 | — | | | | 3RV13 42-4DC10 | | | |
| 32 | 15 | without | 384 | — | | | | 3RV13 42-4EC10 | | | |
| 40 | 18.5 | without | 480 | 3RV13 41-4FC10 | | 2.1 | | 3RV13 42-4FC10 | | | |
| 50 | 22 | without | 600 | 3RV13 41-4HC10 | | | | 3RV13 42-4HC10 | | | |
| 63 | 30 | without | 756 | 3RV13 41-4JC10 | | | | 3RV13 42-4JC10 | | | |
| 75 | 37 | without | 900 | 3RV13 41-4KC10 | | | | 3RV13 42-4KC10 | | | |
| 90 | | without | 1080 | 3RV13 41-4LC10 | | | | 3RV13 42-4LC10 | | | |
| 100 ⁴⁾ | 45 | without | 1140 | 3RV13 41-4MC10 | | | | 3RV13 42-4MC10 | | | |

For multi-unit packing see Part 17.

- 1) Recommended values for standard 4-pole motors at AC 50 Hz 400 V. The actual start-up data and ratings for the motor to be protected are relevant.
- 2) For overload protection of the motors, appropriate overload relays are required.
- 3) For setting ranges with 100 kA see table on page 2/19.
- 4) Max. motor current 95 A.

3RV1 Circuit-Breakers

Protection of Transformers · Fuse Monitoring

SIRIUS 3R



Selection and ordering data

With screw connection · without auxiliary switches

Auxiliary switches should be ordered separately acc. to the table on page 2/9.

| Rated current | Current setting range | | 3RV14, 3RV16 circuit-breakers Standard breaking capacity: 50 kA at AC 400 V ¹⁾ | Order No. | Price | Weight approx. kg |
|---------------|--------------------------|-------------------------------------|--|-----------|--------|-------------------|
| | Thermal overload release | Instantaneous short-circuit release | | | | |
| I_n | | | | | | |
| A | A | A | | | 1 unit | |

Class 10, circuit-breakers for line-side protection of transformers with high inrush current



Size S0

| Rated current | Thermal overload release range | Instantaneous short-circuit release | Order No. | Weight approx. kg |
|---------------|--------------------------------|-------------------------------------|----------------|-------------------|
| 0.16 | 0.11 – 0.16 | 3 | 3RV14 21-0AA10 | 0.32 |
| 0.2 | 0.14 – 0.2 | 3.8 | 3RV14 21-0BA10 | |
| 0.25 | 0.18 – 0.25 | 4.8 | 3RV14 21-0CA10 | |
| 0.32 | 0.22 – 0.32 | 6 | 3RV14 21-0DA10 | |
| 0.4 | 0.28 – 0.4 | 7.6 | 3RV14 21-0EA10 | |
| 0.5 | 0.35 – 0.5 | 9.6 | 3RV14 21-0FA10 | |
| 0.63 | 0.45 – 0.63 | 12 | 3RV14 21-0GA10 | |
| 0.8 | 0.55 – 0.8 | 15 | 3RV14 21-0HA10 | |
| 1 | 0.7 – 1 | 19 | 3RV14 21-0JA10 | |
| 1.25 | 0.9 – 1.25 | 24 | 3RV14 21-0KA10 | |
| 1.6 | 1.1 – 1.6 | 30 | 3RV14 21-1AA10 | |
| 2 | 1.4 – 2 | 38 | 3RV14 21-1BA10 | |
| 2.5 | 1.8 – 2.5 | 48 | 3RV14 21-1CA10 | |
| 3.2 | 2.2 – 3.2 | 60 | 3RV14 21-1DA10 | |
| 4 | 2.8 – 4 | 76 | 3RV14 21-1EA10 | |
| 5 | 3.5 – 5 | 96 | 3RV14 21-1FA10 | |
| 6.3 | 4.5 – 6.3 | 120 | 3RV14 21-1GA10 | |
| 8 | 5.5 – 8 | 150 | 3RV14 21-1HA10 | |
| 10 | 7 – 10 | 192 | 3RV14 21-1JA10 | |
| 12.5 | 9 – 12.5 | 240 | 3RV14 21-1KA10 | |
| 16 | 11 – 16 | 264 | 3RV14 21-4AA10 | |
| 20 | 14 – 20 | 300 | 3RV14 21-4BA10 | |



Size S2

| Rated current | Thermal overload release range | Instantaneous short-circuit release | Order No. | Weight approx. kg |
|---------------|--------------------------------|-------------------------------------|----------------|-------------------|
| 16 | 11 – 16 | 300 | 3RV14 31-4AA10 | 0.96 |
| 20 | 14 – 20 | 380 | 3RV14 31-4BA10 | |
| 25 | 18 – 25 | 475 | 3RV14 31-4DA10 | |
| 32 | 22 – 32 | 600 | 3RV14 31-4EA10 | |
| 40 | 28 – 40 | 760 | 3RV14 31-4FA10 | |

Circuit-breakers for fuse monitoring²⁾

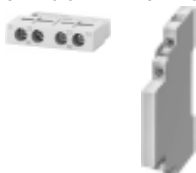


Size S00

| Rated current | Thermal overload release range | Instantaneous short-circuit release | Order No. | Weight approx. kg |
|---------------|--------------------------------|-------------------------------------|----------------|-------------------|
| 0.2 | 0.2 | 1.2 | 3RV16 11-0BD10 | 0.21 |

Accessories

| Type | Version | Order No. | Price | Weight approx. kg |
|--|------------------------------------|-----------------------------|---|-------------------|
| | | ▶ Preferred type | 1 unit | |
| Mountable auxiliary switches³⁾ | | | | |
| 3RV19 01-1E 3RV19 01-1A | Transverse auxiliary switch | 1 changeover 1 NO + 1 NC | ▶ 3RV19 01-1D ▶ 3RV19 01-1E | 0.02 |
| | Lateral auxiliary switch | 1 NO + 1 NC 2 NO 2 NC | ▶ 3RV19 01-1A ▶ 3RV19 01-1B ▶ 3RV19 01-1C | 0.03 |



For multi-unit packing see Part 17.

1) For setting ranges with 100 kA see table on page 2/19.

2) The auxiliary switch required for signalling must be ordered separately.

3) For tripped signalling a minimum of one auxiliary switch is required (see also page 2/16).


Cage Clamp connection · without auxiliary switches 1)

Auxiliary switches should be ordered separately according to the table below.

| Rated current I_n | Suitable for 3-phase induction motors 2) P_n | Current setting range | | Short-circuit breaking capacity at AC 400 V I_{cu} | 3RV10 11 circuit-breakers Standard breaking capacity: 100/50 kA at AC 400 V | Weight approx. kg |
|---------------------------|--|-----------------------------|--|--|---|-------------------------|
| | | Thermal overload release | Instant- aneous short-circuit release | | | |
| A | kW | A | A | kA | | |
| Class 10, size S00 | | | | | | |
| 0.16 | | 0.11 – 0.16 | 1.9 | 100 | 3RV10 11-0AA20 | 0.21 |
| 0.2 | | 0.14 – 0.2 | 2.4 | 100 | 3RV10 11-0BA20 | |
| 0.25 | 0.06 | 0.18 – 0.25 | 3 | 100 | 3RV10 11-0CA20 | |
| 0.32 | 0.09 | 0.22 – 0.32 | 3.8 | 100 | 3RV10 11-0DA20 | |
| 0.4 | | 0.28 – 0.4 | 4.8 | 100 | 3RV10 11-0EA20 | |
| 0.5 | 0.12 | 0.35 – 0.5 | 6 | 100 | 3RV10 11-0FA20 | |
| 0.63 | 0.18 | 0.45 – 0.63 | 7.6 | 100 | 3RV10 11-0GA20 | |
| 0.8 | | 0.55 – 0.8 | 9.6 | 100 | 3RV10 11-0HA20 | |
| 1 | 0.25 | 0.7 – 1 | 12 | 100 | 3RV10 11-0JA20 | |
| 1.25 | 0.37 | 0.9 – 1.25 | 15 | 100 | 3RV10 11-0KA20 | |
| 1.6 | 0.55 | 1.1 – 1.6 | 19 | 100 | 3RV10 11-1AA20 | |
| 2 | 0.75 | 1.4 – 2 | 24 | 100 | 3RV10 11-1BA20 | |
| 2.5 | | 1.8 – 2.5 | 30 | 100 | 3RV10 11-1CA20 | |
| 3.2 | 1.1 | 2.2 – 3.2 | 38 | 100 | 3RV10 11-1DA20 | |
| 4 | 1.5 | 2.8 – 4 | 48 | 100 | 3RV10 11-1EA20 | |
| 5 | | 3.5 – 5 | 60 | 100 | 3RV10 11-1FA20 | |
| 6.3 | 2.2 | 4.5 – 6.3 | 76 | 100 | 3RV10 11-1GA20 | |
| 8 | 3 | 5.5 – 8 | 96 | 50 | 3RV10 11-1HA20 | |
| 9.5 | 4 | 7 – 10 | 120 | 50 | 3RV10 11-1JA20 | |
| 12 | 5.5 | 9 – 12 | 144 | 50 | 3RV10 11-1KA20 | |



1) For further information about the Cage Clamp technology refer to page 6.
 2) Recommended values for standard 4-pole motors at AC 50 Hz 400 V. The actual start-up data and ratings for the motor to be protected are relevant.






3RV1 Circuit-Breakers for Motor Protection · up to 12 A

SIRIUS 3R




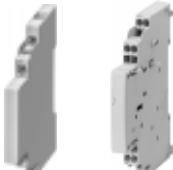





Accessories

CAGE CLAMP

| Type | Version | Order No. | Price | Weight approx. kg | |
|--|---|----------------------------------|--|--|------------------------|
| Laterally mountable auxiliary switch with Cage Clamp connection | | | | | |
|  | 1 lateral auxiliary switch per circuit-breaker mountable on the left-hand side | 1 NO + 1 NC | 3RV19 01 -2A | 1 unit 0.03 | |
| | | 2 NO | 3RV19 01 -2B | 1 unit | |
| | | 2 NC | 3RV19 01 -2C | 1 unit | |
| Adapters and link modules for Cage Clamp connection | | | | | |
|   | Link module for Cage Clamp connection for electrical contacting between circuit-breaker and contactor (1 packing = 10 units) | Size S00 | 3RA19 11-2A | 1 packg. 0.12 | |
| | Link module for Cage Clamp connection with mechanical fixing for mechanical fixing and electrical contacting between circuit-breaker and contactor (1 packing = 10 units) | Size S00 | 3RA19 11-2E | 1 packg. 0.03 | |
| | Adapter for rail mounting for Cage Clamp with 2 mounting rails, one adjustable (1 packing = 5 units) | 45 mm wide | 3RA19 22-1L | 1 packg. 0.26 | |
| | Busbar adapter 45 mm wide, 182 mm long adapted for Cage Clamp circuit-breakers. An additional standard mounting rail must be used if increased protection is required. | 40 mm wide 60 mm wide | 8US10 51-5CM47 8US12 51-5CM47 | 1 unit 0.17 | |
| | 35 mm standard mounting rail, Plastic, including fixing screws (1 packing = 10 units) | 45 mm wide | 8US19 98-7CA05 | 1 packg. 0.09 | |
| | 3-phase busbars for Cage Clamp connection | | | | |
|  | 3-phase busbars for Cage Clamp connection incl. 2 holders, modular spacing 45 mm or more. Terminal blocks can be used for feeding in. Rated current (supply side): 16 A | for 3 breakers for 4 breakers | S00 S00 | 3RV19 15-1BA 3RV19 15-1CA | 1 unit 0.10 0.13 |
| | Screwdriver 3.5 × 0.5 for opening the Cage Clamp terminal | | | | |
|  | For all SIRIUS devices with Cage Clamp connection | Length approx. 100 mm | 8WA2 804 | 1 unit 0.012 | |
| | | Length approx. 175 mm | 8WA2 803 | 0.029 | |



| Type | Version | For circuit-breaker size | Order No. | Price | Weight approx. | Packing |
|--|---|--|--|--|--|-------------------------------|
| | | | Preferred type | 1 unit | kg | Units |
| Auxiliary switches | | | | | | |
| 3RV19 01-1E  | Transverse auxiliary switch | 1 changeover contact 1 NO + 1 NC | S00, S0, S2, S3 | 3RV19 01-1D 3RV19 01-1E | 0.02 | 10 |
| 3RV1901-1G  | Solid-state-compatible, transverse auxiliary switch | 1 changeover contact | S00, S0, S2, S3 | 3RV19 01-1G | 0.02 | 10 |
| 3RV1901-0H  | Covering caps for transverse auxiliary switches (10 units per pack) | | S00, S0 | 3RV19 01-0H | 1 pack | 1 packg. |
| 3RV1901-1A 3RV1901-2A  | Lateral auxiliary switch with screw connection | 1 NO + 1 NC 2 NO 2 NC | S00, S0, S2, S3 | 3RV19 01-1A 3RV19 01-1B 3RV19 01-1C | 0.03 | 1 |
| | Lateral auxiliary switch with Cage Clamp connection | 1 NO + 1 NC 2 NC 2 NO | S00, S0, S2, S3 | 3RV19 01-2A 3RV19 01-2B 3RV19 01-2C | 0.03 | 1 |
| | 1 lateral auxiliary switch per circuit-breaker, mountable on the left | | | | | |
| Signalling switch | | | | | | |
| 3RV19 21-1M  | Signalling switch | Individual tripped and short-circuit signalling, 1 NO + 1 NC each | S0, S2, S3 | 3RV19 21-1M | 0.07 | 1 |
| Auxiliary releases | | | | | | |
| 3RV19 02-1DPO  | Undervoltage release | AC 50 Hz 24 V 110 V 230 V 400 V | AC 60 Hz 120 V 240 V | S00, S0, S2, S3 | 3RV19 02-1AB0 3RV19 02-1AF0 3RV19 02-1AP0 3RV19 02-1AV0 | 0.12 1 1 1 1 |
| | 1 undervoltage release per circuit-breaker, mountable on the right. | | | | | |
| | Cannot be fitted together with shunt release | | | | | |
| 3RV19 12-1CP0  | Undervoltage release with leading auxiliary contacts 2 NO | AC 50 Hz 230 V 400 V | AC 60 Hz 240 V | S00 | 3RV19 12-1CP0 3RV19 12-1CV0 | 0.11 1 1 |
| | 1 undervoltage release per circuit-breaker, mountable on the right. | | | | | |
| | Cannot be fitted together with shunt release | | | | | |
| | Shunt release | AC 50/60 Hz 100% ON ¹⁾ | AC 50/60 Hz; DC 5 sec. ON ²⁾ | | 3RV19 02-1DB0 3RV19 02-1DF0 3RV19 02-1DP0 3RV19 02-1DV0 3RV19 02-1DS0 | 0.11 1 1 1 1 1 |
| | 1 shunt release per circuit-breaker, mountable on the right. | | | | | |
| | Cannot be fitted together with undervoltage release | | | | | |

1) Response voltage for lower mark of voltage range at 0.85 (Tamb = 60 °C).

2) Response voltage for lower mark of voltage range at 0.9 (Tamb = 60 °C).

3RV1 Circuit-Breakers up to 100 A

SIRIUS 3R





Accessories

| Type | Version | For circuit-breaker size | Order No. | Price | Weight approx. kg | Pack Units | |
|--|--|---|---|--|--------------------|------------------------|-----------|
| Covers | | | | | | | |
| <p>3RV1 (size S3) with 3RT19 46-4EA1</p> | Terminal cover for box terminals | Additional touch guard to be fitted at the box terminals (2 units can be mounted per circuit-breaker) | S2 S3 | 3RT19 36-4EA2 3RT19 46-4EA2 | 1 unit | 0.01 1 1 | |
| | Terminal cover for cable lug and busbar connection | For maintaining the required voltage clearance and as protection against the equipment being touched if distant box terminals are used (2 units can be mounted per circuit-breaker) | S3 | 3RT19 46-4EA1 | 1 unit | 0.03 1 | |
| | Scale cover sealable | For covering the current setting scale. Packing unit: Bag with 10 scale covers (Order No. and price per bag) | S00, S0, S2, S3 | 3RV19 08-0P | 1 bag | 1 | |
| Door-coupling rotary operating mechanisms | | | | | | | |
| <p>3RV19 26-0B</p> | The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 300 mm long extension shaft (5 mm x 5 mm). The door-coupling rotary operating mechanisms are designed for degree of protection IP 65. The door locking device prevents accidental opening of the cubicle door in the ON position of the circuit-breaker. The OFF position can be locked with up to 3 padlocks. | | | | | | |
| | Door-coupling rotary operating mechanism, black | Extension shaft 130 mm Extension shaft 330 mm with supporting bracket | S0, S2, S3 S0, S2, S3 | 3RV19 26-0B 3RV19 26-0K | 1 unit | 0.1 0.3 1 | |
| | EMERGENCY STOP door-coupling rotary operating mechanism, red/yellow | Extension shaft 130 mm Extension shaft 330 mm with supporting bracket | S0, S2, S3 S0, S2, S3 | 3RV19 26-0C 3RV19 26-0L | 1 unit | 0.1 0.3 1 | |
| Door-coupling rotary operating mechanisms for arduous conditions¹⁾ | | | | | | | |
| <p>3RV19 26-1C</p> | The door-coupling rotary operating mechanisms consist of a knob, a coupling driver, a 300 mm long extension shaft (6 mm x 6 mm) and a spacer and two metal brackets, into which the circuit-breaker is inserted. The door-coupling rotary operating mechanisms are designed for degree of protection IP 65. The door locking device reliably prevents accidental opening of the cubicle door in the ON position of the circuit-breaker. The OFF position can be locked with up to 3 padlocks. The door-coupling rotary operating mechanisms thus comply with the requirements of IEC 60 947-2 concerning isolator characteristics. | | | | | | |
| | Door-coupling rotary operating mechanism, grey | | S0 S2 S3 | 3RV19 26-1B 3RV19 36-1B 3RV19 46-1B | 1 unit | 1.0 1.1 1.6 1 | |
| | EMERGENCY STOP door-coupling rotary operating mechanism, red/yellow | | S0 S2 S3 | 3RV19 26-1C 3RV19 36-1C 3RV19 46-1C | 1 unit | 1.0 1.1 1.6 1 | |
| Mounting accessories | | | | | | | |
| <p>3RB19 00-0B</p> | Push-in lugs | For screwing the circuit-breaker onto mounting plates. 2 units required per circuit-breaker. (1 bag = 10 units) | | 3RB19 00-0B | 1 bag | 0.01 1 | |
| | <p>3RV19 18-5A with circuit-breaker</p> | Solder pin connection for main contacts | For soldering the main conductor connections of a circuit-breaker to a printed-circuit board. (1 pack = 8 parts for 4 circuit-breakers) | S00 | 3RV19 18-5A | 1 pack | 0.10 1 |
| | | for main and auxiliary contacts | For soldering the main conductor connections and the auxiliary conductor connections of the transverse auxiliary switch (1 NO + 1 NC) of a circuit-breaker to a printed-circuit board. (1 pack = 8 parts for main conductor connection + 4 parts for auxiliary conductor connection for 4 circuit-breakers) | S00 | 3RV19 18-5B | 1 pack | 0.19 1 |
| <p>3RV19 48-1E</p> | Plug-in socket for main contacts | Plug-in socket with upper and lower terminal connections (1 set = 1 plug-in socket + 2 plug contact parts) | S3 | 3RV19 48-1E | 1 set | 1 | |
| | Note: Specially equipped circuit-breakers are required for the plug-in socket ²⁾ | Plug-in socket with busbar connection on rear (1 set = 1 plug-in socket + 2 plug contact parts) | S3 | 3RV19 48-1F | 1 set | 1.40 1 | |

1) Delivery as of March 2000.

2) See page 2/3.



| Type | Version | For circuit-breaker size | Order No. | Price 1 unit | Weight approx. kg |
|---|---|---|-----------|-----------------------|----------------------|
| Mounting accessories | | | | | |
|  3RV19 48-1G | Rear main conductor connection | (1 set = 6 units for one circuit-breaker) | S3 | 3RV19 48-1G | 1 set 0.70 |
|  3RT19 46-4F | Auxiliary terminal, 3-pole | For connection of auxiliary and control cables to the main conductor connections | S3 | 3RT19 46-4F | |
|  3RT19 46-4GA07 | Terminal block with increased creepage distances and clearances for UL/CSA | Up to 600 V according to UL 489 | S3 | 3RT19 46-4GA07 | 0.12 |
| Isolator modules | | | | | |
|  3RV1 (size S2) with padlock | Isolator module for circuit-breaker size S0 | Visible isolating distance for isolating individual circuit-breakers from the system, lockable in isolating position | S0 | 3RV19 28-1A | |
| | Isolator module for circuit-breaker size S2 | | S2 | 3RV19 38-1A | |
| Enclosures and front plates for circuit-breakers | | | | | |
|  Moulded-plastic enclosure for wall mounting 3RV19 13-1D | Moulded-plastic enclosure for wall mounting with actuator diaphragm | Degree of protection IP 55, with N and PE terminals Overall width: 54 mm (e.g. circuit-breaker + lateral auxiliary switch) 72 mm (e.g. circuit-breaker + lateral auxiliary switch + auxiliary release) | S00 | 3RV19 13-1C | 0.23 |
| | | | S00 | 3RV19 13-1D | 0.27 |
| | | | S00 | 3RV19 13-2D | 0.32 |
|  Moulded-plastic encl. for flush mount. 3RV19 13-2D | Moulded-plastic enclosure for flush mounting with actuator diaphragm | Degree of protection IP 55 (front plate), with N and PE terminals Overall width: 72 mm (e.g. circuit-breaker + lateral auxiliary switch + auxiliary release) | S00 | 3RV19 13-2D | 0.32 |
|  Moulded-plastic front plate 3RV19 13-4C | Moulded-plastic front plate with actuator diaphragm and holder for circuit-breaker, size S00 | For actuation of S00 circuit-breakers in any enclosure, including holder for circuit-breaker, degree of protection IP 55 (front plate) | S00 | 3RV19 13-4C | 0.08 |
|  Locking device for enclosures and front plates 3RV19 13-... Not to be used together with EMERGENCY STOP handles | Locking device | For 3 padlocks with max. 8 mm shackle diameter | S00 | 3RV19 13-6B | 0.02 |








3RV1 Circuit-Breakers

up to 100 A

SIRIUS 3R



Accessories

| Type | Version | For circuit-breaker size | Order No. | Price 1 unit | Weight approx. kg |
|--|--|--|--|--|--|
| Enclosures and front plates for circuit-breakers | | | | | |
|  <p>Moulded-plastic enclosure for wall mounting with 3RV19 13-7D</p> | EMERGENCY STOP mushroom button, red/yellow for enclosures and front plates 3RV19 13-... | Mushroom button, latching, unlatching by turning | S00 | 3RV19 13-7D | 0.07 |
| | EMERGENCY STOP mushroom button, red/yellow, with safety lock for enclosures and front plates 3RV19 13-... Not to be used together with locking device | Mushroom button, latching, unlatching with key Ronis safety lock, Lock No. SB 30, 2 keys included | S00 | 3RV19 13-7E | 0.10 |
| | Spare actuator diaphragm | Installation kit: Diaphragm incl. retaining frame and screws | S00 | 3RV19 13-7F | 0.01 |
|  <p>Moulded-plastic enclosure for wall mounting</p> | Moulded-plastic enclosure for wall mounting with rotary operating mechanism, lockable | Degree of protection IP 55, with N and PE terminals, lockable in 0 position Overall width: 54 mm (e.g. circuit-breaker + lateral auxiliary switch) | S0 | 3RV19 23-1C | 0.26 |
| | | 72 mm (e.g. circuit-breaker + auxiliary switch + auxiliary release) | S0 | 3RV19 23-1D | 0.30 |
| | | 82 mm (e.g. circuit-breaker + auxiliary switch + auxiliary release) | S2 | 3RV19 33-1D | 0.81 |
|  <p>Moulded-plastic enclosure for flush mounting</p> | Moulded-plastic enclosure for wall mounting with EMERGENCY STOP rotary operating mechanism, red/yellow, lockable | Degree of protection IP 55, with N and PE terminals, lockable in 0 position Overall width: 54 mm (e.g. circuit-breaker + lateral auxiliary switch) | S0 | 3RV19 23-1F | 0.26 |
| | | 72 mm (e.g. circuit-breaker + auxiliary switch + auxiliary release) | S0 | 3RV19 23-1G | 0.30 |
| | | 82 mm (e.g. circuit-breaker + auxiliary switch + auxiliary release) | S2 | 3RV19 33-1G | 0.81 |
|  <p>Moulded-plastic enclosure for flush mounting</p> | Moulded-plastic enclosure for flush mounting with rotary operating mechanism, lockable | Degree of protection IP 55, with N and PE terminals, lockable in 0 position Overall width: 72 mm (e.g. circuit-breaker + auxiliary switch + auxiliary release) | S0 | 3RV19 23-2D | 0.31 |
| | | Moulded-plastic enclosure for flush mounting with EMERGENCY STOP rotary operating mechanism, red/yellow, lockable | Degree of protection IP 55, with N and PE terminals, lockable in 0 position Overall width: 72 mm (e.g. circuit-breaker + auxiliary switch + auxiliary release) | S0 | 3RV19 23-2G |
|  <p>Moulded-plastic front plate with rotary operating mechanism, lockable</p> | Moulded-plastic front plate with rotary operating mechanism, lockable | For actuation of 3RV1 circuit-breakers in any enclosure, degree of protection IP 55 (front plate) | S0, S2, S3 | 3RV19 23-4B | 0.08 |
| | | Moulded-plastic front plate with EMERGENCY STOP rotary operating mechanism, red/yellow, lockable | EMERGENCY STOP actuation of 3RV1 circuit-breakers in any enclosure, degree of protection IP 55 | S0, S2, S3 | 3RV19 23-4E |
|  <p>Holder for front plate for circuit-breaker size S0</p> | Holder for front plate for circuit-breaker size S0 | Holder is mounted on front plate, circuit-breaker size S0 with or without accessories is snapped in | S0 | 3RV19 23-4G | 0.12 |
| | | Indicator light for all enclosures and front plates | With glow lamp and coloured lenses, red, green, yellow, orange and clear | S00, S0, S2 S00, S0, S2 S00, S0, S2 S00, S0, S2 | 3RV19 03-5B 3RV19 03-5C 3RV19 03-5E 3RV19 03-5G |
| Remote-controlled operating mechanisms | | | | | |
|  <p>Remote-controlled motorized operating mechanism</p> | Remote-controlled motorized operating mechanism | AC 50/60 Hz 230 V | S2 | 3RV19 36-3AP0 | 2.8 |
| | | DC 24 V | S2 | 3RV19 36-3AB4 | |
| | Remote-controlled motorized operating mechanism | AC 50/60 Hz 230 V | S3 | 3RV19 46-3AP0 | 2.9 |
| | | DC 24 V | S3 | 3RV19 46-3AB4 | |



| Type | Version | For circuit-breaker size | Order No. | Price 1 unit | Weight approx. kg |
|------|---------|--------------------------|-----------|-----------------|----------------------|
|------|---------|--------------------------|-----------|-----------------|----------------------|

Busbar adapters for circuit-breakers

For mechanical fixing and electrical contacting onto busbar systems. For circuit-breakers with screw connection. For systems with 3 busbars and the following busbar dimensions:

- Width for 40 mm system: 12 mm to 15 mm
- Width for 60 mm system: 12 mm to 30 mm
- Thickness: 5 mm and 10 mm, with rounded edges according to DIN 46 433

For other busbar adapters, busbar copper, line and load-side terminals and accessories see Part 13. For starter combinations on busbar adapters see also Part 5, "Fuseless Load Feeders".

8US 10 61-5DJ07



40 mm system (busbar centre-line spacing)

| | | | | | |
|--|--|-----------------|----------|-----------------------|------|
| • Busbar adapter 40 mm system | Length 121 mm | Width 45 mm | S00, S0 | 8US10 51-5DJ07 | 0.09 |
| | Length 121 mm | Width 55 mm | S00, S0 | 8US10 61-5DJ07 | 0.10 |
| | Length 139 mm | Width 55 mm | S2 | 8US10 61-5FK08 | 0.23 |
| | Length 182 mm | Width 70 mm | S3 | 8US11 11-4SM00 | 0.45 |
| • Lateral module for busbar adapter 40 mm system | For widening the adapters, can be snapped onto both ends | | | | |
| | Length 139 mm | Width 13.5 mm | S2 | 8US19 98-2BK00 | 0.04 |
| | Length 182 mm | Width 13.5 mm | S3 | 8US19 98-2BM00 | 0.04 |
| • Busbar holder for 3 copper busbars 40 mm system | | 1 set = 2 units | S00 - S3 | 3VX4 280-2R | 0.05 |
| • Moulded-plastic covers for line-side terminals 40 mm system | Fitted onto the 3VX4 280-2R busbar holder, covers 3 terminals up to 35 mm ² | | S00 - S3 | 3VX4 280-2S | 0.04 |

8US12 51-5MD07



60 mm system (busbar centre-line spacing)

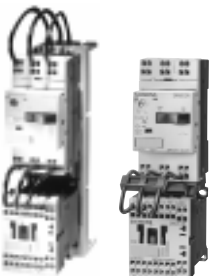
| | | | | | |
|--|---|---------------|----------|-----------------------|------|
| • Busbar adapter 60 mm system | Length 182 mm | Width 45 mm | S00, S0 | 8US12 51-5DM07 | 0.18 |
| | Length 182 mm | Width 55 mm | S2 | 8US12 61-5FM08 | 0.23 |
| | Length 182 mm | Width 70 mm | S3 | 8US11 11-4SM00 | 0.45 |
| • Lateral module for busbar adapter 60 mm system | For widening the adapters, can be snapped onto both ends | | | | |
| | Length 182 mm | Width 13.5 mm | S00 - S3 | 8US19 98-2BM00 | 0.03 |
| • Busbar holder for 3 copper busbars 60 mm system | 1 unit | | S00 - S3 | 8US19 23-2AA00 | 0.16 |

Moulded-plastic cover profiles for busbars

| | | | | | |
|---|---|--------------|----------|-----------------------|---------|
| • for 1 busbar¹⁾ 12 × 5 mm | Touch guard separable, snaps on | 1000 mm long | S00 - S3 | 8GR5 010 | 0.05 |
| • for 3 busbars¹⁾ 12 × 5 mm or 10 mm | Touch guard and empty-space cover | 54 mm long | S00 - S3 | 8US19 02-3AA00 | 0.01 |
| | | 430 mm long | S00 - S3 | 8US19 02-4AA00 | On req. |
| • for 1 busbar 30 × 5 mm | Touch guard separable, snaps on | 1000 mm long | S00 - S3 | 8US19 22-2AA00 | 0.04 |
| • for 1 busbar 30 × 10 mm | Touch guard separable, snaps on | 1000 mm long | S00 - S3 | 8US19 22-2BA00 | 0.084 |

| Type | Order No. | Price 1 pack | Weight approx. kg |
|------|-----------|-----------------|----------------------|
|------|-----------|-----------------|----------------------|

Link modules



Link module, Cage Clamp

for electrical contacting between circuit-breaker and contactor. Specifically for Cage Clamp connections. Size S00 (1 pack = 10 units) (Busbar adapter not included in scope of supply)

| | |
|--------------------|------|
| 3RA19 11-2A | 0.12 |
|--------------------|------|

Link module, Cage Clamp, for mechanical fixing

For mechanical fixing and electrical contacting between circuit-breaker and contactor. Size S00 (1 pack = 10 units)

| | |
|--------------------|------|
| 3RA19 11-2E | 0.03 |
|--------------------|------|

1) For 40 mm system (busbar centre-line spacing 40 mm).

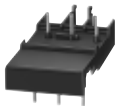

3RV1 Circuit-Breakers

up to 100 A







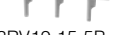






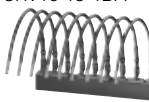
SIRIUS 3R



Accessories

| | | Control supply voltage of contactor | Size of contactor | Size of circuit- breaker | Order No. | Price 1 pack | Weight approx. kg |
|--|---|---|----------------------|--------------------------------|----------------------|-----------------|-------------------------|
| Link modules | | | | | | | |
| 3RA19 11-1A  | Link module for mechanical fixing and electrical contacting between contactor and circuit-breaker | AC and DC (1 pack = 10 units) | S00 | S00 | ▶ 3RA19 11-1A | | 0.15 |
| | | AC and DC (1 pack = 10 units) | S00 | S0 | ▶ 3RA19 21-1D | | 0.15 |
| 3RA19 31-1A 3RA19 41-1A  | | AC (1 pack = 10 units) | S0 | S0 | ▶ 3RA19 21-1A | | 0.21 |
| | | AC (1 pack = 5 units) | S2 | S2 | ▶ 3RA19 31-1A | | 0.1 |
| | | AC (1 pack = 5 units) | S3 | S3 | ▶ 3RA19 41-1A | | 0.3 |
| | | DC (1 pack = 10 units) | S0 | S0 | ▶ 3RA19 21-1B | | 0.25 |
| | | DC (1 pack = 5 units) | S2 | S2 | ▶ 3RA19 31-1B | | 0.13 |
| | | DC (1 pack = 5 units) | S3 | S3 | ▶ 3RA19 41-1B | | 0.29 |

| Version | For circuit- breaker size | Order No. | Price 1 unit | Weight approx. kg |
|---------|------------------------------------|-----------|-----------------|-------------------------|
| | ▶ Preferred type | | | |

| Insulated 3-phase busbar system | | | | | | | |
|--|--|--|-----------------------|--|------|--------------|--|
| For feeding several modular circuit-breakers on standard mounting rails, insulated, shock-protected Load capability: Rated operational voltage 690 V Rated current: Sizes S00 and S0 63 A, Size S2 108 A | | | | | | | |
| 3RV19 15-1A  | 3-phase busbars • modular spacing 45 mm | for 2 circuit-breakers | S00, S0 ¹⁾ | ▶ 3RV19 15-1A | | 0.03 | |
| 3RV19 15-1B  | | for 3 circuit-breakers | S00, S0 ¹⁾ | ▶ 3RV19 15-1B | | 0.05 | |
| 3RV19 15-1C  | | for 4 circuit-breakers | S00, S0 ¹⁾ | ▶ 3RV19 15-1C | | 0.07 | |
| 3RV19 15-1D  | | for 5 circuit-breakers | S00, S0 ¹⁾ | ▶ 3RV19 15-1D | | 0.1 | |
| 3RV19 15-2A  | | for 2 circuit-breakers + accessories | S00, S0 ¹⁾ | ▶ 3RV19 15-2A | | 0.03 | |
| 3RV19 15-2B  | for 4 circuit-breakers + accessories | S00, S0 ¹⁾ | ▶ 3RV19 15-2C | | 0.1 | | |
| 3RV19 15-2C  | for 2 circuit-breakers + accessories | S00, S0 ¹⁾ | ▶ 3RV19 15-3A | | 0.04 | | |
| 3RV19 15-2D  | for 4 circuit-breakers + accessories | S00, S0 ¹⁾ | ▶ 3RV19 15-3C | | 0.1 | | |
| 3RV19 15-5D  | Connector for 3-phase busbars • modular spacing 45 mm | For connecting the 3-phase busbars from circuit-breakers of size S0 to circuit-breakers of size S00 | S00, S0 | ▶ 3RV19 15-5D | | 0.04 | |
| 3RV19 15-5A  | 3-phase line-side terminal • connection from above • connection from below • connection from above | Conductor cross-section: solid or stranded 6 – 25 mm ² finely stranded with end sleeve 4 – 16 mm ² | S00, S0 | ▶ 3RV19 15-5A | | 0.04 | |
| 3RV19 15-5B  | | Conductor cross-section: solid or stranded: 6 – 25 mm ² finely stranded with end sleeve 4 – 16 mm ² Terminal is connected instead of a circuit-breaker, note space requirement. | S00, S0 | ▶ 3RV19 15-5B | | 0.1 | |
| 3RV19 15-5C  | | Conductor cross-section: 1 conductor 2.5–50 mm ² 2 conductors 35 mm ² | S2 | ▶ 3RV19 35-5A | | 0.1 | |
| 3RV19 15-6A/3RV19 15-1D  | Cover for tags | Touch guard for empty spaces | S00 - S0 | ▶ 3RV19 15-6A | | 0.003 | |
| 3RV19 15-1BA  | Cover for tags | Touch guard for empty spaces | S2 | ▶ 3RV19 35-6A | | 0.065 | |
| | 3-phase busbars for Cage Clamp connection incl. 2 holders, modular spacing 45 mm ²⁾ | for 3 circuit-breakers for 4 circuit-breakers | S00 S00 | 3RV19 15-1BA 3RV19 15-1CA | | 0.10 0.13 | |

Appropriate adapters can be supplied for mechanically fixing the contactor and circuit-breaker onto standard mounting rails and busbars.

For details, Order No. etc., see Part 5, "Fuseless Load Feeders".

1) Clamping together S00 and S0 circuit-breakers is not possible due to the different modular spacings and the different heights of the terminals. A connector is available for connecting busbars from size S00 to size S0.
Order No.: 3RV19 15-5D.

2) Modular terminal blocks can be used for feeding.



| General data | | | 3RV1. 11 | 3RV1. 2 | 3RV1. 3 | 3RV1. 4 |
|--|---------------------------------|----|---------------------------|---------|---------------------|---------|
| Type | | | | | | |
| Specifications | | | yes | yes | yes | yes |
| • IEC 60 947-1, EN 60 947-1 (VDE 0660 Part 100) | | | yes | yes | yes | yes |
| • IEC 60 947-2, EN 60 947-2 (VDE 0660 Part 101) | | | yes | yes | yes | yes |
| • IEC 60 947-4-1, EN 60 947-4-1 (VDE 0660 Part 102) | | | yes | yes | yes | yes |
| Size | | | S00 | S0 | S2 | S3 |
| Number of poles | | | 3 | | | |
| Max. rated current I_{nmax} (=max. rated operational current I_e) | A | | 12 | 25 | 50 | 100 |
| Permissible ambient temperature | | | | | | |
| Storage/transport | °C | | -50 to +80 | | | |
| Operation | °C | | -20 to +70 ¹⁾ | | | |
| Permissible rated current at temperature inside cubicle of: | | | | | | |
| • +60 °C | % | | 100 | | | |
| • +70 °C | % | | 87 | | | |
| Circuit-breaker inside enclosure | | | | | | |
| Permissible rated current at temperature inside enclosure of: | | | | | | |
| • +35 °C | % | | 100 | | | |
| • +60 °C | % | | 87 | | | |
| Rated operational voltage U_e | V | | 690 ²⁾ | | | |
| Rated frequency | Hz | | 50/60 | | | |
| Rated insulation voltage U_i | V | | 690 | | | |
| Rated impulse withstand voltage U_{imp} | kV | | 6 | | | |
| Utilization category | | | | | | |
| • IEC 60 947-2 (circuit-breaker) | | | A | | | |
| • IEC 60 947-4-1 (motor starter) | | | AC-3 | | | |
| Class | acc. to IEC 60 947-4-1 | | 10 | | 10/20 | |
| DC short-circuit breaking capacity (time constant $\tau = 5$ ms) | | | | | | |
| • 1 conducting path DC 150 V | kA | | 10 | | | |
| • 2 conducting paths in series DC 300 V | kA | | 10 | | | |
| • 3 conducting paths in series DC 450 V | kA | | 10 | | | |
| Power loss P_v per circuit-breaker | | | | | | |
| dependent on rated current I_n | | | | | | |
| (upper setting range) | | | | | | |
| | $I_n \rightarrow$ up to 1.25 A | W | 5 | - | - | - |
| | $I_n \rightarrow$ 1.6 to 6.3 A | W | 6 | - | - | - |
| | $I_n \rightarrow$ 8 to 12 A | W | 7 | - | - | - |
| | $I_n \rightarrow$ up to 0.63 A | W | - | 5 | - | - |
| | $I_n \rightarrow$ 0.8 to 6.3 A | W | - | 6 | - | - |
| | $I_n \rightarrow$ 8 to 16 A | W | - | 7 | - | - |
| | $I_n \rightarrow$ 20 to 25 A | W | - | 8 | - | - |
| | $I_n \rightarrow$ up to 25 A | W | - | - | 12 | - |
| | $I_n \rightarrow$ 32 A | W | - | - | 15 | - |
| | $I_n \rightarrow$ 40 to 50 A | W | - | - | 20 | - |
| | $I_n \rightarrow$ up to 63 A | W | - | - | - | 20 |
| | $I_n \rightarrow$ 75 and 90 A | W | - | - | - | 30 |
| | $I_n \rightarrow$ up to 100 A | W | - | - | - | 38 |
| Shock resistance | acc. to IEC 68 Part 2-27 | g | 25 | | | |
| incl. accessory: plug-in socket | | g | 15 | | | |
| Degree of protection | acc. to IEC 60 529 | | IP 20 | | IP 20 ³⁾ | |
| Shock hazard protection | acc. to DIN VDE 0106 Part 100 | | safe against finger touch | | | |
| Temperature compensation⁴⁾ | acc. to IEC 60 947-4-1 | °C | -20 to +60 | | | |
| Phase failure sensitivity | acc. to IEC 60 947-4-1 | | yes | | | |
| Explosion protection | acc. to EC Directive 94191 EC | | yes ⁵⁾ | | | |
| Isolator characteristics | acc. to IEC 60 947-3 | | yes | | | |
| Main and EM. STOP switch characteristics⁶⁾ | acc. to IEC 60 204-1 (VDE 0113) | | yes | | | |
| Safe isolation between main and auxiliary circuits | acc. to DIN VDE 0106 Part 101 | | | | | |
| • up to 400 V + 10 % | | | yes | | | |
| • up to 415 V + 5 % (higher voltages on request) | | | yes | | | |
| Mechanical endurance | operating cycles | | 100 000 | | 50 000 | |
| Electrical endurance | | | 100 000 | | 25 000 | |
| Max. operating frequency per hour (motor starts) | 1/h | | 15 | | | |

For rated short-circuit breaking capacity I_{cn} see table on page 2/19.

1) Over +60 °C current reduction.

2) 500 V with moulded-plastic enclosure.

3) Terminal compartment IP 00.

4) Only for circuit-breakers for motor protection.

5) KEMA test cert. No. Ex-97.4.3236.DMT in preparation.

6) With appropriate accessories.

3RV1 Circuit-Breakers

up to 100 A

SIRIUS 3R



Technical data

| Conductor cross-sections for main circuit ¹⁾ | | | | | | |
|---|--------------------|---|---|------------------|----------------------|------------|
| Type | | 3RV1. 11 | 3RV1. 2 | 3RV1. 3 | 3RV1. 4 | |
| Terminal type | | Screw-type | | Box terminal | Allen screw | |
| Terminal screw | | Poizidriv size 2 | | Poizidriv size 2 | 4 to 6 | |
| Tightening torque | Nm | 0.8 to 1.2 | 2 to 2.5 | 3 to 4.5 | | |
| Minimum/maximum conductor cross-sections | | | | | | |
| finely stranded with end sleeve | | | | | | |
| - 1 conductor | mm ² | 0.5/2.5 | 1/6 | 0.75/25 | 2.5/50 ²⁾ | |
| - 2 conductors | mm ² | 0.5/2.5 | 1/2.5 or 2.5/6 | 0.75/16 | 2.5/35 ²⁾ | |
| solid or stranded | | | | | | |
| - 1 conductor | mm ² | 0.5/4 | 1/6 (max. 10) | 0.75/35 | 2.5/70 ²⁾ | |
| - 2 conductors | mm ² | 0.75/2.5 (max. 4) | 1/2.5 or 2.5/6 | 0.75/25 | 2.5/50 ²⁾ | |
| ribbon conductor | | - | - | yes | yes | |
| conductor bar | | - | - | - | yes | |
| solid or stranded | AWG | 2 x (18 to 14) | 2 x (14 to 10) | 2 x (18 to 2) | - | |
| stranded | AWG | - | - | - | 2 x (10 to 1/0) | |
| Terminal type | | Cage Clamp ³⁾ | | | | |
| | mm ² | 2 x (0.5 to 2.5) | - | | | |
| | AWG | 2 x (18 to 14) | | | | |
| Permissible mounting position | | any acc. to IEC 60 447 start command "I" right-hand side or top | | | | |
| Auxiliary switches | | | | | | |
| Front transverse auxiliary switch with 1 changeover contact | | | Switching capacity for different voltages | | | |
| Rated operational voltage U_e | AC | AC V | 24 | 230 | 400 | 690 |
| Rated operational current $I_e/AC-15$ | | A | 4 | 3 | 1.5 | 0.5 |
| Rated operational current $I_e/AC-12 \hat{=} I_{th}$ | | A | 10 | 10 | 10 | 10 |
| Rated operational voltage U_e | DC L/R 200 ms | DC V | 24 | 110 | 220 | |
| Rated operational current $I_e/DC-13$ | | A | 1 | 0.22 | 0.1 | |
| Front transverse auxiliary switch with 1 NO + 1 NC | | | | | | |
| Rated operational voltage U_e | AC | AC V | 24 | 230 | | |
| Rated operational current $I_e/AC-15$ | | A | 2 | 0.5 | | |
| Rated operational current $I_e/AC-12 \hat{=} I_{th}$ | | A | 2.5 | 2.5 | | |
| Rated operational voltage U_e | DC L/R 200 ms | DC V | 24 | 48 | 60 | |
| Rated operational current $I_e/DC-13$ | | A | 1 | 0.3 | 0.15 | |
| Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC and signalling switch | | | | | | |
| Rated operational voltage U_e | AC | AC V | 24 | 230 | 400 | 690 |
| Rated operational current $I_e/AC-15$ | | A | 6 | 6 | 3 | 1 |
| Rated operational current $I_e/AC-12 \hat{=} I_{th}$ | | A | 10 | 10 | 10 | 10 |
| Rated operational voltage U_e | DC L/R 200 ms | DC V | 24 | 110 | 220 | 440 |
| Rated operational current I_e | | A | 2 | 0.5 | 0.25 | 0.1 |
| Auxiliary releases | | | | | | |
| Undervoltage release | | | | | | |
| Power consumption | during pick-up | VA/W | 20.2/13 | | | |
| | uninterrupted duty | VA/W | 7.2/2.4 | | | |
| Response voltage | trip | V | 0.7 to $0.35 \times U_s$ | | | |
| | pick-up | V | 0.85 to $1.1 \times U_s$ | | | |
| Max. opening time | | ms | 20 | | | |
| (for rated control supply voltage U_s see selection and ordering data) | | | | | | |
| Shunt release | | | | | | |
| Power consumption during pick-up: | AC voltages | VA | 20.2/13 | | | |
| | DC voltages | W | 13 to 80 | | | |
| Response voltage acc. to IEC 60 947-1 | trip | V | 0.7 to $1.1 \times U_s$ | | | |
| Permissible command duration | | | | | | |
| Max. opening time | | | | | | |
| (for rated control supply voltage U_s see selection and ordering data) | | | | | | |

1) For details see technical data of contactors, Part 3.

2) After removing the box terminals, connection with cable lugs and busbars is also possible.

3) For further information about the Cage Clamp technology refer to page 6.

4) Prospective short-circuit current < 0.4 kA.



| Short-circuit protection for auxiliary and control circuits | | | |
|---|----------------------------|-----------------------------|-------------------------------------|
| Fuses | utilization category gL/gG | A | 10 |
| Miniature circuit-breakers | C characteristic | A | 6 ⁴⁾ |
| Conductor cross-sections for auxiliary and control circuits | | | |
| Terminal type | | | Screw-type |
| Terminal screw | | | Pozidriv size 2 |
| Minimum/maximum conductor cross-sections | | | |
| finely stranded with end sleeve | | | |
| – 1 conductor | mm ² | 0.5/2.5 | |
| – 2 conductors | mm ² | 0.5/2.5 | |
| solid or stranded | | | |
| – 1 conductor | mm ² | 0.5/4 | |
| – 2 conductors | mm ² | 0.75/2.5 (4 ¹⁾) | |
| solid or stranded | AWG | 2 × (18 to 14) | |
| Terminal type | | | Cage Clamp |
| | mm ² | | 2 × (0.5 to 2.5) |
| Remote-controlled operating mechanisms | | | |
| Max. power consumption at U_s | DC 24 V | W | 48 |
| | AC 230 V | VA | 170 |
| Operating range | | V | 0.85 to 1.1 × U_s |
| Minimum command duration at U_s | | s | 0.1 |
| Maximum command duration | | s | unlimited (uninterrupted operation) |
| Maximum make-/break-time | remote-controlled | s | 2 |
| Ready to reclose | after approx. | s | 2.5 |
| Operating frequency | | h ⁻¹ | 25 |
| Internal back-up fuse | AC 230 V | A | 0.8 |
| | DC 24 V | A | 1.6 |
| Terminal type of control leads | | | connector with screw connection |
| Shock resistance acc. to IEC 60068, Part 2-27 | | g/ms | 25/11 |

1) Maximum possible.

3RV1 Circuit-Breakers up to 100 A

SIRIUS 3R



Technical data

Permissible ratings for approved devices

UL and CUL approved ratings as motor starters (UL 508, CSA C22.2 No. 14, in conjunction with a device for short-circuit protection¹⁾, "Group Installation" or "Type E Starter"

| | | 3RV1.1 | 3RV1.2 | 3RV1.3 | 3RV1.4 |
|---|--|---------|---------|---------|------------------|
| Circuit-breakers open and enclosed | | | | | |
| Rated voltage acc. to NEMA (UL, CUL) | AC V | 600 | | | |
| Max. rated current | • acc. to NEMA (UL) | 12 | 25 | 50 | 99 ²⁾ |
| | • acc. to NEMA (CUL) | 12 | 25 | 50 | 99 ²⁾ |
| Max. back-up fuse (group fuse) | • up to AC 480 V ¹⁾ | 50 | | | |
| | • up to AC 600 V (575 V) ¹⁾ | 10 | | | |
| Max. current setting range for "Type E Starter" | A | 5.5 - 8 | 17 - 22 | 40 - 50 | 80 - 99 |
| Installation without 480 V fuse (circuit-breaker for contactor) (UL, C-UL) | kA | 50 | 50 | 50 | 50 |
| Rated output of 3-phase induction motors | • at AC 200 V | 3 | 7.5 | 15 | 30 |
| | • AC 230 V | 3 | 7.5 | 20 | 30 |
| | • AC 460 V | 7.5 | 15 | 40 | 75 |
| | • AC 575 V | 10 | 20 | 50 | 100 |
| | | hp | | | |

UL and CUL approved ratings for auxiliary switches and alarm switches

| | | Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC and signalling switch | Transverse auxiliary switch with 1 changeover contact | Transverse auxiliary switch with 1 NO + 1 NC |
|---------------------------------|----------------------|---|---|--|
| Max. rated voltage | • acc. to NEMA (UL) | 600 | | 240 |
| | • acc. to NEMA (CUL) | 600 | | 240 |
| Uninterrupted current | A | 10 | 5 | 2.5 |
| Breaking capacity ³⁾ | | A600 Q300 | B600 R300 | C300 |

1) All fuse and circuit-breaker types and sizes that are considered by the basic American specification NFPA-70, Article 430-53 (c), to offer adequate protection for the supply system are approved.

2) Only approved up to 99 A.

3) For explanations see Part 17.



Rated short-circuit breaking capacity I_{cn}

This table shows the rated ultimate short-circuit breaking capacity I_{cu} and the rated service short-circuit breaking capacity I_{cs} of the 3RV1 circuit-breakers with different operational voltages as a function of the rated current I_n of the circuit-breakers.

The circuit-breakers can be fed at the top or bottom supply

terminals without any reduction of the rated data.

In the coloured areas, I_{cu} is 100 kA or in certain cases 50 kA. The circuit-breakers are therefore short-circuit-proof in these areas.

If the short-circuit current exceeds the rated short-circuit breaking capacity of the circuit-breaker specified in the tables at the installation point, a back-up fuse is to be used.

Alternatively, a circuit-breaker with a limiter function can be connected upstream (see page 2/20).

The maximum rated current for the back-up fuse is specified in the tables. These fuses are only suitable for the short-circuit-currents as indicated on the fuses.

Fuseless construction

Circuit-breaker/contactor combinations for short-circuit currents of up to 50 kA can be ordered in the form of fuseless load feeders in accordance with Part 5.

| Circuit-breaker | Rated current I_n | up to AC 240 V ²⁾ | | | up to AC 400 V ^{2)/415 V³⁾} | | | up to AC 440 V ^{2)/460 V³⁾} | | | up to AC 500 V ^{2)/525 V³⁾} | | | up to AC 690 V ²⁾ | | |
|---|---------------------|------------------------------|----------|-----------|---|-------------------|-------------------|---|-------------------|-------------------|---|----------|-----------|------------------------------|----------|-----------|
| | | I_{cu} | I_{cs} | max. fuse | I_{cu} | I_{cs} | max. fuse | I_{cu} | I_{cs} | max. fuse | I_{cu} | I_{cs} | max. fuse | I_{cu} | I_{cs} | max. fuse |
| Type | A | kA | kA | A | kA | kA | A | kA | kA | A | kA | kA | A | kA | kA | A |
| 3RV1011 Size S00 | 0.16 to 0.8 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • |
| | 1 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • |
| | 1.25 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 2 | 2 | 20 |
| | 1.6 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 2 | 2 | 20 |
| | 2 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 10 | 10 | 35 | 2 | 2 | 35 |
| | 2.5 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 10 | 10 | 35 | 2 | 2 | 35 |
| | 3.2 | 100 | 100 | • | 100 | 100 | • | 10 | 10 | 40 | 3 | 3 | 40 | 2 | 2 | 40 |
| | 4 | 100 | 100 | • | 100 | 100 | • | 10 | 10 | 40 | 3 | 3 | 40 | 2 | 2 | 40 |
| | 5 | 100 | 100 | • | 100 | 100 | • | 10 | 10 | 50 | 3 | 3 | 50 | 2 | 2 | 50 |
| | 6.3 | 100 | 100 | • | 100 | 100 | • | 10 | 10 | 50 | 3 | 3 | 50 | 2 | 2 | 50 |
| | 8 | 100 | 100 | • | 50 | 12.5 | 80 ¹⁾ | 10 | 10 | 63 | 3 | 3 | 63 | 2 | 2 | 63 |
| | 10 | 100 | 100 | • | 50 | 12.5 | 80 ¹⁾ | 10 | 10 | 63 | 3 | 3 | 63 | 2 | 2 | 63 |
| 12 | 100 | 100 | • | 50 | 12.5 | 80 ¹⁾ | 10 | 10 | 80 | 3 | 3 | 80 | 2 | 2 | 80 | |
| 3RV1.2 Size S0 | 0.16 to 1.25 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • |
| | 1.6 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • |
| | 2 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 8 | 8 | 25 |
| | 2.5 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 8 | 8 | 25 |
| | 3.2 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 8 | 8 | 32 |
| | 4 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 6 | 3 | 32 |
| | 5 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 6 | 3 | 32 |
| | 6.3 | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 100 | 100 | • | 6 | 3 | 50 |
| | 8 | 100 | 100 | • | 100 | 100 | • | 50 | 25 | 63 ¹⁾ | 42 | 21 | 63 | 6 | 3 | 50 |
| | 10 | 100 | 100 | • | 100 | 100 | • | 50 | 25 | 80 ¹⁾ | 42 | 21 | 63 | 6 | 3 | 50 |
| | 12.5 | 100 | 100 | • | 100 | 100 | • | 50 | 25 | 80 ¹⁾ | 42 | 21 | 80 | 6 | 3 | 63 |
| | 16 | 100 | 100 | • | 50 | 25 | 100 ¹⁾ | 20 | 10 | 80 | 10 | 5 | 80 | 4 | 2 | 63 |
| | 20 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 20 | 10 | 80 | 10 | 5 | 80 | 4 | 2 | 63 |
| 22 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 20 | 10 | 100 | 10 | 5 | 80 | 4 | 2 | 63 | |
| 25 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 20 | 10 | 100 | 10 | 5 | 80 | 4 | 2 | 63 | |
| 3RV1.3 Size S2 Standard breaking capacity | 16 | 100 | 100 | • | 50 | 25 | 100 ¹⁾ | 50 | 25 | 100 ¹⁾ | 12 | 6 | 63 | 5 | 3 | 63 |
| | 20 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 50 | 25 | 100 ¹⁾ | 12 | 6 | 80 | 5 | 3 | 63 |
| | 25 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 30 | 15 | 100 | 12 | 6 | 80 | 5 | 3 | 63 |
| | 32 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 30 | 15 | 125 | 10 | 5 | 100 | 4 | 2 | 63 |
| | 40 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 30 | 15 | 125 | 10 | 5 | 100 | 4 | 2 | 63 |
| | 45 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 30 | 15 | 125 | 10 | 5 | 100 | 4 | 2 | 63 |
| 3RV1.4 Size S3 Standard breaking capacity | 50 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 30 | 15 | 125 | 10 | 5 | 100 | 4 | 2 | 80 |
| | 40 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 40 | 20 | 125 | 12 | 6 | 100 | 6 | 3 | 63 |
| | 50 | 100 | 100 | • | 50 | 25 | 125 ¹⁾ | 40 | 20 | 125 | 12 | 6 | 100 | 6 | 3 | 80 |
| | 63 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 40 | 20 | 160 | 12 | 6 | 100 | 6 | 3 | 80 |
| | 75 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 40 | 20 | 160 | 8 | 4 | 125 | 5 | 3 | 100 |
| 3RV1.4 Size S3 Increased breaking capacity | 90 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 40 | 20 | 160 | 8 | 4 | 125 | 5 | 3 | 125 |
| | 100 | 100 | 100 | • | 50 | 25 | 160 ¹⁾ | 40 | 20 | 160 | 8 | 4 | 125 | 5 | 3 | 125 |
| | 16 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 100 ¹⁾ | 30 | 15 | 80 | 12 | 7 | 63 |
| | 20 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 100 ¹⁾ | 30 | 15 | 80 | 12 | 7 | 63 |
| | 25 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 100 ¹⁾ | 30 | 15 | 80 | 12 | 7 | 63 |
| | 32 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 125 ¹⁾ | 22 | 11 | 100 | 12 | 7 | 63 |
| | 40 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 160 ¹⁾ | 18 | 9 | 160 | 12 | 6 | 80 |
| | 50 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 160 ¹⁾ | 15 | 7.5 | 160 | 10 | 5 | 100 |
| 63 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 200 ¹⁾ | 15 | 7.5 | 160 | 7.5 | 4 | 100 | |
| 3RV1.4 Size S3 Standard breaking capacity | 75 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 200 ¹⁾ | 10 | 5 | 160 | 6 | 3 | 125 |
| | 90 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 200 ¹⁾ | 10 | 5 | 160 | 6 | 3 | 160 |
| | 100 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 200 ¹⁾ | 10 | 5 | 160 | 6 | 3 | 160 |
| | 100 | 100 | 100 | • | 100 | 50 | • | 50 | 25 | 200 ¹⁾ | 10 | 5 | 160 | 6 | 3 | 160 |

• Short-circuit-proof up to 50 or 100 kA.
• No back-up fuse required.

1) Back-up fuse required only if short-circuit current at installation point > 50 kA.
2) 10 % overvoltage.
3) 5 % overvoltage.

3RV1 Circuit-Breakers up to 100 A

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Technical data

Limiting function with standard devices for AC 500 and AC 690 V

The table shows the rated ultimate short-circuit breaking capacity I_{CU} and the rated service short-circuit breaking capacity I_{CS} with a standard circuit-breaker that fulfils the limiter function connected upstream for voltages of AC 500 V and AC 690 V.

The upstream standard circuit-breaker with limiter function enables the short-circuit breaking capacity to be significantly increased. The upstream circuit-breaker must be set to the maximum value in order to fulfil the limiter function.

The circuit-breaker which is connected downstream must be set to the rated current of the load. If different circuit-breakers are combined, the clearances from earthed parts and the clearances between the individual circuit-breakers must be maintained (see [Dimensions](#)).

In addition, short-circuit-proof wiring between the circuit-breakers must be guaranteed. The circuit-breakers are not allowed to be mounted side by side in a modular arrangement.

| Standard circuit-breaker with limiter function 1) Type Rated current I_n | Standard circuit-breaker | | up to AC 500 V / 525 V | | up to AC 690 V | |
|--|--------------------------|--------------------------|------------------------|----------------|----------------|----------------|
| | Type | Rated current I_n A | I_{CU} kA | I_{CS} kA | I_{CU} kA | I_{CS} kA |
| 3RV10 2 2) Size S0 $I_n = 25$ A | 3RV1. 2 Size S0 | up to 1 | • | • | • | • |
| | | 1.25 | • | • | • | • |
| | | 1.6 | • | • | • | • |
| | | 2 | • | • | 50 | 25 |
| | | 2.5 | • | • | 50 | 25 |
| | | 3.2 | • | • | 50 | 25 |
| | | 4 | • | • | 50 | 25 |
| | | 5 | • | • | 50 | 25 |
| | | 6.3 | • | • | 50 | 25 |
| | | 8 | 100 | 50 | 20 | 10 |
| | | 10 | 100 | 50 | 20 | 10 |
| | | 12.5 | 100 | 50 | 20 | 10 |
| | | 16 | 100 | 50 | 20 | 10 |
| | | 20 | 100 | 50 | 20 | 10 |
| 22 | 100 | 50 | 20 | 10 | | |
| 25 | 100 | 50 | 20 | 10 | | |
| 3RV10 3 Size S2 $I_n = 50$ A | 3RV1. 3 Size S2 | 16 | 100 | 50 | 50 | 25 |
| | | 20 | 100 | 50 | 50 | 25 |
| | | 25 | 100 | 50 | 50 | 25 |
| | | 32 | 100 | 50 | 50 | 25 |
| | | 40 | 100 | 50 | 50 | 25 |
| 50 | 100 | 50 | 50 | 25 | | |
| 3RV10 4 Size S3 $I_n = 50$ A | 3RV1. 4 Size S3 | 32 | 100 | 50 | 50 | 25 |
| | | 40 | 100 | 50 | 50 | 25 |
| | | 50 | 100 | 50 | 50 | 25 |
| 3RV10 4 Size S3 $I_n = 100$ A | 3RV1. 4 Size S3 | 50 | 100 | 50 | 50 | 25 |
| | | 63 | 100 | 50 | 50 | 25 |
| | | 75 | 100 | 50 | 50 | 25 |
| | | 90 | 100 | 50 | 50 | 25 |
| | | 100 | 100 | 50 | 50 | 25 |

- Short-circuit-proof up to 100 kA.
- No upstream circuit-breaker required; short-circuit-proof up to 100 kA.

- 1) A 3RV13 starting circuit-breaker of the same size and with the same rated current can be used alternatively.
- 2) An insulated plate must be used for size S0 and AC 690 V.

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Circuit-breaker S00 with laterally mounted undervoltage release and leading auxiliary switch



3RV1 circuit-breakers are compact, current-limiting circuit-breakers which are optimized for load feeders. The circuit-breakers are used for switching and protecting three-phase induction motors of up to 45 kW at AC 400 V and for loads with rated currents of up to 100 A.

Construction

The circuit-breakers are available in four sizes:

- Size S00, overall width 45 mm. Max. rated current 12 A. Suitable for three-phase induction motors of up to 5.5 kW at voltages of 400 V AC.
- Size S0, overall width 45 mm. Max. rated current 25 A. Suitable for three-phase induction motors of up to 11 kW at voltages of 400 V AC.
- Size S2, overall width 55 mm. Max. rated current 50 A. Suitable for three-phase induction motors of up to 22 kW at voltages of 400 V AC.
- Size S3, overall width 70 mm. Max. rated current 100 A. Suitable for three-phase induction motors of up to 45 kW at voltages of 400 V AC.

3RV1 circuit-breakers and 3RT1 contactors are electrically compatible with matching designs and can thus be optimally combined to form load feeders.

Releases

3RV1 circuit-breakers are equipped with bimetallic-based, inverse-time delayed overload releases and with instantaneous overcurrent releases (electromagnetic short-circuit releases). The overload releases can be set in accordance with the load current. The overcurrent releases are permanently set to a value 12 times the rated current and thus enable trouble-free start-up of motors.

Circuit-breakers for line-side protection of transformers are set to a value 19 times the rated current, in order to prevent tripping as a result of the high inrush current of transformers.

The scale cover can be sealed to prevent unauthorized adjustments to the set current.

Operating mechanisms

S00 circuit-breakers are actuated via a rocker operating mechanism and S0, S2 and S3 circuit-breakers via a rotary operating mechanism. If the circuit-breaker trips, the rotary operating mechanism switches to the tripped position to indicate this. Before the circuit-breaker is reclosed, the rotary operating mechanism must be reset to the 0 position by hand, in order to prevent the former from closing by mistake before the fault has been cleared.

In the case of circuit-breakers with rotary operating mechanisms, an electrical signal can be output via a signalling switch to indicate that the circuit-breaker has tripped.

All operating mechanisms can be locked in the 0 position with a padlock (shackle diameter 3.5 to 4.5 mm).

When delivered, the circuit-breakers have 3 main contacts and can be fitted with auxiliary switches simply and without using tools. The auxiliary switches can be inserted transversely on the front or mounted laterally.

3RV1 Circuit-Breakers up to 100 A

Description

Operating conditions

3RV1 circuit-breakers are suitable for use in any climate. They are designed for operation in enclosed rooms under normal conditions (e. g. no dust, corrosive vapours or harmful gases). Suitable enclosures must be provided for installation in dusty or damp rooms.

3RV1 circuit-breakers can also be fed from below.

The standards in accordance with which the circuit-breakers are constructed, the permissible ambient temperatures, the maximum making and breaking capacities, the tripping currents and other boundary conditions can be found in the technical data and tripping characteristics.

Since the operational currents, starting currents and current peaks vary as a result of the inrush current, even in the case of motors with identical output ratings, the values specified for these output ratings in the selection tables are intended as a guide only. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable circuit-breaker. This also applies to circuit-breakers for transformer protection.

In order to prevent premature tripping due to phase failure sensitivity, the circuit-breakers should always be connected in such a way that current flows through all three main conducting paths.

Mounting

The circuit-breakers are secured in position by snapping them onto 35 mm standard mounting rails according to EN 50 022. A mounting rail with an overall height of 15 mm is required for S3 circuit-breakers. A 75 mm mounting rail can be used as an alternative here.

S2 and S3 circuit-breakers can also be screwed directly onto a baseplate.

For S00 and S0 circuit-breakers, push-in lugs are available for screw connection.



Description

Terminations

Screw connection

3RV1 circuit-breaker sizes S00 and S0 are fitted with terminals with captive screws and clamping pieces, which enable 2 conductors with different cross-sections to be connected.

The box terminals of the S2 and S3 circuit-breakers also enable 2 conductors with different cross-sections to be connected. With the exception of the S3 circuit-breakers, the terminal screws of which have a 4 mm hexagon socket, all terminal screws are tightened

with a standard screwdriver or a size 2 Pozidriv screwdriver.

The box terminals of the S3 circuit-breakers can be removed in order to connect conductors with cable lugs or with connecting bars. A terminal cover is available as shock protection and to ensure that the necessary clearances and creepage distances are maintained if the box terminals are removed.

Cage Clamp connection ¹⁾

As an alternative to the screw connection, S00 circuit-breakers can also be supplied with Cage Clamp connection.

With this screwless connection system, which is already familiar from terminal blocks, the conductors are clamped by means of a cage tension spring so that they are resistant to shocks and vibrations.

Circuit-breakers with Cage Clamp connections also enable 2 conductors to be clamped separately per terminal.

Circuit-breaker with Cage Clamp connection



Short-circuit protection

The short-circuit releases of 3RV1 circuit-breakers disconnect the faulty load feeder from the system in the event of a short circuit and thus prevent any further damage from being caused.

Circuit-breakers with a short-circuit breaking capacity of 50 kA or 100 kA at a voltage of 400 V AC are practically short-circuit-proof at this voltage, as higher short-circuit currents are not usually encountered at the installation point.

Back-up fuses are only necessary if the short-circuit current at the installation point exceeds the rated ultimate short-circuit breaking capacity of the circuit-breakers.

Refer if necessary to page 2/19 for the short-circuit breaking capacity at other voltages and for other fuse sizes.

Refer to page 2/20 for further information about the limiter function.

Motor protection

The tripping characteristics of 3RV1 circuit-breakers are designed mainly to protect three-phase induction motors.

The circuit-breakers are therefore also referred to as motor circuit-breakers.

The current of the motor to be protected is set with the aid of the scale. The short-circuit release is set in the factory to a value equivalent to 12 times the rated current of the circuit-breaker. This permits trouble-free start-up and ensures that the motor is properly protected.

The phase failure sensitivity of the circuit-breaker ensures that the latter is tripped at the appropriate time in the event of a phase failure and the overcurrents that occur as a result in the other phases.

Circuit-breakers with thermal overload releases are normally designed in accordance with release Class 10. The size S2 and S3 circuit-breakers are, however, also available in Class 20 and therefore allow motors to be started up under arduous conditions.

Release classes

The release classes of thermally delayed releases are based on the release time (t_A) at 7.2 times the operational current, starting from the cold state (excerpt from IEC 947-4):

- Class 10A $2 \text{ s} < t_A \leq 10 \text{ s}$
- Class 10 $4 \text{ s} < t_A \leq 10 \text{ s}$
- Class 20 $6 \text{ s} < t_A \leq 20 \text{ s}$
- Class 30 $9 \text{ s} < t_A \leq 30 \text{ s}$

The release must trip within this time!

Motor protection with overload relay function

The circuit-breakers for motor protection with an overload relay function are designed to protect three-phase induction motors.

They are fitted with the same short-circuit releases and overload releases as the circuit-breakers for motor protection without an overload relay function.

The circuit-breaker always remains closed in the event of an overload. The overload release simply switches two auxiliary contacts (1 NO + 1 NC). The overload trip can be signalled to a higher-level control via these auxiliary contacts. It is also possible to open a downstream contactor directly. In EEx e applications, the normally-closed contact is mandatory for opening the downstream contactor.

The overload signal is reset automatically. The circuit-breaker itself only trips if a short circuit occurs downstream.

Line protection

3RV1 circuit-breakers for motor protection are also suitable for line protection.

In order to prevent premature tripping due to phase failure sensitivity, the three conducting paths must always be uniformly loaded. The conducting paths must be connected in series in the case of single-phase loads.

Circuit-breaker in enclosure with EMERGENCY STOP mushroom button



Short-circuit protection for starter combinations

S0, S2 and S3 circuit-breakers provide short-circuit protection for starter combinations comprising a contactor and an overload relay.

Like the circuit-breakers for motor protection, these circuit-breakers are fitted with short-circuit releases which are permanently set to a value equivalent to 12 times the rated current of the circuit-breakers. They are not equipped with overload releases.

In the event of an overload, the overload relay trips the contactor and the circuit-breaker remains closed.

Only when a short circuit occurs in the feeder does the circuit-breaker trip as well.

1) For further information about the Cage Clamp technology refer to page 6.

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3RV1 Circuit-Breakers up to 100 A

Description

Transformer protection

When control transformers are protected on the line side, the high inrush currents generated at the time the transformers are switched on often cause spurious tripping in the protection mechanisms.

3RV1 S0 and S2 circuit-breakers for protecting transformers are therefore fitted with overcurrent releases which are permanently set in the factory to a value equivalent to 19 times the rated current.

Circuit-breakers can thus be used to provide line-side protection for transformers, the inrush peak currents of which are up to 30 times the rated current.

This type of circuit-breaker is not necessary in the case of control transformers with low inrush currents, such as control transformers from Siemens. 3RV1 circuit-breakers for motor protection can be used in this case.

Main and EMERGENCY STOP switches

The circuit-breakers fulfil the isolation conditions of IEC 60 947-3 as well as the additional test conditions for circuit-breakers with isolation characteristics specified in IEC 60 947-2. Taking IEC 60 204-1 into consideration, they can thus be implemented as main and EMERGENCY STOP switches.

Fuse monitoring

The 3RV16 11-0BD10 S00 circuit-breaker is used for fuse monitoring.

A fuse is connected in parallel with each conducting path of the circuit-breaker. If a fuse blows, the current flows via the parallel conducting path of the circuit-breaker and trips it.

The 3RV16 11-0BD10 must be fitted with a transverse or lateral auxiliary contact (accessories), which signals that the circuit-

breaker has tripped, in other words that the fuse has blown, or which causes all poles of the faulty circuit to be disconnected by means of an appropriate switching device.

Notes on safety

When fuses with a safety isolating function are monitored, a warning notice must be affixed next to the fuses indicating that after they have been removed, voltage may still be present (in the area assumed to be isolated) via the parallel current path of the monitoring equipment if this has not been switched off.

We recommend the following text for this warning:

Warning!
For safety isolation, also switch off fuse monitoring equipment with the item code

The 3RV16 11-0BD10 circuit-breaker for fuse monitoring is suitable for voltages from 24 V to 690 V at AC 50/60 Hz. Please enquire about circuit-breakers for DC.

Circuit-breaker for fuse monitoring



Fuse monitoring with the 3RV16 11-0BD10 is not permitted in feeders with power controllers in which DC feedback with higher values can occur in the event of a fault.

With parallel cables and meshed systems, the circuit-breaker will only trip, and a signal be output to indicate this, if the voltage difference across the circuit-breaker is at least 24 V.

DC switching

3RV1 AC circuit-breakers are also suitable for DC switching.

The maximum permissible DC voltage per conducting path must however be adhered to here.

At higher voltages, 2 or 3

conducting paths must be connected in series.

The response values of the overload releases remain unchanged; the response

values of the short-circuit releases increase by approximately 30 % for DC. The recommended circuits for DC switching can be seen in the table below.

| Recommended circuit for 3RV1 S00 to S3 circuit-breakers | Max. permissible DC voltage U_e | Notes |
|---|-----------------------------------|--|
| | DC 150 V | 2-pole switching, unearthed system ¹⁾ If an earth fault cannot occur, or if every earth fault is immediately cleared (earth fault monitoring), the maximum permissible DC voltage can be tripled. |
| | DC 300 V | 2-pole switching, earthed system The earthed pole must always be assigned to the specific conducting path, so that in the event of an earth fault 2 conducting paths will be connected in series. |
| | DC 450 V | 1-pole switching, earthed system 3 conducting paths connected in series. The earthed pole must be assigned to the disconnected conducting path. |

¹⁾ It is assumed with this circuit that a safe cut-out always occurs, even in the event of a double earth fault when both contacts are bridged.



Description

Characteristics

The time/ current characteristic, the current limiting characteristics and the I^2t characteristics were determined in accordance with DIN VDE 0660 and IEC 60 947.

The tripping characteristic of the **inverse-time delayed overload releases** (thermal overload releases or 'a' releases) for DC and AC with a frequency of 0 to 400 Hz also apply to the time/current characteristic.

The characteristics apply to the cold state. At operating temperature, the tripping times of the thermal releases are reduced to approximately 25 %.

Under normal operating conditions, all three poles of the device must be loaded. The three main conducting paths must be connected in series in order to protect single-phase or DC loads.

With 3-pole loading, the maximum deviation in the tripping time for 3 times the setting current and upwards is $\pm 20\%$ and thus in accordance with DIN VDE 0165.

The tripping characteristics for the instantaneous, electromagnetic overcurrent

releases (short-circuit releases or 'n' releases) are based on the rated current I_n , which is also the maximum value of the setting range for circuit-breakers with adjustable overload releases. If the current is set to a lower value, the tripping current of the 'n' release is increased by a corresponding factor.

The characteristics of the electromagnetic overcurrent releases apply to frequencies of 50/60 Hz. Appropriate correction factors must be used for lower frequencies up to $16\frac{2}{3}$ Hz, for higher frequencies up to 400 Hz and for DC.

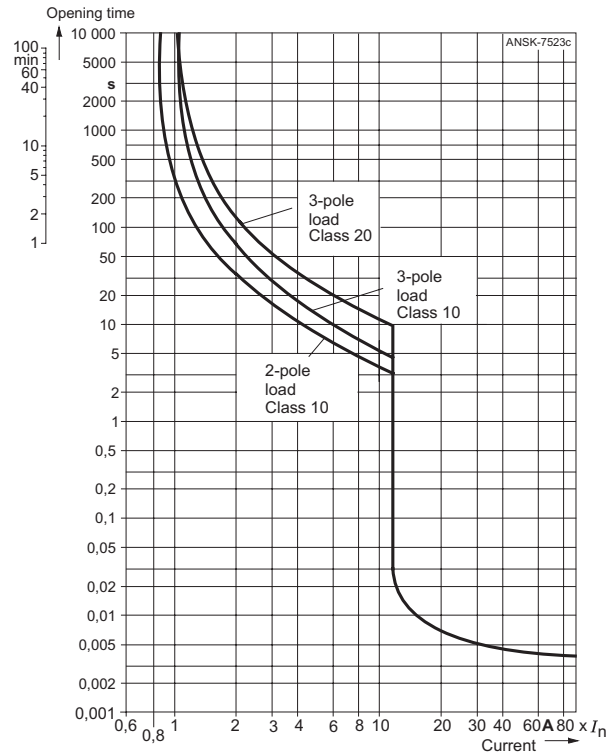
The characteristic shown here applies to the

- 3RV10 11-0EA10 (Class 10),
- 3RV11 21-1EA10 (Class 20)

circuit-breakers with a setting range from 2.8 to 4 A. It is, however, also valid as a schematic representation of circuit-breakers with other current ranges.

Time/current characteristics, current limiting characteristics and I^2t characteristics are available on request.

Typical time/current characteristic of 3RV10 11-.....





Mountable accessories

The 3RV1 circuit-breakers have three main contact elements. In order to achieve maximum

flexibility, auxiliary switches, signalling switches, auxiliary releases and isolator modules

can be supplied separately. These components can be fitted as required on the

circuit-breakers simply and without using tools.

| | | |
|---|--|--|
| Front | Transverse auxiliary switch 1 changeover contact or 1 NO + 1 NC | An auxiliary contact block can be inserted transversely on the front. The overall width of the circuit-breakers remains unchanged. |
| Left-hand side | Lateral auxiliary switch 1 NO + 1 NC or 2 NO or 2 NC | One of the three auxiliary switches can be mounted laterally for each circuit-breaker. The contacts of the auxiliary switch close and open together with the main contacts of the circuit-breaker. The overall width of the lateral auxiliary switches is 9 mm. |
| | Signalling switch for sizes S0, S2 and S3 Trip 1NO+1NC Short circuit 1NO+1NC | One signalling switch can be mounted on the side of each circuit-breaker with a rotary operating mechanism. The signalling switch has two contact systems. One contact system always signals <u>tripping</u> , irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signalling as a result of <u>switching off</u> with the handle. |
| | Auxiliary switch and signalling switch can be mounted separately or together. | In order to be able to reclose the circuit-breaker after a short circuit, the signalling switch must be reset by hand after the cause of the fault has been removed. The overall width of the signalling switch is 18 mm. |
| Right-hand side Note: No accessories can be mounted on the right-hand side of the 3RV1 circuit-breakers with an overload relay function. | Shunt release or | For remote-controlled tripping of the circuit-breaker. The voltage coil of the release should only be energized for short periods. ¹⁾ |
| | Undervoltage release or | Trips the circuit-breaker when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored. Used for remote-controlled tripping of the circuit-breaker. Particularly suitable for EMERGENCY STOP disconnection via the appropriate EMERGENCY STOP button in accordance with DIN VDE 0113. |
| | Undervoltage release with leading auxiliary contacts (2 NO) One auxiliary release can be mounted on the circuit-breakers in each case. | Operation and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function: the auxiliary contacts isolate the undervoltage release from the system on both sides when the circuit-breaker is open, thus preventing the formation of vagabond voltages in the control circuit in the OFF position. In the "tripped" position of the breaker, these auxiliary contacts are not guaranteed to open. The leading contacts permit the circuit-breaker to reclose. The overall width of the auxiliary releases is 18 mm. |
| Top | Isolator module for circuit-breakers Sizes S0 and S2 The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator module is used, we therefore recommend either that the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired. | Isolator modules can be mounted on top of S0 and S2 circuit-breakers. The supply cable is connected to the circuit-breaker via the isolator module. A removable plug, which can only be unplugged when the circuit-breaker is open, isolates all 3 poles of the circuit-breaker from the system. The shock-protected disconnection point is clearly visible and can be secured by means of a padlock to prevent reconnection of the plug. ²⁾ |

1) See circuit diagram on page 2/28.

2) See circuit diagrams on pages 2/28 and 2/29.