


Solid-State Motor Controllers SIKOSTART 3RW22

Selection and ordering data

| Rated operational voltage U_e | At ambient temperature 40 °C | | | | | | At ambient temperature 55 °C | | | | Order No. | Price | Weight approx. | |
|---|---------------------------------|--|------------|------------|------------|---------------------------------|--|------------|------------|----------|----------------|--|----------------|--|
| | Rated operational current I_e | Rated outputs of three-phase motors at rated operational voltage U_e | | | | Rated operational current I_e | Rated outputs of three-phase motors at rated operational voltage U_e | | | | | | | |
| | | 230 V | 400 V | 500 V | 690 V | | 230 V | 400 V | 500 V | 690 V | | | | |
| V | A | kW | kW | kW | kW | A | kW | kW | kW | kW | Preferred type | 1 unit | kg | |
| Soft starters for three-phase asynchronous motors | | | | | | | | | | | | | | |
| 3RW22 21  | 200 to 500 | 7 10.5 | 1.5 2.2 | 3 4 | 4 5.5 | – | 5.5 9 | 1.1 2.2 | 2.2 4 | 3 5.5 | – | ▶ 3RW22 21-1A□□5 ▶ 3RW22 23-1A□□5 ▶ 3RW22 25-1A□□5 ▶ 3RW22 26-1A□□5 ▶ 3RW22 27-1A□□5 ▶ 3RW22 28-1A□□5 ▶ 3RW22 30-1A□□5 ▶ 3RW22 31-1A□□5 | 1.5 2.9 | |
| | | 22 28 | 5.5 7.5 | 11 15 | 15 18.5 | – | 16 22 | 4 5.5 | 7.5 11 | 11 15 | – | | 2.9 3.4 | |
| | | 35 45 | 10 11 | 18.5 22 | 22 30 | – | 32 37 | 7.5 11 | 15 18.5 | 22 24 | – | | 4.8 4.8 | |
| | | 50 70 | 15 18.5 | 25 37 | 37 45 | – | 45 63 | 12 18.5 | 22 30 | 30 45 | – | | 8.1 8.1 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

3RW22 23 and 3RW22 25



| | | | |
|---|-------|-----|--------------------------|
| Order No. suffix | | A 0 | Additional price without |
| Standard version | | B 0 | |
| With electronic overload protection | | B 1 | |
| With electronic overload protection and RS 232 serial interface | | B 1 | |

With electronic overload protection and RS 232 serial interface

3RW22 26 to 3RW22 31



| | | | | | | | | | | | | |
|------------|------|-----|-----|-----|---|------|-----|-----|-----|---|------------------|-----|
| 200 to 500 | 100 | 30 | 55 | 75 | – | 85 | 22 | 45 | 55 | – | ▶ 3RW22 34-0DB15 | 14 |
| | 135 | 37 | 75 | 90 | – | 110 | 37 | 55 | 75 | – | ▶ 3RW22 35-0DB15 | 14 |
| | 160 | 45 | 90 | 110 | – | 140 | 45 | 75 | 90 | – | ▶ 3RW22 36-0DB15 | 16 |
| 200 to 415 | 235 | 75 | 132 | 160 | – | 205 | 55 | 110 | 132 | – | ▶ 3RW22 38-0DB15 | 19 |
| | 300 | 90 | 160 | 200 | – | 250 | 75 | 132 | 160 | – | ▶ 3RW22 40-0DB15 | 19 |
| | 355 | 110 | 200 | 250 | – | 300 | 90 | 160 | 200 | – | ▶ 3RW22 41-0DB15 | 19 |
| 200 to 415 | 450 | 132 | 250 | – | – | 355 | 110 | 200 | – | – | ▶ 3RW22 42-0DB14 | 44 |
| | 560 | 160 | 315 | – | – | 450 | 132 | 250 | – | – | ▶ 3RW22 43-0DB14 | 44 |
| | 700 | 200 | 400 | – | – | 560 | 160 | 315 | – | – | ▶ 3RW22 45-0DB14 | 44 |
| 500 to 690 | 865 | 300 | 500 | – | – | 700 | 200 | 400 | – | – | ▶ 3RW22 47-0DB14 | 75 |
| | 1200 | 400 | 710 | – | – | 1000 | 315 | 560 | – | – | ▶ 3RW22 50-0DB14 | 104 |

3RW22 34 to 3RW22 41



| | | | | | | | | | | | | |
|------------|------|-----|-----|-----|------|------|-----|-----|-----|------|------------------|-----|
| 200 to 500 | 450 | 132 | 250 | 315 | – | 355 | 110 | 200 | 250 | – | ▶ 3RW22 42-0DB15 | 44 |
| | 560 | 160 | 315 | 400 | – | 450 | 132 | 250 | 315 | – | ▶ 3RW22 43-0DB15 | 44 |
| | 700 | 200 | 400 | 500 | – | 560 | 160 | 315 | 400 | – | ▶ 3RW22 45-0DB15 | 44 |
| 500 to 690 | 865 | 300 | 500 | 630 | – | 700 | 200 | 400 | 500 | – | ▶ 3RW22 47-0DB15 | 75 |
| | 1200 | 400 | 710 | 850 | – | 1000 | 315 | 560 | 710 | – | ▶ 3RW22 50-0DB15 | 104 |
| | 160 | – | – | 110 | 160 | 140 | – | – | 90 | 132 | ▶ 3RW22 36-0DB16 | 16 |
| 500 to 690 | 235 | – | – | 160 | 250 | 205 | – | – | 132 | 200 | ▶ 3RW22 38-0DB16 | 19 |
| | 300 | – | – | 200 | 315 | 250 | – | – | 160 | 250 | ▶ 3RW22 40-0DB16 | 19 |
| | 450 | – | – | 315 | 450 | 355 | – | – | 250 | 355 | ▶ 3RW22 42-0DB16 | 44 |
| 500 to 690 | 560 | – | – | 400 | 560 | 450 | – | – | 315 | 450 | ▶ 3RW22 43-0DB16 | 44 |
| | 865 | – | – | 630 | 850 | 700 | – | – | 500 | 710 | ▶ 3RW22 47-0DB16 | 104 |
| | 1200 | – | – | 850 | 1200 | 1000 | – | – | 710 | 1000 | ▶ 3RW22 50-0DB16 | 104 |

| Rated operational voltage U_e | At ambient temperature 40 °C | | | | At ambient temperature 55 °C | | | Order No. | Price | Weight approx. |
|---|---------------------------------|--|--|--|---------------------------------|--|--|------------------|-------|----------------|
| | Rated operational current I_e | Rated outputs of three-phase motors at rated operational voltage U_e | | | Rated operational current I_e | Rated outputs of three-phase motors at rated operational voltage U_e | | | | |
| | | 1000 V | | | | 1000 V | | | | |
| V | A | kW | | | A | kW | | 1 unit | kg | |
| With electronic overload protection and RS 232 serial interface¹⁾ | | | | | | | | | | |
| 1000 | 160 | 200 | | | 140 | 160 | | ▶ 3RW22 36-0DB18 | | 16 |
| | 300 | 400 | | | 250 | 315 | | ▶ 3RW22 40-0DB18 | | 19 |
| | 450 | 630 | | | 355 | 450 | | ▶ 3RW22 42-0DB18 | | 44 |

The 3RW22 solid-state motor controllers are designed for normal starting.
(Moment of inertia of total operation $I_{tot} < 10 \cdot I_{Motor}$; starting current 300 % for 30 s or similar load).
For any other conditions of use, the devices should be picked with the aid of the PC selection program (see accessories)!

1) Delivery on request.

Solid-State Motor Controllers

SIKOSTART 3RW22

Accessories

| | Order No. | Price |
|---|--|--------|
| | | 1 unit |
| PC communication program COM SIKOSTART | | |
| User interface for PC communication via RS 232 serial interface in German, English, French, Italian, Spanish and Swedish Disk format 3 ¹ / ₂ " | 3RW27 01-0AA00 | |
| Manual, Planning, Commissioning & Mounting | | |
| German English Spanish | E20001-P285-A484-V3 E20001-P285-A484-V2-7600 E20001-P285-A484-V2-7800 | |
| Cable | | |
| for PC communication (modified RS 232 cable) 5 m long | 3RW29 20-1DA00 | |
| Enclosure | | |
| for IP 54 degree of protection for 3RW22 23 to 3RW22 31 | 3RW29 20-0AB00 | |

Spare parts

| For solid-state motor controllers | Maximum number required per device | Order No. | Price | Weight approx. |
|---|------------------------------------|--|--------|------------------------------|
| Type | | | 1 unit | kg |
| Control unit, standard version | | | | |
| 3RW22 21-1AA05 to 3RW22 31-1AA05 | 1 | 3RW29 20-1AA05 | | 1.1 |
| Control unit with electronic overload protection | | | | |
| 3RW22 21-1AB05 to 3RW22 31-1AB05 | 1 | 3RW29 20-1BA05 | | 1.1 |
| Control unit with electronic overload protection and RS 232 serial interface | | | | |
| 3RW22 21-. AB1. to 3RW22 50-. AB1. and 3RW22 40-0CB15 | 1 | 3RW29 20-1BB05 | | 1.1 |
| 3RW22 ...0DB14 3RW22 ...0DB15 3RW22 ...0DB16 | 1 | 3RW29 20-1BC05 3RW29 20-1BC06 | | 1.1 |
| Thyristor module | | | | |
| 3RW22 21-1A...5 3RW22 23-1A...5 3RW22 25-1A...5 3RW22 26-1A...5 | 3 3 3 3 | 3RW29 00-0AL00 3RW91 01-0AA 3RW91 01-0AC 3RW29 00-0AN00 | | 0.1 0.18 0.18 0.18 |
| 3RW22 27-1A...5 3RW22 28-1A...5 3RW22 30-1A...5 3RW22 31-1A...5 | 3 3 3 3 | 3RW29 00-0AN00 3RW91 01-0AE 3RW91 01-0AE 3RW91 01-0AJ | | 0.18 0.18 0.18 0.25 |
| 3RW22 34-0AB15 3RW22 35-0AB15 3RW22 36-0AB15 3RW22 37-0AB15 | 3 3 3 6 | 3RW29 20-5AK00 3RW29 20-5AL00 3RW29 20-5AM00 3RW29 20-5AQ00 | | 0.3 0.43 0.94 0.94 |
| 3RW22 38-0AB15 (up to revision level 6 ¹⁾) 3RW22 38-0AB15 (from revision level 7 ¹⁾) 3RW22 40-0CB15 | 6 3 3 | 3RW29 20-5AQ00 3RW29 20-5AN00 3RW29 20-5AP00 | | 0.94 1.5 1.5 |
| 3RW22 34-0DB15 3RW22 35-0DB15 3RW22 36-0DB15 | 3 3 3 | 3RW29 20-5AR00 3RW29 20-5AS00 3RW29 20-5AT00 | | 0.3 0.43 0.45 |
| 3RW22 38-0DB15 3RW22 40-0DB15 3RW22 41-0DB15 | 3 3 3 | 3RW29 20-5AN00 3RW29 20-5AN00 3RW29 20-5AP00 | | 1.5 1.5 1.5 |
| 3RW22 36-0DB16 3RW22 38-0DB16 3RW22 40-0DB16 | 3 3 3 | 3RW29 20-5DT00 3RW29 20-5DV00 3RW29 20-5DW00 | | 0.45 1.5 1.5 |

| For solid-state motor controllers | Maximum number required per device | Order No. | Price | Weight approx. |
|--|------------------------------------|--|--------|----------------------|
| Type | | | 1 unit | kg |
| Thyristor assembly | | | | |
| 3RW22 40-0AB14 3RW22 42-0 . B14 3RW22 43-0AB14 3RW22 45-0AB14 | 3 3 3 3 | 3RW29 20-6KA00 3RW29 20-6KC00 3RW29 20-6KD00 3RW29 20-6KE00 | | 17 18 18 26 |
| 3RW22 47-0AB14 3RW22 50-0AB14 | 3 3 | 3RW29 20-6KF00 3RW29 20-6KG00 | | 30 30 |
| 3RW22 40-0AB15 3RW22 42-0 . B15 3RW22 43-0AB15 3RW22 45-0AB15 | 3 3 3 3 | 3RW29 20-6LA00 3RW29 20-6LC00 3RW29 20-6LD00 3RW29 20-6LE00 | | 17 18 18 26 |
| 3RW22 47-0AB15 3RW22 50-0AB15 | 3 3 | 3RW29 20-6LF00 3RW29 20-6LG00 | | 30 30 |
| 3RW22 43-0DB14 3RW22 45-0DB14 3RW22 47-0DB14 3RW22 50-0DB14 | 3 3 3 3 | 3RW29 20-6KC00 3RW29 20-6KD00 3RW29 20-6KE00 3RW29 20-6KH00 | | 18 18 26 30 |
| 3RW22 43-0DB15 3RW22 45-0DB15 3RW22 47-0DB15 3RW22 50-0DB15 | 3 3 3 3 | 3RW29 20-6LC00 3RW29 20-6LD00 3RW29 20-6LE00 3RW29 20-6LH00 | | 18 18 26 30 |
| 3RW22 42-0DB16 and 3RW22 43-0DB16 | 3 | 3RW29 20-6MC00 | | 18 |
| 3RW22 47-0DB16 3RW22 50-0DB16 | 3 3 | 3RW29 20-6ME00 3RW29 20-6MH00 | | 30 30 |

Spare parts for 3RW 22...0DB18 on request.

1) See rating plate.

Solid-State Motor Controllers

SIKOSTART 3RW22

Spare parts

| For solid-state motor controllers | Maximum number required per device | Order No. | Price | Weight approx. |
|-------------------------------------|------------------------------------|-----------------------|--------|----------------|
| Type | | | 1 unit | kg |
| Disk-type thyristor | | | | |
| 3RW22 40-0AB14 | 6 | 3RW29 20-6AA00 | | 0.4 |
| 3RW22 42-0 . B14 | 6 | 3RW29 20-6AC00 | | 0.55 |
| 3RW22 43-0AB14 | 6 | 3RW29 20-6AD00 | | 0.55 |
| 3RW22 45-0AB14 | 6 | 3RW29 20-6AE00 | | 0.7 |
| 3RW22 47-0AB14 | 6 | 3RW29 20-6AF00 | | 1.1 |
| 3RW22 50-0AB14 | 6 | 3RW29 20-6AG00 | | 1.6 |
| 3RW22 40-0AB15 | 6 | 3RW29 20-6BA00 | | 0.4 |
| 3RW22 42-0 . B15 | 6 | 3RW29 20-6BC00 | | 0.55 |
| 3RW22 43-0AB15 | 6 | 3RW29 20-6BD00 | | 0.55 |
| 3RW22 45-0AB15 | 6 | 3RW29 20-6BE00 | | 0.7 |
| 3RW22 47-0AB15 | 6 | 3RW29 20-6BF00 | | 1.1 |
| 3RW22 50-0AB15 | 6 | 3RW29 20-6BG00 | | 1.6 |
| 3RW22 43-0DB14 | 6 | 3RW29 20-6AC00 | | 0.55 |
| 3RW22 45-0DB14 | 6 | 3RW29 20-6AD00 | | 0.55 |
| 3RW22 47-0DB14 | 6 | 3RW29 20-6AE00 | | 0.7 |
| 3RW22 50-0DB14 | 6 | 3RW29 20-6AH00 | | 1.6 |
| 3RW22 43-0DB15 | 6 | 3RW29 20-6BC00 | | 0.55 |
| 3RW22 45-0DB15 | 6 | 3RW29 20-6BD00 | | 0.55 |
| 3RW22 47-0DB15 | 6 | 3RW29 20-6BE00 | | 0.7 |
| 3RW22 50-0DB15 | 6 | 3RW29 20-6BH00 | | 1.6 |
| 3RW22 42-0DB16 and 3RW22 43-0DB16 | 6 | 3RW29 20-6CC00 | | 0.55 |
| 3RW22 47-0DB16 | 6 | 3RW29 20-6CE00 | | 1.6 |
| 3RW22 50-0DB16 | 6 | 3RW29 20-6CH00 | | 1.6 |
| Current transformer | | | | |
| 3RW22 34 | 1 | 3RW29 20-2AD00 | | 0.3 |
| 3RW22 35 | 1 | 3RW29 20-2AD00 | | 0.3 |
| 3RW22 36 | 1 | 3RW29 20-2AD00 | | 0.3 |
| 3RW22 37 | 1 | 3RW29 20-2AD00 | | 0.3 |
| 3RW22 38 | 1 | 3RW29 20-2AF00 | | 0.4 |
| 3RW22 38-0DB1. | 1 | 3RW29 20-2AE00 | | 0.4 |
| 3RW22 40-0AB1. | 1 | 3RW29 20-2AG00 | | 0.4 |
| 3RW22 40-0 . B15 | 1 | 3RW29 20-2AE00 | | 0.4 |
| 3RW22 41-0DB15 | 1 | 3RW29 20-2AK00 | | 0.4 |
| 3RW22 42 | 1 | 3RW29 20-2AH00 | | 0.45 |
| 3RW22 43 | 1 | 3RW29 20-2AH00 | | 0.5 |
| 3RW22 45 | 1 | 3RW29 20-2AJ00 | | 0.5 |
| 3RW22 45-0DB1. | 1 | 3RW29 20-2AL00 | | 0.5 |
| 3RW22 47 | 1 | 3RW29 20-2AJ00 | | 0.5 |
| 3RW22 50 | 1 | 3RW29 20-2AJ00 | | 0.5 |
| Fans | | | | |
| 3RW22 34 | 1 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 35 | 1 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 36 | 1 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 37 | 1 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 38 (up to revision level 6!)) | 2 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 38 (from revision level 7!)) | 1 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 40-0AB1. | 3 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 40-0 . B1. | 2 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 41 | 2 | 3RW29 20-3AC00 | | 0.6 |
| 3RW22 42 | 3 | 3RW29 20-3AD00 | | 1.0 |
| 3RW22 42-0DB1. | 3 | 3RW29 20-3AF00 | | 0.6 |
| 3RW22 43 | 3 | 3RW29 20-3AD00 | | 1.0 |
| 3RW22 45 | 3 | 3RW29 20-3AE00 | | 1.2 |
| 3RW22 45-0DB1. | 3 | 3RW29 20-3AD00 | | 1.0 |
| 3RW22 47 | 3 | 3RW29 20-3AE00 | | 1.2 |
| 3RW22 50 | 3 | 3RW29 20-3AE00 | | 1.2 |

| For solid-state motor controllers | Maximum number required per device | Order No. | Price | Weight approx. |
|--|------------------------------------|-----------------------|--------|----------------|
| Type | | | 1 unit | kg |
| Surge suppressor circuit | | | | |
| 3RW22 34 | 1 | 3RW29 20-4AC00 | | 0.1 |
| 3RW22 35 | 1 | 3RW29 20-4AC00 | | 0.1 |
| 3RW22 36 | 1 | 3RW29 20-4AC00 | | 0.1 |
| 3RW22 37 | 1 | 3RW29 20-4AD00 | | 0.15 |
| 3RW22 38 | 1 | 3RW29 20-4AD00 | | 0.15 |
| 3RW22 40-0AB1. | 2 | 3RW29 20-4AD00 | | 0.15 |
| 3RW22 40-0 . B1. | 1 | 3RW29 20-4AD00 | | 0.15 |
| 3RW22 41 | 1 | 3RW29 20-4AD00 | | 0.15 |
| 3RW22 42 | 2 | 3RW29 20-4AD00 | | 0.15 |
| 3RW22 43 | 2 | 3RW29 20-4AD00 | | 0.15 |
| Temperature detector | | | | |
| 3RW22 21 | 1 | 3RW29 00-3AA00 | | 0.05 |
| to 3RW22 31 | | | | |
| 3RW22 34 | 1 | 3RW29 00-3BA00 | | 0.05 |
| to 3RW22 50 | | | | |
| Cover | | | | |
| 3RW22 34 | 1 | 3RW29 20-0BA00 | | 0.45 |
| to 3RW22 41 | | | | |
| 3RW22 40-0AB1 | 1 | 3RW29 20-0BB00 | | 1.4 |
| 3RW22 42-0 . B1. | 1 | 3RW29 20-0BB00 | | 1.4 |
| to 3RW22 43-0 . B1. and 3RW22 45-0DB1. | | | | |
| 3RW22 45-0AB1. | 1 | 3RW29 20-0BC00 | | 1.8 |
| 3RW22 47-0DB14 | | | | |
| 3RW22 47-0DB15 | | | | |
| 3RW22 47-0AB1. | 1 | 3RW29 20-0BD00 | | 2.4 |
| 3RW22 47-0DB16 | | | | |
| 3RW22 50 | | | | |

1) See rating plate.

Solid-State Motor Controllers

SIKOSTART 3RW22

Technical data

Control electronics

| | | | | | |
|--|---|-----------------|--|--|---------------------------|
| Rated control supply voltage | | V | 380 to 415, 200 to 240, 100 to 120 (+ 10 %/- 15 %) | | |
| Rated frequency | | Hz | 50/60, operating range 45 to 66 | | |
| Rated control supply current | at 380 V to 415 V | mA | approx. 40 | | |
| | at 200 V to 240 V | mA | approx. 75 | | |
| | at 100 V to 120 V | mA | approx. 100 | | |
| Short circuit protection, control circuit | built-in fuse 250 mA slow, Ø 6.3 mm x 32 mm | | | | |
| Control times | ON-delay | ms | ≤50 controlled separately when the control supply voltage is applied and the voltage is present in the control circuit | | |
| | ON-delay | s | ≤1 contactor operation, ON/OFF by switching the control supply voltage | | |
| | ON-delay | s | ≤1.1 automatic mode | | |
| | recovery time | ms | ≤440 after DC braking | | |
| Mains failure bridging time | control supply voltage | ms | ≤80 | | |
| Mains failure reaction time | load current circuit | ms | ≤100 | | |
| Operating indications (continuous light) | LED 1 | | Ready | | |
| | LED 2 | | starting or slowing down | | |
| | LED 3 | | starting ended | | |
| | LED 4 | | energy save mode active | | |
| | LED 5 | | braking | | |
| Fault indications (flashing light) | LED 1 | | Mains fault (phase failure, missing voltage/load, control supply voltage too low) | | |
| | LED 2 | | Thyristor defective (one or several thyristor(s) alloyed) | | |
| | LED 3 | | Excess temperature or overload deactivation | | |
| | LED 4 | | Unit malfunction | | |
| | LED 5 | | Unit gets too hot; new starting is inhibited; however, unit continues to operate | | |
| Control inputs on versions with serial interface, the input assignments are dependent on the number of parameter sets selected via the COM-SIKOSTART PC communication program (up to 3 parameter sets can be selected) | Input 1 | | Standard application with one motor | Serial starting of several motors or of reversible pole motors | |
| | | | ON | ON/OFF Parameter set 1 | ON/OFF Parameter set 1 |
| | Input 2 | | OFF | ON/OFF Parameter set 2 | ON/OFF Parameter set 2 |
| | Input 3 | | Reset | Reset | ON/OFF Parameter set 3 |
| | Rated operational current | mA | approx. 10 according to DIN 19 240 | | |
| | Rated voltage | V | 24 V DC from built-in power supply unit via DC +24 V terminal | | |
| Relay outputs | Output 1 | | Group fault signal (changover contact) | | |
| | Output 2 | | Start ended; motor connected to full mains voltage (normally open contact) | | |
| | Output 3 | | DC brakes active; for control of the braking contactor (normally open contact) | | |
| | Rated operational current | A | 3 AC-15/AC-14 at 240 V | | |
| | | A | 0.1 DC-13 at 240 V | | |
| | | A | 0.5 DC-13 at 24 V | | |
| | Short-circuit protection | | 4 A utilization category gL/gG; 6 A fast (fuse is not included in scope of delivery) | | |
| Max. conductor cross-sections | solid | mm ² | 0.5 to 2.5 | | |
| | finely stranded with end sleeve | mm ² | 0.5 to 1.5 | | |
| | tightening torque | Nm | 0.8 to 1.4 | | |

Power electronics

| | | | | | | | |
|---|--|----------------------|---|-----|-----|-----|-----|
| Uninterrupted operation (% of I_e) | | % | 115 | | | | |
| Starting current (% of I_e) | | % | 600 | 450 | 300 | 250 | 200 |
| Max. starting time | cold (40 °C or 55 °C) | s | 2 | 10 | 60 | 120 | 200 |
| | warm | s | 1 | 5 | 30 | 60 | 100 |
| Minimum load ¹⁾ (% of I_e) | | % | 20 | | | | |
| Permissible ambient temperature | in operation | °C | 0 to 40 or 55 (switchable) | | | | |
| | when stored | °C | -40 to +80 | | | | |
| Operating range | Rated voltage | V | 200 (-15 %) to 500 (+10 %) at 3RW22...-0...; | | | | |
| | | V | 200 (-15 %) to 415 (+10 %) at 3RW22...-0...B14; | | | | |
| | | V | 500 (-15 %) to 690 (+10 %) at 3RW22...-0DB16 | | | | |
| | | V | 1000 (-20 %; +25 %) at 3RW22...-0DB18 | | | | |
| | Frequency | Hz | 45 to 66 | | | | |
| Degree of protection | 3RW22 21 to 3RW22 31 | | IP 20 | | | | |
| | to IEC 60 947-1 and DIN 40 050 | 3RW22 34 to 3RW22 50 | IP 00 | | | | |
| Overload protection | Thermal sensor on the heatsink Solid-state protection with thermal image (unit type 3RW22...-B...) | | | | | | |
| Permissible installation altitude | up to 3000 m above sea level; over 1000 m above sea level linear reduction of I_e , thus at 2000 m above sea level $0.87 \times I_e$ at 3000 m above sea level $0.77 \times I_e$ | | | | | | |
| Fan (quantity see page 5/67) | Rated control supply voltage | V | 230 ± 10 % | | | | |
| | Frequency | Hz | 45 to 66 | | | | |

Technical data for 3RW22...-0DB18 on request.

1) The motor rated current (see motor type plate) should be at least 20 % of the SIKOSTART device rated current I_e .

Solid-State Motor Controllers

SIKOSTART 3RW22

Technical data

| Power electronics | | | | 3RW22 21-1A..5 | 3RW22 23-1A..5 | 3RW22 25-1A..5 | 3RW22 26-1A..5 | |
|--|-------------------------------------|-----------------|-----------|----------------|----------------------|----------------------|----------------------|----------------------|
| Type (200 to 500 V) | | | | | | | | |
| Load ratings | | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 7/5.5 | 10.5/9 | 22/16 | 28/22 | | |
| Motor output (400 V) approx. | at 40/55 °C, AC-3 | kW | 3/2.2 | 4/4 | 11/7.5 | 15/11 | | |
| Permissible starts per hour | | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C ON-period = 30 % | 350 % x I_e for 5 s | 1/h | 80 | 90 | 30 | 20 | | |
| | 300 % x I_e for 10 s | 1/h | 50 | 60 | 20 | 10 | | |
| | 250 % x I_e for 15 s | 1/h | 50 | 50 | 20 | 10 | | |
| Power loss at rated operational current (40 °C) approx. | | | | W | 30 | 40 | 70 | 80 |
| Max. conductor cross-sections | | | | | | | | |
| | solid | mm ² | 1 to 16 | 1 to 16 | 1 to 16 | 1 to 16 | | |
| | finely stranded without end sleeves | mm ² | 2.5 to 16 | 2.5 to 16 | 2.5 to 16 | 2.5 to 16 | | |
| | finely stranded with end sleeves | mm ² | 1 to 16 | 1 to 16 | 1 to 16 | 1 to 16 | | |
| | stranded | mm ² | 2.5 to 25 | 2.5 to 25 | 2.5 to 25 | 2.5 to 25 | | |
| Bridging contactor | | | | | | | | |
| (if required, as a main contactor to AC-3) | | | | to AC-1 | 3RT10 15 3RT10 16 | 3RT10 15 3RT10 17 | 3RT10 24 3RT10 26 | 3RT10 24 3RT10 34 |
| Recommended braking contactor | | | | | 3RT15 1. | 3RT15 26 | 3RT15 26 | 3RT15 26 |

| Power electronics | | | | 3RW22 27-1A..5 | 3RW22 28-1A..5 | 3RW22 30-1A..5 | 3RW22 31-1A..5 | |
|--|-------------------------------------|-----------------|-----------|----------------|----------------------|----------------------|----------------------|----------------------|
| Type (200 to 500 V) | | | | | | | | |
| Load ratings | | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 35/32 | 45/37 | 50/45 | 70/63 | | |
| Motor output (400 V) approx. | at 40/55 °C, AC-3 | kW | 18.5/15 | 22/18.5 | 25/22 | 37/30 | | |
| Permissible starts per hour | | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C ON-period = 30 % | 350 % x I_e for 5 s | 1/h | 50 | 30 | 20 | 40 | | |
| | 300 % x I_e for 10 s | 1/h | 30 | 20 | 20 | 30 | | |
| | 250 % x I_e for 15 s | 1/h | 30 | 20 | 20 | 30 | | |
| Power loss at rated operational current (40 °C) approx. | | | | W | 105 | 130 | 140 | 220 |
| Max. conductor cross-sections | | | | | | | | |
| | solid | mm ² | 1 to 16 | 1 to 16 | 1 to 16 | 1 to 16 | | |
| | finely stranded without end sleeves | mm ² | 2.5 to 16 | 2.5 to 16 | 2.5 to 16 | 2.5 to 16 | | |
| | finely stranded with end sleeve | mm ² | 1 to 16 | 1 to 16 | 1 to 16 | 1 to 16 | | |
| | stranded | mm ² | 2.5 to 25 | 2.5 to 25 | 2.5 to 25 | 2.5 to 25 | | |
| Bridging contactor | | | | | | | | |
| (if required, as a main contactor to AC-3) | | | | to AC-1 | 3RT10 24 3RT10 35 | 3RT10 34 3RT10 36 | 3RT10 35 3RT10 44 | 3RT10 44 3RT10 45 |
| Recommended braking contactor | | | | | 3RT15 26 | 3RT15 26 | 3RT15 35 | 3RT15 35 |

| Power electronics | | | | 3RW22 34-0DB15 | 3RW22 35-0DB15 | 3RW22 36-0DB15 | 3RW22 38-0DB15 | |
|--|------------------------|-----------------|--------|----------------|------------------------|------------------------|------------------------|------------------------|
| Type (200 to 500 V) | | | | | | | | |
| Load ratings | | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 100/85 | 135/110 | 160/140 | 235/205 | | |
| Motor output (400 V) approx. | at 40/55 °C, AC-3 | kW | 55/45 | 75/55 | 90/75 | 132/110 | | |
| Permissible starts per hour | | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C ON-period = 30 % | 350 % x I_e for 5 s | 1/h | 120 | 100 | 90 | 90 | | |
| | 300 % x I_e for 10 s | 1/h | 80 | 60 | 60 | 60 | | |
| | 250 % x I_e for 15 s | 1/h | 70 | 50 | 50 | 50 | | |
| Power loss at rated operational current (40 °C) approx. | | | | W | 260 | 370 | 435 | 640 |
| Fans | | | | | | | | |
| | Quantity | | 1 | 1 | 1 | 1 | | |
| | Power output | W | 18 | 18 | 18 | 18 | | |
| Max. conductor cross-sections | | | | | | | | |
| | stranded | mm ² | 95 | 120 | 150 | 240 | | |
| Bridging contactor | | | | | | | | |
| (if required, as a main contactor to AC-3) | | | | to AC-1 | 3RT10 45 3TF50 | 3TK48 3TF51 | 3TK50 3TF52 | 3TK52 3TF54 |
| Recommended braking contactor | | | | | | | | |
| (opening + closing contactor) | | | | | 3RT10 34 + 3RT10 34 | 3RT10 35 + 3RT10 44 | 3RT10 44 + 3RT10 44 | 3RT10 44 + 3RT10 46 |

| Power electronics | | | | 3RW22 40-0DB15 | 3RW22 41-0DB15 | 3RW22 42-0DB1. | |
|--|------------------------|-----------------|---------|----------------|----------------|----------------|----------------|
| Type (200 to 500 V) | | | | | | | |
| Load ratings | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 300/250 | 355/300 | 450/355 | | |
| Motor output (400 V) approx. | at 40/55 °C, AC-3 | kW | 160/132 | 200/160 | 250/200 | | |
| Permissible starts per hour | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C ON-period = 30 % | 350 % x I_e for 5 s | 1/h | 20 | 40 | 180 | | |
| | 300 % x I_e for 10 s | 1/h | 10 | 20 | 100 | | |
| | 250 % x I_e for 15 s | 1/h | 10 | 20 | 70 | | |
| Power loss at rated operational current (40 °C) approx. | | | | W | 810 | 970 | 1560 |
| Fans | | | | | | | |
| | Quantity | | 2 | 2 | 3 | | |
| | Power output | W | 36 | 36 | 54 | | |
| Max. conductor cross-sections | | | | | | | |
| | stranded | mm ² | 240 | 240 | - | | |
| | connection bar | mm | - | - | 40 x 10 | | |
| Bridging contactor | | | | | | | |
| (if required as a main contactor to AC-3) | | | | to AC-1 | 3TK52 3TF55 | 3TK54 3TF56 | 3TK56 3TF57 |
| Recommended braking contactor combination | | | | | | | |
| (opening + closing contactor) | | | | | 3TF50 + 3TF51 | 3TF52 + 3TF54 | 3TF52 + 3TF54 |

Technical data for 3RW22...-0DB18 on request.

Solid-State Motor Controllers

SIKOSTART 3RW22

Technical data

Power electronics

| Type (200 to 500 V) | | | | 3RW22 43-0DB1 | 3RW22 45-0DB1 | 3RW22 47-0DB1 | 3RW22 50-0DB1 | | |
|--|------------------------|-----|---------|-------------------------------|----------------|----------------|----------------|--------------------------------------|---------|
| Load ratings | | | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 560/450 | 700/560 | 865/700 | 1200/1000 | | | |
| Motor output (400 V) approx. | at 40/55 °C, AC-3 | kW | 315/250 | 400/315 | 500/400 | 710/560 | | | |
| Permissible starts per hour | | | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C | 350 % x I_e for 5 s | 1/h | 90 | 100 | 120 | 60 | | | |
| ON-period = 30 % | 300 % x I_e for 10 s | 1/h | 60 | 60 | 80 | 40 | | | |
| | 250 % x I_e for 15 s | 1/h | 50 | 60 | 70 | 40 | | | |
| Power loss at rated operational current (40 °C) approx. | | | | W | 1950 | 2060 | 2440 | 3550 | |
| Fans | | | | | | | | | |
| | Quantity | | 3 | 3 | 3 | 3 | | | |
| | Power output | W | 135 | 135 | 78 | 78 | | | |
| Max. conductor cross-sections¹⁾ | | | | connection bar | mm | 40 x 10 | 40 x 10 | 50 x 20 | 60 x 20 |
| Bridging contactor | | | | to AC-1 | 3TF57 3TF68 | 3TF68 3TF68 | 3TF69 3TF69 | 2 x 3TF68 2 x 3TF68 ²⁾ | |
| Recommended braking contactor combination | | | | (opening + closing contactor) | 3TF54 + 3TF55 | 3TF54 + 3TF56 | 3TF56 + 3TF57 | 3TF57 + 3TF68 | |

| Type (500 to 690 V) | | | | 3RW22 36-0DB16 | 3RW22 38-0DB16 | 3RW22 40-0DB16 | 3RW22 42-0DB16 | | |
|--|------------------------|-----|---------|-------------------------------|-----------------------|------------------------|-----------------|----------------------------|-------------------------|
| Load ratings | | | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 160/140 | 235/205 | 300/250 | 450/355 | | | |
| Motor output (690 V) | at 40/55 °C, AC-3 | kW | 160/132 | 250/200 | 315/250 | 450/355 | | | |
| Permissible starts per hour | | | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C | 350 % x I_e for 5 s | 1/h | 90 | 90 | 20 | 180 | | | |
| ON-period = 30 % | 300 % x I_e for 10 s | 1/h | 60 | 60 | 10 | 100 | | | |
| | 250 % x I_e for 15 s | 1/h | 50 | 50 | 10 | 70 | | | |
| Short-circuit protection | | | | SITOR Fuses | A Type | 500 3NE3 334-0B | 630 3NE3 336 | 2 x 500 2 x 3NE3 334-0B | 2 x 560 2 x 3NE3 335 |
| Power loss at rated operational current (40 °C) approx. | | | | W | 490 | 700 | 810 | 1550 | |
| Fans | | | | | | | | | |
| | Quantity | | 1 | 1 | 2 | 3 | | | |
| | Power output | W | 18 | 18 | 36 | 54 | | | |
| Max. conductor cross-sections¹⁾ | | | | stranded connection bar | mm ² mm | 150 – | 240 – | 240 – | – 40 x 10 |
| Bridging contactor | | | | to AC-1 | 3TK50 | 3TK52 | 3TK52 | 3TK56 | |
| Recommended braking contactor combination | | | | (opening + closing contactor) | 3TF46 + 3TF50 | 3RT10 44 + 3RT10 46 | 3TF50 + 3TF52 | 3TF52 + 3TF54 | |

| Type (500 to 690 V) | | | | 3RW22 43-0DB16 | 3RW22 47-0DB16 | 3RW22 50-0DB16 | | |
|--|------------------------|-----|---------|-------------------------------|----------------|-------------------------|---------------------------|---------------------------|
| Load ratings | | | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 560/450 | 865/700 | 1200/1000 | | | |
| Motor output (690 V) | at 40/55 °C, AC-3 | kW | 560/450 | 850/710 | 1200/1000 | | | |
| Permissible starts per hour | | | | | | | | |
| intermittent duty S4, $T_u = 40$ °C | 350 % x I_e for 5 s | 1/h | 90 | 100 | 60 | | | |
| ON-period = 30 % | 300 % x I_e for 10 s | 1/h | 60 | 80 | 40 | | | |
| | 250 % x I_e for 15 s | 1/h | 50 | 70 | 40 | | | |
| Short-circuit protection | | | | SITOR Fuses | A Type | 2 x 560 2 x 3NE3 335 | 3 x 800 3 x 3NE3 338-8 | 4 x 800 4 x 3NE3 338-8 |
| Power loss at rated operational current (40 °C) approx. | | | | W | 1950 | 2660 | 3560 | |
| Fans | | | | | | | | |
| | Quantity | | 3 | 3 | 3 | | | |
| | Power output | W | 135 | 78 | 78 | | | |
| Max. conductor cross-sections¹⁾ | | | | connection bar | mm | 40 x 10 | 60 x 20 | 60 x 20 |
| Bridging contactor | | | | to AC-1 | 3TF57 | 3TF69 | 2 x 3TF68 ²⁾ | |
| Recommended braking contactor combination | | | | (opening + closing contactor) | 3TF54 + 3TF56 | 3TF56 + 3TF58 | 3TF57 + 3TF68 | |

| Type (1000 V) | | | | 3RW22 36-0DB18 | 3RW22 40-0DB18 | 3RW22 42-0DB18 |
|--|------------------------|-----|------------|-------------------------------|----------------|----------------|
| Load ratings | | | | | | |
| Rated operational current I_e | at 40/55 °C, AC-3 | A | 160/140 | 300/250 | 450/355 | |
| Motor output (690 V) | at 40/55 °C, AC-3 | kW | 200/160 | 400/315 | 630/450 | |
| Permissible starts per hour | | | | | | |
| intermittent duty S4, $T_u = 40$ °C | 350 % x I_e for 5 s | 1/h | on request | | | |
| ON-period = 30 % | 300 % x I_e for 10 s | 1/h | | | | |
| | 250 % x I_e for 15 s | 1/h | | | | |
| Short-circuit protection | | | | SITOR Fuses | A Type | on request |
| Power loss at rated operational current (40 °C) approx. | | | | W | on request | |
| Fans | | | | | | |
| | Quantity | | on request | | | |
| | Power output | W | | | | |
| Max. conductor cross-sections¹⁾ | | | | connection bar | mm | on request |
| Bridging contactor | | | | nach AC-1 | on request | |
| Recommended braking contactor combination | | | | (opening + closing contactor) | on request | |

1) Owing to thermal expansion of the bars, flexible links must be used for connection of the busbars.

2) Suitable as emergency contactor in occasional starts with $I_a \leq 6 \times I_e$.

Solid-State Motor Controllers

SIKOSTART 3RW22

Technical data

Short-circuit protection for semiconductors and leads with SITOR all-range fuses, type 3NE1

| SIKOSTART ($T_a = 40^\circ\text{C}$) (200 to 500 V) | Rated output/current of motor at 400 V | | Fuse for high utilization of the SIKOSTART starter parameters e.g. starting current $3 \times I_n$ for 60 s | | Line protection per fuse ²⁾ | Fuse for reduced load of the SIKOSTART starter: starting current $3 \times I_n$ for 5 s and 2 starts/h | | Line protection per fuse ²⁾ |
|---|--|------------|---|-----------------------|---|--|-----------------------|---|
| | P_N kW | I_N A | SITOR fuse (utilization category gR) Quantity per phase/ type | Rated current A | for Cu-cable $\geq \text{mm}^2$ | SITOR fuse (utilization category gR) Quantity per phase/ type | Rated current A | for Cu-cable $\geq \text{mm}^2$ |
| 3RW22 21-1A...5 | 2.2 | 5.2 | 1 x 3NE1 814-0 | 20 | 2.5 | 1 x 3NE1 813-0 | 16 | 1.5 |
| 3RW22 21-1A...5 | 3 | 6.8 | 1 x 3NE1 814-0 | 20 | 2.5 | 1 x 3NE1 813-0 | 16 | 1.5 |
| 3RW22 23-1A...5 | 4 | 9 | 1 x 3NE1 815-0 | 25 | 4 | 1 x 3NE1 814-0 | 20 | 2.5 |
| 3RW22 23-1A...5 ³⁾ | 5.5 | 11.4 | 1 x 3NE1 815-0 | 25 | 4 | 1 x 3NE1 814-0 | 20 | 2.5 |
| 3RW22 25-1A...5 | 7.5 | 15.4 | 1 x 3NE1 817-0 | 50 | 10 | 1 x 3NE1 815-0 | 25 | 4 |
| 3RW22 25-1A...5 | 11 | 21.4 | 1 x 3NE1 817-0 | 50 | 10 | 1 x 3NE1 803-0 | 35 | 6 |
| 3RW22 26-1A...5 | 15 | 28.5 | 1 x 3NE1 818-0 | 63 | 16 | 1 x 3NE1 817-0 | 50 | 10 |
| 3RW22 27-1A...5 | 18.5 | 35 | 1 x 3NE1 820-0 | 80 | 25 | 1 x 3NE1 818-0 | 63 | 16 |
| 3RW22 28-1A...5 | 22 | 41 | 1 x 3NE1 820-0 | 80 | 25 | 1 x 3NE1 818-0 | 63 | 16 |
| 3RW22 30-1A...5 ³⁾ | 30 | 55 | 1 x 3NE1 820-0 | 80 | 25 | 1 x 3NE1 820-0 | 80 | 25 |
| 3RW22 31-1A...5 | 37 | 67 | 1 x 3NE1 022-0 | 125 | – | 1 x 3NE1 021-0 | 100 | 35 ⁴⁾ |
| 3RW22 31-1A...5 ³⁾ | 45 | 80 | 1 x 3NE1 022-0 | 125 | – | 1 x 3NE1 021-0 | 100 | 35 ⁴⁾ |
| 3RW22 34-0DB15 | 55 | 97 | 1 x 3NE1 225-0 | 200 | 95 | 1 x 3NE1 022-0 | 125 | 50 |
| 3RW22 35-0DB15 | 75 | 134 | 1 x 3NE1 227-0 ¹⁾ | 250 | 120 | 1 x 3NE1 224-0 | 160 | 70 |
| 3RW22 36-0DB15 | 90 | 160 | 1 x 3NE1 230-0 | 315 | 2 x 70 | 1 x 3NE1 225-0 | 200 | 95 |
| 3RW22 38-0DB15 | 110 | 194 | 1 x 3NE1 333-0 | 450 | 2 x 120 | 1 x 3NE1 227-0 | 250 | 120 |
| 3RW22 38-0DB15 | 132 | 228 | 1 x 3NE1 334-0 | 500 | 2 x 120 | 1 x 3NE1 230-0 | 315 | 2 x 70 |
| 3RW22 40-0DB15 | 160 | 280 | 1 x 3NE1 334-0 | 500 | 2 x 120 | 1 x 3NE1 331-0 | 350 | 2 x 95 |
| 3RW22 41-0DB15 | 200 | 345 | 1 x 3NE1 436-0 | 630 | 2 x 185 | 1 x 3NE1 332-0 | 400 | 2 x 95 |
| 3RW22 42-0DB1. | 250 | 430 | 2 x 3NE1 331-0 | 350 | (2 x) 2 x 95 | 1 x 3NE1 334-0 | 500 | 2 x 120 |
| 3RW22 43-0DB1. | 315 | 540 | 2 x 3NE1 333-0 ¹⁾ | 450 | (2 x) 2 x 120 | 2 x 3NE1 436-0 | 630 | 2 x 185 |
| 3RW22 43-0DB1. ³⁾ | 355 | 610 | 2 x 3NE1 334-0 | 500 | (2 x) 2 x 120 | 2 x 3NE1 331-0 | 350 | (2 x) 2 x 95 |
| 3RW22 45-0DB1. | 400 | 690 | 2 x 3NE1 435-0 ¹⁾ | 560 | (2 x) 2 x 150 | 2 x 3NE1 332-0 | 400 | (2 x) 2 x 95 |
| 3RW22 47-0DB1. | 500 | 850 | 2 x 3NE1 436-0 ¹⁾ | 630 | (2 x) 2 x 185 | 2 x 3NE1 334-0 | 500 | (2 x) 2 x 120 |
| 3RW22 50-0DB1. | 630 | 1060 | 3 x 3NE1 436-0 ¹⁾ | 630 | (3 x) 2 x 185 | 2 x 3NE1 436-0 | 630 | (2 x) 2 x 185 |

General data

Climatic conditions

SN 29 070 Part 1, climate class J2

Mechanical conditions

Resistance to vibration
Shock resistance

SN 29 010, severity 13
acc. to IEC 60 068-2-27

Noise immunity

Electrostatic discharge

acc. to IEC 60 801-2

Test severity
Air discharge kV
Contact discharge (direct and indirect) kV

III
 ± 8
 ± 4

Noise immunity of induced Hf fields

acc. to IEC 60 801-6

10 V; 0.15 MHz to 230 MHz; 80 % AM-modulated; 1 kHz

Burst

acc. to IEC 60 801-4

Test severity
kV

IV
4

Surge

acc. to IEC 60 801-5

Load and supply voltage kV
Control circuit kV

4/2
2/1

Voltage dips

acc. to IEC 60 947-4-2

Test

A, B, C

Emitted interference

Line-borne interference voltage

acc. to IEC 60 947-4-2 (draft)

Limit class
Limit class with single-stage filter
(e.g. type B84143-A...)⁵⁾

A
B

Noise field intensity

acc. to IEC 60 947-4-2 (draft)

Limit value curve

A

Technical data for 3RW22...0DB18 on request.

- At voltages > 450 V these fuses provide no semi-conductor protection.
- The minimal cable cross-section is referred to 40°C ambient temperature, 70°C limit temperature. Single laying at a distance and with one fuse per phase. If there is more than one fuse

per phase, these fuses must be connected in parallel and a larger cross section must be selected (see factors in parentheses). It may be necessary to lay different cross-sections in the event of deviating conditions (see DIN VDE 0298 Part 4).

- The service factor ($I_e \times 1.15$) was exploited to the full with these units.
- To connect the unit to 35 mm² wiring the terminal strip has to be converted to 2 x 16 mm².
- For further information see manual (Order No. on page 5/66).

Solid-State Motor Controllers

SIKOSTART 3RW22

Technical data

| Type | | 3RW22 ...-1AA05 | 3RW22 ...-1AB05 | 3RW22 ...-B1. | |
|--|---|-----------------------------------|---|--|---|
| Design | | Standard version | With solid-state unit protection | With solid-state unit protection and RS 232 serial PC interface | |
| Adjustability of functions in the various unit versions | | on the unit, with potentiometers | on the unit, with potentiometers | on the unit, with potentiometers | |
| | | | | Via a PC, with COM SIKOSTART | |
| Start | Breakaway pulse | Amplitude | 20 % to 100 % $\times U_n$ | 21 % to 100 % $\times U_n$ | |
| | | Duration | 50 ms to 1000 ms | 100 ms to 1000 ms | |
| | Start ramp | Start voltage | 20 % to 100 % $\times U_n$ | | |
| | | Duration | 0.3 s to 180 s | 0 s to 1000 s | |
| | Current limiting | Amplitude | 20 % to 100 % $\times I_a$ (I_a : motor starting current at 100 % U_n) | 50 % to 600 % $\times I_e$ (I_e : rated operational current) | |
| | Current limiting | Amplitude | | Numeric value in Amps, from 1 A to max. 6553 A up to max. $6 \times I_e$ (I_e : rated operational current) | |
| | | Duration | until start-up is detected | | |
| | Voltage limiting | Amplitude | – | 20 % to 100 % $\times U_n$ | |
| | | Duration | – | 0 s to 1000 s | |
| | Start-up detection | Function | Automatic increasing of the motor's terminal voltage to 100 % $\times U_n$ when the rated speed is reached by p.f. detection | | |
| | | p.f. detection can be deactivated | x | by p.f. detection and current detection | |
| Emergency start (only start ramp active) | | x | | | |
| Operation | Energy saving mode | x | | | |
| | Bridging contactor operation | x | | | |
| | Uninterrupted operation at max. 115 % I_e (full control of the thyristors) | x | | | |
| Running down | Free running down | x | | | |
| | Smooth running down | Initial voltage of the stop ramp | fixed $90 \% \times U_n$ | 20 % to 100 % $\times U_n$ | |
| | | Off voltage of the stop ramp | 85 % of the start ramp's initial voltage | 20 % to 100 % $\times U_n$ | |
| | | Run-down time | 1 s to 20 s | 0 s to 1000 s | |
| | Pump running down | Off voltage of pump running down | – | 20 % to 90 % $\times U_n$ | |
| | | Run-down time | – | 5 s to 90 s | |
| | DC braking | Braking torque | inversely proportional to the braking time, from 20 % to 85 % of the max. possible braking torque | | 20 % to 100 % of the max. possible braking torque, regardless of braking time |
| | | Braking time | 3 s to 18 s | | 1 s to 18 s |
| | | | U_n = mains voltage | | |

Solid-State Motor Controllers

SIKOSTART 3RW22

Description

1

2

3

4

5

Applicable standards

IEC 60 947 · UL/CSA for 3RW22 21 to 3RW22 31

Application

The SIKOSTART solid-state motor controllers are suitable for the controlled soft starting and running down, for the braking and the energy-saving operation of three-phase induction motors.

Service range

- Pumps, compressors
- Fans
- Conveyor belts
- Breakers, mills
- Stirring apparatus
- Grinding machines
- Wire-drawing machines, textile machines
- Presses
- Machine tools
- Additional functions

Features

The 3RW22 SIKOSTART compact starters have the following service properties:

- Smooth starting with break-away impulse, voltage ramp, voltage or current limiting as well as any combination from them, according to load type
- Varied setting facilities for the starting parameters as starting voltage, ramp time etc.
- Ramp detection
- Energy-saving duty
- Four running-down modes selectable: free running down, pump running down, smooth running down, DC braking
- Electronic overload protection
- Protection against temperature rise
- Setting via potentiometer and slide switch or via PC program COM SIKOSTART
- Interface for communication with PC for exact setting of parameters as well as for controlling and observing
- Simple adaptation to the motor feeder
- Simple mounting and commissioning
- Automatic operation possible
- Display of 5 operating states and 5 fault signals
- System voltages from 200 V to 1000 V, 50/60 Hz
- Integrated power supply unit for three control supply voltages
- Applicable up to 55 °C
- Higher load ratings by selecting low ambient temperatures.

Advice

The 3RW solid-state motor controllers are designed for normal starting. In case of heavy starting or increased starting frequency, a larger unit must be selected. For an exact dimensioning, the special starting conditions must be observed.

If necessary, an overload relay for heavy-starting must be selected when long starting times are involved. PTC thermistor detectors are recommended. This must be also observed with the running-down modes smooth running down, pump running down and DC braking. In these cases an additional current load is effective compared with a free running down.

No capacitive elements (e.g. correction equipment) may be contained in the motor feeder between SIKOSTART and the motor.

All elements of the main circuit (e.g. fuses, switching devices and overload relays) should be dimensioned for direct starting, following the load short-circuit conditions. Fuses, switching devices and overload relays must be ordered separately.

The harmonic component load for starting currents must be taken into consideration for the selection of circuit breakers (selection of release).

Use with EEx-protected motors

The units are suitable for starting EEx-protected motors with types of protection "d", "p" and "n", insofar as the relevant mode does not give rise to any expected noteworthy influence of starting behavior on heat development.

Explanation:

Type of protection
"d" = flameproof enclosure
"p" = pressurized enclosure
"n" = designed for zone 2

SIEMENS has received a confirmation from the German national standards laboratory (PTB) in Braunschweig that, in relation to motors with the type of protection "d", there are no objections to including starting with SIKOSTART within the scope of the conditions upon which the general conformity certificates are based, and that there is no need to expressly mention this.

Express mention of this in the conformity certificate of the motors will also not be necessary in the future.

The units are suitable for starting EEx-protected motors with types of protection "e" provided heavy starting is not involved. The ramp time on the unit must be set to a value that is maximally equivalent to the machine's T_E time. A test report with the PTB No. 3.53-542/96 is available.

Manual and PC selection program for 3RW22 SIKOSTART

The following is necessary for selection in the case of special starting situations:

- Motor data
- Load data: moment of inertia, required output, speed
- Torque/speed characteristic of the machine and the motor
- Current/speed characteristic of the motor in the event of direct starting
- Required starting frequency
- Load cycles: starting, operating and idle time.

The PC program provides assistance in making these selections. It is obtainable together with the manual. Besides containing all important information on planning, commissioning and servicing, the manual also contains suggested circuits and the technical data for all units.

Manual **without** PC selection program for 3RW22 SIKOSTART

English:
Order No.:
E20001-P285-A484-V3-7600

German:
Order No.:
E20001-P285-A484-V3

Spanish:
Order No.:
E20001-P285-A484-V2-7800

Electronic overload protection, serial RS 232 PC interface and COM SIKOSTART PC communication program

Besides featuring electronic overload protection, this version also has a PC interface for communication.

Together with the PC program COM SIKOSTART, it enables simple parameter definition, control and observation of SIKOSTART 3RW22 via a PC or a notebook.

Once entered, a parameter set can be stored in the PC and then retrieved when defining the parameters of a unit with the same kind of drive.

Parameters can be entered more exactly and independently of one another than when using the potentiometers (see [technical data on page 5/68](#)).

It is also possible to store two or three parameter sets in the SIKOSTART 3RW22. Thus, the units are excellently suitable for use with Dahlander and reversible-pole motors, wind energy systems and for serial starting of motors with different outputs or loads.

SIKOSTART training course

Siemens offers a 2-day training course on the SIKOSTART solid-state motor controllers to keep customers and Siemens' own personnel up-to-date on matters of planning, commissioning and servicing.

Please direct enquiries and applications to:

Trainings Center Field Services and Workshop Operations Division
ATD TD 5 TC Course Office
Werner-von-Siemens-Str. 50
D-91052 Erlangen
Federal Republic of Germany
Phone: ++49 91 31 72 7972
Fax: ++49 91 31 72 8172

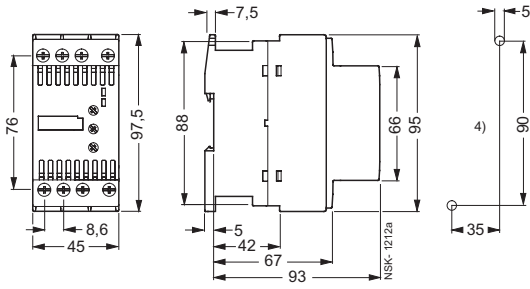
Solid-State Soft Starters and Motor Controllers

SIRIUS 3RW3, SIKOSTART 3RW34

Dimensions

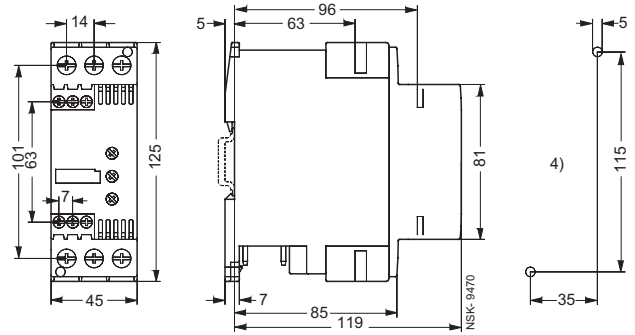
SIRIUS 3RW3 solid-state soft starters

3RW30 1.

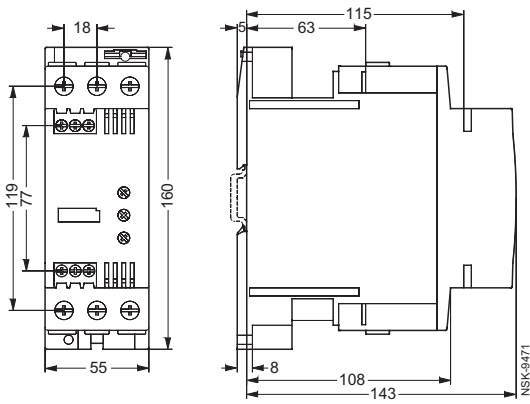


50 mm upward and downward distance from earthed parts.

3RW30 2. and 3RW31 2.

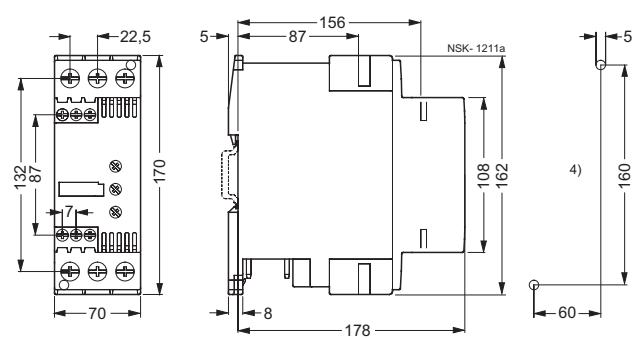


3RW30 3.



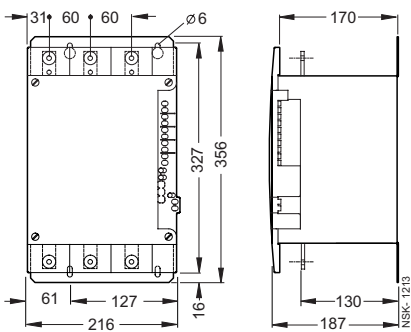
4) Drilling diagram

3RW30 4.

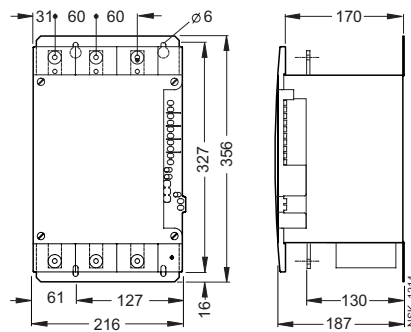


3RW34 SIKOSTART solid-state motor controllers

3RW34 54

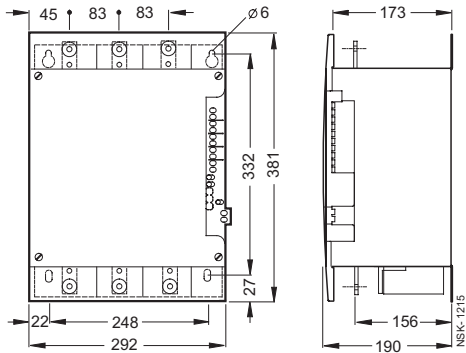


3RW34 55/57/58

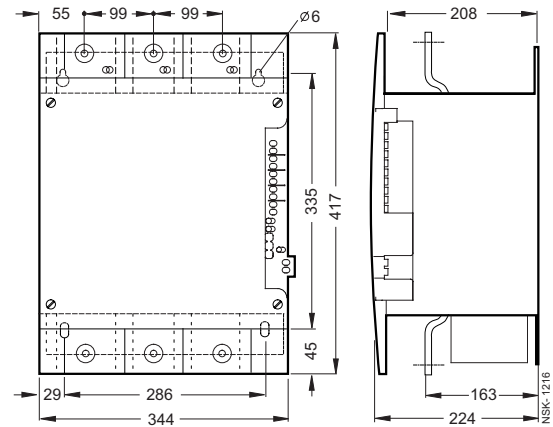


3RW34 65 SIKOSTART to 3RW34 86 SIKOSTART solid-state motor controllers

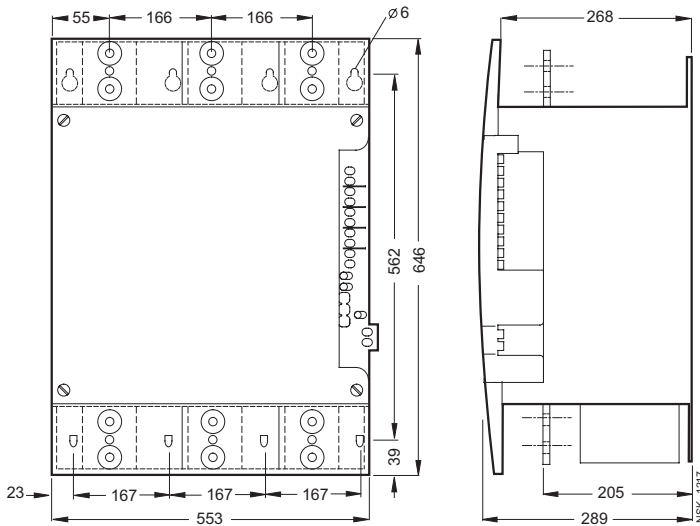
3RW34 65/66/67



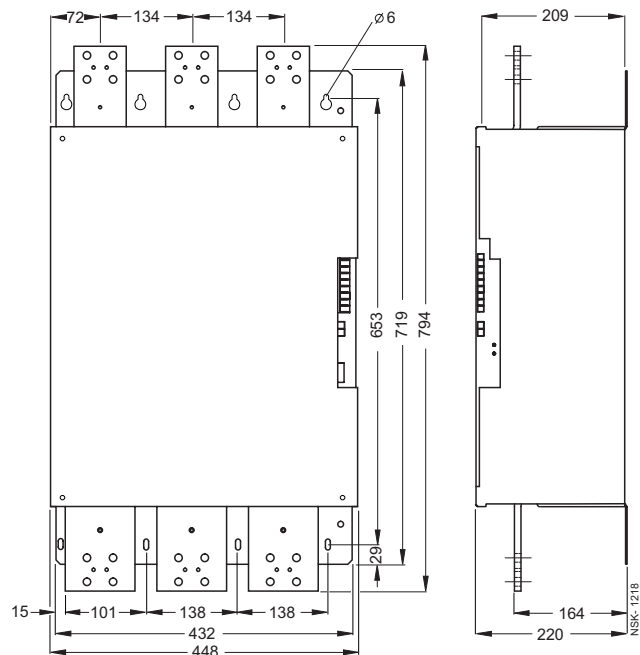
3RW34 72



3RW34 83/84



3RW34 86



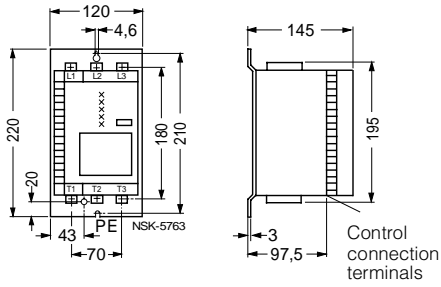
Solid-State Motor Controllers

SIKOSTART 3RW22

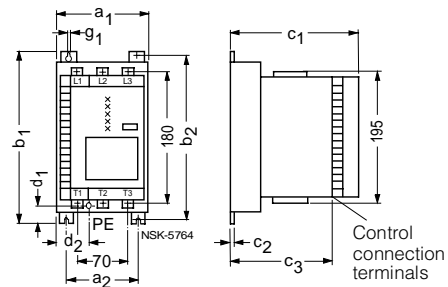
Dimensions

3RW22 21 SIKOSTART to 3RW22 31 SIKOSTART solid-state motor controllers

3RW22 21



3RW22 23 to 3RW22 31



- Distance to other devices:
For unobstructed supply and extraction of cooling air, the vertical distance to other devices must not be less than the following values:

3RW22 21 to 3RW22 31: 200 mm

Horizontal distance for connection of the control leads only necessary for 3RW22 21 to 26.

| Type | a_1 | a_2 | b_1 | b_2 | c_1 | c_2 | c_3 | d_1 | d_2 | g_1 |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 3RW22 23 | 125 | 95 | 240 | 230 | 177.5 | 2 | 130 | 30 | 45 | 4.6 |
| 3RW22 25 | 125 | 95 | 240 | 230 | 177.5 | 2 | 130 | 30 | 45 | 4.6 |
| 3RW22 26 | 165 | 135 | 240 | 230 | 180 | 2 | 132.5 | 30 | 65 | 4.6 |
| 3RW22 27 | 205 | 175 | 280 | 270 | 180 | 2 | 132.5 | 50 | 85 | 4.6 |
| 3RW22 28 | 205 | 175 | 280 | 270 | 180 | 2 | 132.5 | 50 | 85 | 4.6 |
| 3RW22 30 | 222.5 | 185 | 290 | 275 | 225 | 2.5 | 175 | 55 | 94 | 6.6 |
| 3RW22 31 | 222.5 | 185 | 290 | 275 | 225 | 2.5 | 175 | 55 | 94 | 6.6 |

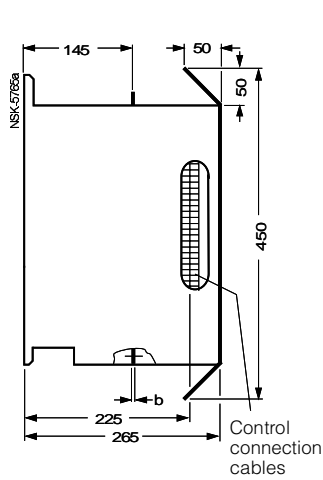
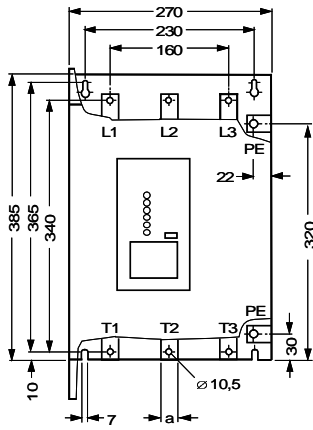
Solid-State Motor Controllers and Enclosures

SIKOSTART 3RW22

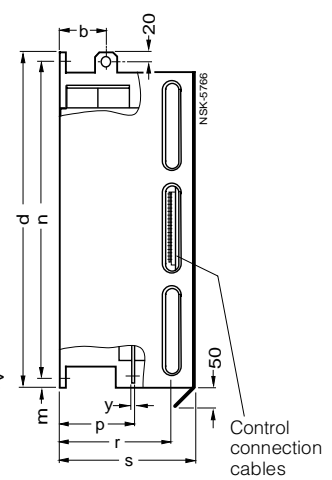
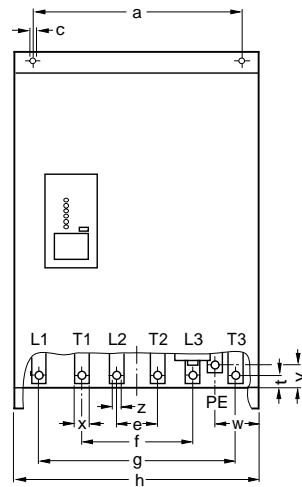
Dimensions

3RW22 34 to 3RW22 50 SIKOSTART solid-state motor controllers

3RW22 34 to 3RW22 41



3RW22 42 to 3RW22 50



| Type | a | b |
|----------------------|----|---|
| 3RW22 34 to 3RW22 36 | 20 | 3 |
| 3RW22 38 to 3RW22 41 | 25 | 5 |

Distance to other devices:
For unobstructed supply and extraction of cooling air, the vertical distance to other devices must not be less than the following values:

3RW22 34 to 3RW22 45: 200 mm
3RW22 47 and 3RW22 50: 400 mm

| Type | a | b | c | d | e | f | g | h | m | n |
|------------------------------------|-----|----|----|-----|----|-----|-----|-----|----|-----|
| 3RW22 42, 3RW22 43, 3RW22 45 | 400 | 90 | 11 | 605 | 80 | 210 | 370 | 465 | 15 | 570 |

| | | | | | | | | | | |
|----------|-----|-----|----|-----|-----|-----|-----|-----|----|-----|
| 3RW22 47 | 480 | 115 | 11 | 680 | 100 | 260 | 460 | 560 | 20 | 645 |
|----------|-----|-----|----|-----|-----|-----|-----|-----|----|-----|

| | | | | | | | | | | |
|-----------------------------|-----|-----|----|-----|-----|-----|-----|-----|----|-----|
| 3RW22 50, 3RW22 47-0DB16 | 520 | 115 | 13 | 825 | 105 | 275 | 485 | 600 | 20 | 790 |
|-----------------------------|-----|-----|----|-----|-----|-----|-----|-----|----|-----|

| Type | p | r | s | t | v | w | x | y | z |
|------------------------------------|-----|-----|-----|----|----|------|----|---|----|
| 3RW22 42, 3RW22 43, 3RW22 45 | 145 | 215 | 255 | 20 | 25 | 87,5 | 30 | 5 | 11 |

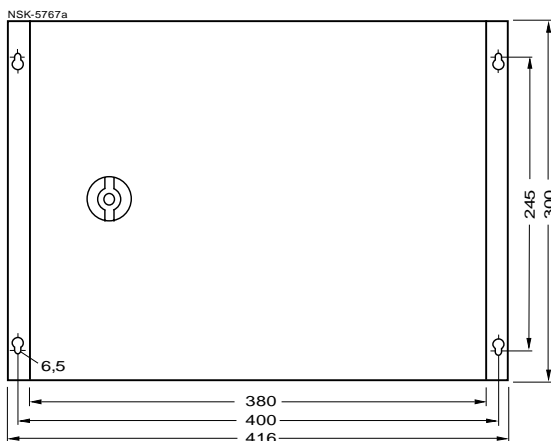
| | | | | | | | | | |
|----------|-----|-----|-----|----|----|-----|----|---|----|
| 3RW22 47 | 230 | 295 | 340 | 25 | 27 | 100 | 40 | 8 | 13 |
|----------|-----|-----|-----|----|----|-----|----|---|----|

| | | | | | | | | | |
|-----------------------------|-----|-----|-----|----|----|-----|----|----|----|
| 3RW22 50, 3RW22 47-0DB16 | 220 | 285 | 330 | 25 | 29 | 110 | 50 | 10 | 13 |
|-----------------------------|-----|-----|-----|----|----|-----|----|----|----|

Enclosures to degree of protection IP 54 for 3RW22 23 to 3RW22 31

3RW29 20-0AB00

Top view



View from below

