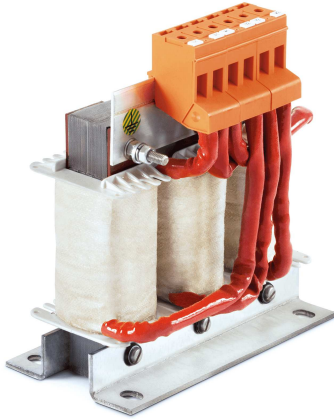


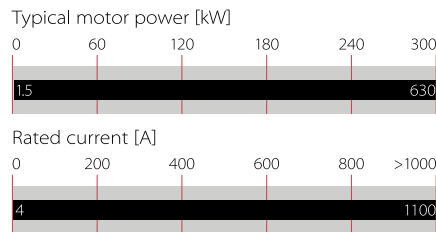
# Three-phase dv/dt Reactor for Efficient Motor Protection



- Reduction of drive output voltage dv/dt
- Reduction of motor temperature
- Increase of motor service life
- Compact and economic open frame design
- Standard catalog reactors up to 1100 A
- UL rated materials used



### Performance indicators



### Approvals



UL 508C up to 182 A. For use with AC or DC drives (power conversion equipment) only

### Features and benefits

- Efficient reduction of high output voltage dv/dt from IGBT motor drives
- Protection of motor coil insulation from premature aging and destruction
- Significantly increased service life of electric motors
- High reliability and secured production up time for mission critical applications
- Reduced converter pulse load
- Less interference propagation towards neighboring equipment of lines
- „Output filter“ with low impedance, ideal for processes requiring exceptional precision and reproducibility of movements
- Vacuum impregnation for reduced humming noise and high durability

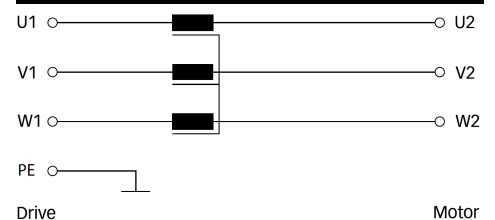
### Technical specifications

|  |  |
|--|--|
| <b>Maximum continuous operating voltage</b>      | 3 x 500/288 VAC  |
| <b>Motor frequency</b>                           | 60 Hz  |
| <b>Switching frequency</b>                       | 2 to 16 kHz  |
| <b>Rated currents</b>                            | 4 to 1100 A @ 40°C   |
| <b>Motor cable length</b>                        | 30 m max. @ 16 kHz (derating curve next page)  |
| <b>Impedance (uk)</b>                            | 0.8% @ 400 VAC, 50 Hz & rated current  |
| <b>Typical dv/dt reduction</b>                   | ≥factor 5  |
| <b>High potential test voltage</b>               | P → E 3000 VAC for 3 sec<br>P → P 3000 VAC for 3 sec   |
| <b>Protection category</b>                       | IP 00 (KL types according to VBG 4)  |
| <b>Overload capability</b>                       | 2 x rated current at switch on for 30 seconds<br>1.5 x rated current for 1 minute, once per hour |
| <b>Temperature range (operation and storage)</b> | -25°C to +100°C (25/100/21)  |
| <b>Insulation class</b>                          | T40/N (200°C) for ≤182 A types<br>T40/F (155°C) for ≥230 A types                                 |
| <b>Flammability corresponding to</b>             | UL 94 V-2 or better  |
| <b>Design corresponding to</b>                   | EN 61558-2-20 (VDE 0570-2-20), UL 508C, CSA C22.2 NO. 14   |
| <b>MTBF @ 40°C/400 V (Mil-HB-217F)</b>           | >500,000 hours   |

### Typical applications

- Servo drives
- Close loop vector drives
- Motor drive applications with short motor cables
- Machinery comprising servo or torque motors
- Robots
- Pick and place machines

### Typical electrical schematic



### Reactor selection table

| Reactor        | Rated current<br>@ 40°C | Typical motor<br>power rating* | Nominal<br>inductance | Typical<br>power loss** | Input/Output<br>connections   |   |   | Weight<br>Total |
|----------------|-------------------------|--------------------------------|-----------------------|-------------------------|---|---|---|-----------------|
|                | [A]                     | [kW]                           | [mH]                  | [W]                     |  |  |  | [kg]            |
| RWK 305-4-KL   | 4                       | 1.5                            | 1.47                  | 22                      | KL  |   |   | 1.2             |
| RWK 305-7.8-KL | 7.8                     | 3                              | 0.754                 | 25                      | KL  |   |   | 1.2             |
| RWK 305-10-KL  | 10                      | 4                              | 0.588                 | 30                      | KL  |   |   | 1.8             |
| RWK 305-14-KL  | 14                      | 5.5                            | 0.42                  | 34                      | KL  |   |   | 2.2             |
| RWK 305-17-KL  | 17                      | 7.5                            | 0.346                 | 38                      | KL  |   |   | 2.5             |
| RWK 305-24-KL  | 24                      | 11                             | 0.245                 | 45                      | KL  |   |   | 2.5             |
| RWK 305-32-KL  | 32                      | 15                             | 0.184                 | 55                      | KL  |   |   | 3.9             |
| RWK 305-45-KL  | 45                      | 22                             | 0.131                 | 60                      | KL  |   |   | 6.1             |
| RWK 305-60-KL  | 60                      | 30                             | 0.098                 | 65                      | KL  |   |   | 6.1             |
| RWK 305-72-KL  | 72                      | 37                             | 0.082                 | 70                      | KL  |   |   | 6.1             |
| RWK 305-90-KL  | 90                      | 45                             | 0.065                 | 75                      | KL  |   |   | 7.4             |
| RWK 305-110-KL | 110                     | 55                             | 0.053                 | 90                      | KL  |   |   | 8.2             |
| RWK 305-124-KS | 124                     | 55                             | 0.047                 | 110                     |   | KS  |   | 8.2             |
| RWK 305-143-KS | 143                     | 75                             | 0.041                 | 115                     |   | KS  |   | 10.7            |
| RWK 305-156-KS | 156                     | 75                             | 0.038                 | 120                     |   | KS  |   | 10.7            |
| RWK 305-170-KS | 170                     | 90                             | 0.035                 | 130                     |   | KS  |   | 10.7            |
| RWK 305-182-KS | 182                     | 90                             | 0.032                 | 140                     |   | KS  |   | 16              |
| RWK 305-230-KS | 230                     | 132                            | 0.026                 | 180                     |   | KS  |   | 22              |
| RWK 305-280-KS | 280                     | 160                            | 0.021                 | 220                     |   | KS  |   | 29              |
| RWK 305-330-KS | 330                     | 160                            | 0.018                 | 240                     |   | KS  |   | 32              |
| RWK 305-400-S  | 400                     | 200                            | 0.015                 | 330                     |   |   | S   | 34              |
| RWK 305-500-S  | 500                     | 250                            | 0.012                 | 340                     |   |   | S   | 35              |
| RWK 305-600-S  | 600                     | 355                            | 0.01                  | 380                     |   |   | S   | 37              |
| RWK 305-680-S  | 680                     | 400                            | 0.009                 | 410                     |   |   | S   | 38              |
| RWK 305-790-S  | 790                     | 450                            | 0.007                 | 590                     |   |   | S   | 43              |
| RWK 305-910-S  | 910                     | 500                            | 0.006                 | 740                     |   |   | S   | 49              |
| RWK 305-1100-S | 1100                    | 630                            | 0.005                 | 760                     |   |   | S   | 66              |

\* General purpose four-pole (1500 r/min) AC induction motor rated 400 V/50 Hz.

\*\* Exact value depends upon the motor cable type and length, switching frequency, motor frequency and further stray parameters within the system.

### Reactor derating

The maximum admissible motor cable length depends mainly on the switching frequency and the drive output voltage. The applicable value for a given application can be found in the derating curve below.



**Mechanical data**



## Dimensions

|                      | A   | B        | C        | D   | E   | F       | G                   |
|----------------------|-----|----------|----------|-----|-----|---------|---------------------|
| <b>4 and 7.8 A</b>   | 100 | max. 60  | max. 115 | 56  | 34  | 4.8 x 9 | 2.5 mm <sup>2</sup> |
| <b>10 A</b>          | 100 | max. 70  | max. 115 | 56  | 43  | 4.8 x 9 | 2.5 mm <sup>2</sup> |
| <b>14 A</b>          | 125 | max. 70  | max. 135 | 100 | 45  | 5 x 8   | 2.5 mm <sup>2</sup> |
| <b>17 A</b>          | 125 | max. 75  | max. 135 | 100 | 55  | 5 x 8   | 2.5 mm <sup>2</sup> |
| <b>24 A</b>          | 125 | max. 75  | max. 135 | 100 | 55  | 5 x 8   | 4 mm <sup>2</sup>   |
| <b>32 A</b>          | 155 | max. 95  | max. 170 | 130 | 56  | 8 x 12  | 10 mm <sup>2</sup>  |
| <b>45 A</b>          | 155 | max. 110 | max. 190 | 130 | 72  | 8 x 12  | 10 mm <sup>2</sup>  |
| <b>60 and 72 A</b>   | 155 | max. 125 | max. 190 | 130 | 70  | 8 x 12  | 16 mm <sup>2</sup>  |
| <b>90 A</b>          | 190 | max. 115 | max. 225 | 170 | 57  | 8 x 12  | 35 mm <sup>2</sup>  |
| <b>110 A</b>         | 190 | max. 130 | max. 220 | 170 | 67  | 8 x 12  | 35 mm <sup>2</sup>  |
| <b>124 A</b>         | 190 | max. 180 | max. 160 | 170 | 67  | 8 x 12  | Ø 8                 |
| <b>143 A</b>         | 190 | max. 180 | max. 160 | 170 | 77  | 8 x 12  | Ø 8                 |
| <b>156 AND 170 A</b> | 190 | max. 180 | max. 160 | 170 | 77  | 8 x 12  | Ø 10                |
| <b>182 A</b>         | 210 | max. 180 | max. 185 | 175 | 95  | 8 x 12  | Ø 10                |
| <b>230 A</b>         | 240 | 220      | 220      | 190 | 119 | 11 x 15 | Ø 12                |
| <b>280 A</b>         | 240 | 235      | 220      | 190 | 133 | 11 x 15 | Ø 12                |
| <b>330 A</b>         | 240 | 240      | 220      | 190 | 135 | 11 x 15 | Ø 12                |
| <b>400 and 500 A</b> | 240 | 220      | 325      | 190 | 119 | 11 x 15 | Ø 11                |
| <b>600 and 680 A</b> | 240 | 230      | 325      | 190 | 128 | 11 x 15 | Ø 14                |
| <b>790 A</b>         | 300 | 218      | 355      | 240 | 136 | 11 x 15 | 2 x Ø 11            |
| <b>910 A</b>         | 300 | 228      | 355      | 240 | 148 | 11 x 15 | 2 x Ø 11            |
| <b>1100 A</b>        | 360 | 250      | 380      | 310 | 144 | 11 x 15 | 2 x Ø 11            |

All dimensions in mm; 1 inch = 25.4 mm  
Tolerances according: ISO 2768-m / EN 22768-m

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connectors.



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