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

<table>
<thead>
<tr>
<th>Typical motor power [kW]</th>
<th>0</th>
<th>60</th>
<th>120</th>
<th>180</th>
<th>240</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current [A]</td>
<td></td>
<td></td>
<td></td>
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</table>

### Technical specifications

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

### 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

### 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

```
Drive  | Motor
U1    | U2
V1    | V2
W1    | W2
PE    |        
```
## Reactor selection table

<table>
<thead>
<tr>
<th>Reactor</th>
<th>Rated current @ 40°C</th>
<th>Typical motor power rating*</th>
<th>Nominal inductance</th>
<th>Typical power loss**</th>
<th>Input/Output connections</th>
<th>Weight Total</th>
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<tbody>
<tr>
<td>RWK 305-4-KL</td>
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</table>

* 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

4 to 45 A types

60 to 110 A types

124 to 330 A types

400 to 1100 A types
## Dimensions

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<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>max. 135</td>
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<td>24 A</td>
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<td>max. 160</td>
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<td>77</td>
<td>8 x 12</td>
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<td>250</td>
<td>380</td>
<td>310</td>
<td>144</td>
<td>11 x 15</td>
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</tbody>
</table>

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

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