Thermal Overload Relays
Electronic Overload Relays
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Overview

Thermal Overload relays

<table>
<thead>
<tr>
<th>Type</th>
<th>Setting ranges from to</th>
<th>Mounting possibilities onto contactor</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>T7DU</td>
<td>0.1 ... 0.16 A 9.0 ... 12.0 A</td>
<td>B6, VB6, VB6A, BC6, VBC6, VBC6A, B7, VB7, VB7A, BC7, VBC7, VBC7A</td>
<td>no mounting kit required, direct mounting</td>
</tr>
<tr>
<td>TA25DU</td>
<td>0.1 ... 0.16 A 24 ... 32 A</td>
<td>A9 ... A40 AE9 ... AE40 BC9 ... BC30 TBC9 ... TBC30</td>
<td>–</td>
</tr>
<tr>
<td>TA42DU</td>
<td>18 A 29 ... 42 A</td>
<td>A30, A40 AE30, AE40</td>
<td>–</td>
</tr>
<tr>
<td>TA75DU</td>
<td>18 A 60 ... 80 A</td>
<td>A50 ... A75 AF50 ... AF75 AE50 ... AE75 TAE50 ... TAE75</td>
<td>–</td>
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</table>

Electronic Overload relays

<table>
<thead>
<tr>
<th>Type</th>
<th>Setting ranges from to</th>
<th>Mounting possibilities onto contactor</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>E16DU</td>
<td>0.1 ... 0.32 A 5.7 ... 18.9 A</td>
<td>B6,B7 A9...A16</td>
<td>no mounting kit required</td>
</tr>
<tr>
<td>UMC22-FBP</td>
<td>0.2 A 63 A</td>
<td>A0...A75 bigger sizes with transformer</td>
<td>–</td>
</tr>
</tbody>
</table>

Electronic overload relays for special applications

<table>
<thead>
<tr>
<th>For motors with heavy starting</th>
<th>For EEx e motor protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>–</td>
<td>TA25DU ... V1000</td>
</tr>
<tr>
<td>–</td>
<td>TA42DU ... V1000</td>
</tr>
<tr>
<td>–</td>
<td>TA75DU ... V1000</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Main terminal shroud</th>
<th>Separate mounting kit</th>
<th>Electronic overload relays for special applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>terminal shroud integrated</td>
<td>DB16E</td>
<td>class 10, 20, 30 adjustable</td>
</tr>
<tr>
<td>EEx e/ATEX</td>
<td>–</td>
<td>class 5,10, 20, 30 adjustable</td>
</tr>
</tbody>
</table>
## Overview

### Thermal Overload Relays TA...

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA80DU</td>
<td>29 A, 60 A, 80 A</td>
</tr>
<tr>
<td>TA110DU</td>
<td>65 A, 80 A, 110 A</td>
</tr>
<tr>
<td>TA200DU</td>
<td>80 A, 200 A</td>
</tr>
<tr>
<td>T900DU/SU</td>
<td>265 A, 375 A, 610 A, 850 A</td>
</tr>
</tbody>
</table>

#### Ratings and Options:
- A95, A110, AF95, AF110, AE95, AE110, TAE95, TAE110
- A145, A185, AF145, AF185
- A210, A300, AF210, AF300

- no mounting kit required, direct mounting
- DT450/A, AT900/EH
- DS25-A, DR25-A

### Electronic Overload Relays E...

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>E200DU</td>
<td>60 A, 200 A</td>
</tr>
<tr>
<td>E320DU</td>
<td>100 A, 320 A</td>
</tr>
<tr>
<td>E500DU</td>
<td>150 A, 500 A</td>
</tr>
<tr>
<td>E800DU</td>
<td>250 A, 800 A</td>
</tr>
</tbody>
</table>

#### Ratings and Options:
- A145, A185, AF145, AF185
- A210, A260, A300, AF210, AF260, AF300
- AF400, AF460
- AF580, AF750

- no mounting kit required, direct mounting
- DT500 / AF460, DT800 / AF750

### Class 10, 20, 30 Adjustable

- EEEx e/ATEX
## Motor protection
### Selection of the protection device

### Motor protection - General aspects
Selection of an adequate motor protection is of great importance with regard to the operational reliability and service life of a motor.

The effectiveness of the available motor protection devices depends on the range of application.

The following shows a summary which facilitates the correct choice. Since no general rules exist, we will gladly give you further advice in special cases such as heavy starting.

Protection against:
- overload
- phase failure imbalance
- phase loss

### Efficiency

<table>
<thead>
<tr>
<th>Reason for unwanted overloading of the motor winding</th>
<th>Fuses</th>
<th>Overload relays with protection device in case of phase failure</th>
<th>Protection device, temperature-dependent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Current overloading</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Rated duty types S1-S8 to IEC 34-1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Operation when starting, braking, reversing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Operation at starting rates Schaltfrequenz 15 ops./h</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Locked motor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Overload at phase failure</td>
<td>☐</td>
<td>⬤</td>
<td>☐</td>
</tr>
<tr>
<td>7. Over-/undervoltage in supply mains</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. Variation of frequency in supply mains</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. Increased ambient temperature</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. External heating of the motor (e.g.: bearing heating)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11. Obstruction to motor cooling</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

**Efficiency of protection device:**
- ☐ not effective
- ☐ partly effective
- ☐ fully effective

### Note on fuses
Fuses do not protect a motor against overload. They serve only as short-circuit protection of switchgear and cables.

For direct starting, fuses of around 1.5 to 2.5 times the rated current should be used. A fuse must withstand 1.3 times its rated current for a sustained period. This would entail thermal overload of the motor. In order to protect motors against short-circuits, it is advisable to use fuses aM in conjunction with the thermal overload relay. The specifications in relation to short-circuit protection for contactors and overload relays must be noted when selecting the rating of fuses or circuit-breakers.
Motor protection
with FieldBusPlug devices

The FieldBusPlug concept
This new ABB product family is a communication device range with switching and automation components which can be combined easily with standard fieldbus systems.

One device for all fieldbus types
Each complete device, and each function module within the product family, has a fieldbus-neutral interface. A specially prefabricated connection cable establishes the communications connection with its bus-specific plug interface. In this way, flexibility, transparency and reliability in the process are achieved. The connecting, operating and diagnostic elements are placed at the front of all devices providing increased ease of installation.

The components
The fieldbus plug (FieldBusPlug) is the central communications element of the new product family. It connects devices and device combinations of different functions and characteristics as well as simple sensors with automation devices. A great variety of switching and automation modules belong to the product family separated into similar performance characteristics, e.g. devices for motor protection, motor control and standard sensors.
Thermal overload relays
T7DU, TA25DU, TA25DU... V1000, TA42DU, TA42DU... V1000
Ordering details

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>Max. fuse</th>
<th>Price / piece</th>
<th>Weight per piece kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A ... A</td>
<td>See page 20 aM gL/gG A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T7DU 0.16</td>
<td>1SAZ 11 301 R 0001</td>
<td>0.1 ... 0.16</td>
<td>0.5</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 0.24</td>
<td>1SAZ 11 301 R 0002</td>
<td>0.16 ... 0.24</td>
<td>1</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 0.4</td>
<td>1SAZ 11 301 R 0003</td>
<td>0.24 ... 0.4</td>
<td>2</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 0.6</td>
<td>1SAZ 11 301 R 0004</td>
<td>0.4 ... 0.6</td>
<td>2</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 1.0</td>
<td>1SAZ 11 301 R 0005</td>
<td>0.6 ... 1.0</td>
<td>4</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 1.6</td>
<td>1SAZ 11 301 R 0006</td>
<td>1.0 ... 1.6</td>
<td>6</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 2.4</td>
<td>1SAZ 11 301 R 0007</td>
<td>1.6 ... 2.4</td>
<td>6</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 4.0</td>
<td>1SAZ 11 301 R 0008</td>
<td>2.4 ... 4.0</td>
<td>10</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 6.0</td>
<td>1SAZ 11 301 R 0009</td>
<td>4.0 ... 6.0</td>
<td>10</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU 9.0</td>
<td>1SAZ 11 301 R 0010</td>
<td>6.0 ... 9.0</td>
<td>10</td>
<td>1</td>
<td>0.070</td>
</tr>
<tr>
<td>T7DU12.0</td>
<td>1SAZ 11 301 R 0011</td>
<td>9.0 ... 12.0</td>
<td>20</td>
<td>1</td>
<td>0.070</td>
</tr>
</tbody>
</table>

TA25DU for contactors A9 ... A40 and BC9 ... BC30

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>Max. fuse</th>
<th>Price / piece</th>
<th>Weight per piece kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A ... A</td>
<td>See page 20 aM gL/gG A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA25DU 0.16</td>
<td>1SAZ 21 1201 R1005</td>
<td>0.1 ... 0.16</td>
<td>0.5</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 0.25</td>
<td>1SAZ 21 1201 R1009</td>
<td>0.16 ... 0.25</td>
<td>0.63</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 0.4</td>
<td>1SAZ 21 1201 R1013</td>
<td>0.25 ... 0.4</td>
<td>1.25</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 0.63</td>
<td>1SAZ 21 1201 R1017</td>
<td>0.4 ... 0.63</td>
<td>2</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 1.0</td>
<td>1SAZ 21 1201 R1021</td>
<td>0.63 ... 2</td>
<td>4</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 1.4</td>
<td>1SAZ 21 1201 R1023</td>
<td>1.0 ... 1.4</td>
<td>4</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 1.8</td>
<td>1SAZ 21 1201 R1025</td>
<td>1.3 ... 1.8</td>
<td>4</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 2.4</td>
<td>1SAZ 21 1201 R1028</td>
<td>1.7 ... 2.4</td>
<td>4</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 3.1</td>
<td>1SAZ 21 1201 R1031</td>
<td>2.2 ... 3.1</td>
<td>10</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 4.0</td>
<td>1SAZ 21 1201 R1033</td>
<td>2.8 ... 4.0</td>
<td>10</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 5.0</td>
<td>1SAZ 21 1201 R1035</td>
<td>3.5 ... 5.0</td>
<td>10</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 6.5</td>
<td>1SAZ 21 1201 R1038</td>
<td>4.5 ... 6.5</td>
<td>10</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 8.5</td>
<td>1SAZ 21 1201 R1040</td>
<td>6.0 ... 8.5</td>
<td>20</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 11</td>
<td>1SAZ 21 1201 R1043</td>
<td>7.5 ... 11</td>
<td>25</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 14</td>
<td>1SAZ 21 1201 R1045</td>
<td>10 ... 14</td>
<td>25</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 19</td>
<td>1SAZ 21 1201 R1047</td>
<td>13 ... 19</td>
<td>35</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 25</td>
<td>1SAZ 21 1201 R1051</td>
<td>18 ... 25</td>
<td>50</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>TA25DU 32</td>
<td>1SAZ 21 1201 R1053</td>
<td>24 ... 32</td>
<td>60</td>
<td>1</td>
<td>0.170</td>
</tr>
</tbody>
</table>

(1) With terminal block DX25: 1 x 16 mm²

TA42DU for contactors A30, A40 and BC30

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>Max. fuse</th>
<th>Price / piece</th>
<th>Weight per piece kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A ... A</td>
<td>See page 20 aM gL/gG A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA42DU 25</td>
<td>1SAZ 31 1201 R1001</td>
<td>18 ... 25</td>
<td>50</td>
<td>1</td>
<td>0.330</td>
</tr>
<tr>
<td>TA42DU 32</td>
<td>1SAZ 31 1201 R1002</td>
<td>22 ... 32</td>
<td>60</td>
<td>1</td>
<td>0.330</td>
</tr>
<tr>
<td>TA42DU 42</td>
<td>1SAZ 31 1201 R1003</td>
<td>29 ... 42</td>
<td>100</td>
<td>1</td>
<td>0.330</td>
</tr>
</tbody>
</table>

(1) With terminal block DX25: 1 x 16 mm²
# Thermal overload relays

**TA75DU, TA80DU, TA110DU, TA200DU**

## Ordering details

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>Max. fuse</th>
<th>Price / Pack-</th>
<th>Weight / pack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>am A</td>
<td>gl/G A</td>
<td>piece</td>
</tr>
<tr>
<td>TA75DU for contactors A50 ... A75 and AE50 ... AE75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA75DU 25</td>
<td>1SAZ 32 1201 R1001</td>
<td>18 ... 25</td>
<td>50</td>
<td>63</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 32</td>
<td>1SAZ 32 1201 R1002</td>
<td>22 ... 32</td>
<td>63</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 42</td>
<td>1SAZ 32 1201 R1003</td>
<td>29 ... 42</td>
<td>80</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 52</td>
<td>1SAZ 32 1201 R1004</td>
<td>36 ... 52</td>
<td>100</td>
<td>125</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 63</td>
<td>1SAZ 32 1201 R1005</td>
<td>45 ... 63</td>
<td>125</td>
<td>160</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 80</td>
<td>1SAZ 32 1201 R1006</td>
<td>60 ... 80</td>
<td>160</td>
<td>200</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU for contactors A50 ... A75 and AE50 ... AE75 and V1000 (EEx e)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA75DU 25</td>
<td>V1000 1SAZ 33 1301 R1001</td>
<td>18 ... 25</td>
<td>50</td>
<td>63</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 32</td>
<td>V1000 1SAZ 33 1301 R1002</td>
<td>22 ... 32</td>
<td>63</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 42</td>
<td>V1000 1SAZ 33 1301 R1003</td>
<td>29 ... 42</td>
<td>80</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 52</td>
<td>V1000 1SAZ 33 1301 R1004</td>
<td>36 ... 52</td>
<td>100</td>
<td>125</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 63</td>
<td>V1000 1SAZ 33 1301 R1005</td>
<td>45 ... 63</td>
<td>125</td>
<td>160</td>
<td>1</td>
</tr>
<tr>
<td>TA75DU 80</td>
<td>V1000 1SAZ 33 1301 R1006</td>
<td>60 ... 80</td>
<td>160</td>
<td>200</td>
<td>1</td>
</tr>
<tr>
<td>TA80DU for contactors A95, A110, AE95 and AE110</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA80DU 42</td>
<td>1SAZ 33 1201 R1003</td>
<td>29 ... 42</td>
<td>80</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>TA80DU 52</td>
<td>1SAZ 33 1201 R1004</td>
<td>36 ... 52</td>
<td>100</td>
<td>125</td>
<td>1</td>
</tr>
<tr>
<td>TA80DU 63</td>
<td>1SAZ 33 1201 R1005</td>
<td>45 ... 63</td>
<td>125</td>
<td>160</td>
<td>1</td>
</tr>
<tr>
<td>TA80DU 80</td>
<td>1SAZ 33 1201 R1006</td>
<td>60 ... 80</td>
<td>160</td>
<td>200</td>
<td>1</td>
</tr>
<tr>
<td>TA80DU for contactors A95, A110, AE95 and AE110 and V1000 (EEx e)</td>
<td></td>
<td></td>
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<tr>
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<td>V1000 1SAZ 33 1301 R1003</td>
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<tr>
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<tr>
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<td>V1000 1SAZ 33 1301 R1006</td>
<td>60 ... 80</td>
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<td>TA110DU for contactors A95, A110, AE95 and AE110</td>
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<td>TA110DU 90</td>
<td>1SAZ 41 1201 R1001</td>
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<tr>
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<td>1SAZ 41 1201 R1002</td>
<td>80 ... 110</td>
<td>200</td>
<td>224</td>
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<td>TA110DU for contactors A95, A110, AE95 and AE110 and V1000 (EEx e)</td>
<td></td>
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<td>TA110DU 90</td>
<td>V1000 1SAZ 41 1301 R1001</td>
<td>65 ... 90</td>
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<td>200</td>
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<tr>
<td>TA110DU 110</td>
<td>V1000 1SAZ 41 1301 R1002</td>
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</table>

## Normal starting time class 10 A

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<tr>
<th>Type</th>
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<th>For contactor</th>
<th>Price / Pack-</th>
<th>Weight / pack</th>
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<tr>
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<td>A</td>
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<td>66 ... 90</td>
<td>A145, 185</td>
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<tr>
<td>TA200DU 110</td>
<td>1SAZ 421 201 R1002</td>
<td>80 ... 110</td>
<td>A145, 185</td>
<td>0.750</td>
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<tr>
<td>TA200DU 150</td>
<td>1SAZ 421 201 R1004</td>
<td>110 ... 150</td>
<td>A145, 185</td>
<td>0.750</td>
<td></td>
</tr>
<tr>
<td>TA200DU 175</td>
<td>1SAZ 421 201 R1005</td>
<td>130 ... 175</td>
<td>A145, 185</td>
<td>0.750</td>
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<tr>
<td>TA200DU 200</td>
<td>1SAZ 421 201 R1006</td>
<td>150 ... 200</td>
<td>A145, 185</td>
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## Normal starting time class 10 A, V1000 (EEx e)

<table>
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<th>For contactor</th>
<th>Price / Pack-</th>
<th>Weight / pack</th>
</tr>
</thead>
<tbody>
<tr>
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<td>A ... A</td>
<td>A</td>
<td>unit kg</td>
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<tr>
<td>TA200DU 110</td>
<td>V1000 1SAZ 421 301 R1002</td>
<td>80 ... 110</td>
<td>A145, 185</td>
<td>0.750</td>
<td></td>
</tr>
<tr>
<td>TA200DU 130</td>
<td>V1000 1SAZ 421 301 R1003</td>
<td>100 ... 135</td>
<td>A145, 185</td>
<td>0.750</td>
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</tr>
<tr>
<td>TA200DU 150</td>
<td>V1000 1SAZ 421 301 R1004</td>
<td>110 ... 150</td>
<td>A145, 185</td>
<td>0.750</td>
<td></td>
</tr>
<tr>
<td>TA200DU 175</td>
<td>V1000 1SAZ 421 301 R1005</td>
<td>130 ... 175</td>
<td>A145, 185</td>
<td>0.750</td>
<td></td>
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<tr>
<td>TA200DU 200</td>
<td>V1000 1SAZ 421 301 R1006</td>
<td>150 ... 200</td>
<td>A145, 185</td>
<td>0.750</td>
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</table>

## Terminal shroud for TA200

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>Price / Pack-</th>
<th>Weight / pack</th>
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<tbody>
<tr>
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<td>A ... A</td>
<td>A</td>
<td>unit kg</td>
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<td>LT200/A</td>
<td>1SAZ 401 901 R1001</td>
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</table>
# Thermal overload relays

**TA450DU/SU, T900DU/SU**

## Ordering details

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>For contactor</th>
<th>Price / piece</th>
<th>Packing unit</th>
<th>Weight / piece</th>
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</thead>
<tbody>
<tr>
<td><strong>Normal starting time class 10 A</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TA450DU 185</td>
<td>1SAZ 511 201 R1001</td>
<td>130 ... 185</td>
<td>A 210, 260, 300</td>
<td>1.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA450DU 235</td>
<td>1SAZ 511 201 R1002</td>
<td>165 ... 235</td>
<td>A 210, 260, 300</td>
<td>1.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA450DU 310</td>
<td>1SAZ 511 201 R1003</td>
<td>220 ... 310</td>
<td>A 210, 260, 300</td>
<td>1.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Normal starting time class 10 A, V1000 (EExe)</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>TA450DU 185 V1000</td>
<td>1SAZ 511 301 R1001</td>
<td>130 ... 185</td>
<td>A 210, 260, 300</td>
<td>1.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA450DU 235 V1000</td>
<td>1SAZ 511 301 R1002</td>
<td>165 ... 235</td>
<td>A 210, 260, 300</td>
<td>1.500</td>
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<tr>
<td>TA450DU 310 V1000</td>
<td>1SAZ 511 301 R1003</td>
<td>220 ... 310</td>
<td>A 210, 260, 300</td>
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<td><strong>Long starting time class 30</strong></td>
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<tr>
<td>TA450SU 60</td>
<td>1SAZ 611 201 R1005</td>
<td>40 ... 60</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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<tr>
<td>TA450SU 80</td>
<td>1SAZ 611 201 R1006</td>
<td>55 ... 80</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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<td></td>
</tr>
<tr>
<td>TA450SU 105</td>
<td>1SAZ 611 201 R1007</td>
<td>70 ... 105</td>
<td>A 145 ... 300</td>
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<tr>
<td>TA450SU 140</td>
<td>1SAZ 611 201 R1008</td>
<td>95 ... 140</td>
<td>A 145 ... 300</td>
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<tr>
<td>TA450SU 185</td>
<td>1SAZ 611 201 R1001</td>
<td>130 ... 185</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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<tr>
<td>TA450SU 235</td>
<td>1SAZ 611 201 R1002</td>
<td>165 ... 235</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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</tr>
<tr>
<td>TA450SU 310</td>
<td>1SAZ 611 201 R1003</td>
<td>220 ... 310</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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<td><strong>Long starting time class 30, V1000 (EExe)</strong></td>
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<td>TA450SU 60 V1000</td>
<td>1SAZ 611 301 R1005</td>
<td>40 ... 60</td>
<td>A 145 ... 300</td>
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<td>TA450SU 80 V1000</td>
<td>1SAZ 611 301 R1006</td>
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<td>A 145 ... 300</td>
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<tr>
<td>TA450SU 105 V1000</td>
<td>1SAZ 611 301 R1007</td>
<td>70 ... 105</td>
<td>A 145 ... 300</td>
<td>1.500</td>
<td></td>
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<tr>
<td>TA450SU 140 V1000</td>
<td>1SAZ 611 301 R1008</td>
<td>95 ... 140</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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<tr>
<td>TA450SU 185 V1000</td>
<td>1SAZ 611 301 R1001</td>
<td>130 ... 185</td>
<td>A 145 ... 300</td>
<td>1.500</td>
<td></td>
<td></td>
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<tr>
<td>TA450SU 235 V1000</td>
<td>1SAZ 611 301 R1002</td>
<td>165 ... 235</td>
<td>A 145 ... 300</td>
<td>1.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA450SU 310 V1000</td>
<td>1SAZ 611 301 R1003</td>
<td>220 ... 310</td>
<td>A 145 ... 300</td>
<td>1.500</td>
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<tr>
<td><strong>Mounting kits for TA450 overload relays</strong></td>
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<td>DT450/A185</td>
<td>1SAZ 501 901 R1001</td>
<td>A 145, 185</td>
<td>A 260, 300</td>
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<tr>
<td>DT450/A300</td>
<td>1SAZ 501 902 R1001</td>
<td>A 145, 185</td>
<td>A 260, 300</td>
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<tr>
<td><strong>Type</strong></td>
<td><strong>Order code</strong></td>
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<td><strong>Max.fuse</strong></td>
<td><strong>Price / piece</strong></td>
<td><strong>Packing unit</strong></td>
<td><strong>Weight / piece</strong></td>
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<td>T900DU</td>
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<tr>
<td>T900DU 375</td>
<td>GJZ 602 1001 R 0001</td>
<td>265 ... 375</td>
<td>500</td>
<td>1 3.000</td>
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<tr>
<td>T900DU 500</td>
<td>GJZ 602 1001 R 0002</td>
<td>355 ... 500</td>
<td>800</td>
<td>1 3.000</td>
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<tr>
<td>T900DU 650</td>
<td>GJZ 602 1001 R 0003</td>
<td>465 ... 650</td>
<td>1000</td>
<td>1 3.000</td>
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<tr>
<td>T900DU 850</td>
<td>GJZ 602 1001 R 0004</td>
<td>610 ... 850</td>
<td>1250</td>
<td>1 3.000</td>
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<tr>
<td><strong>T900SU</strong></td>
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<tr>
<td>T900SU 375</td>
<td>GJZ 612 1001 R 0001</td>
<td>265 ... 375</td>
<td>500</td>
<td>1 1.500</td>
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<tr>
<td>T900SU 500</td>
<td>GJZ 612 1001 R 0002</td>
<td>355 ... 500</td>
<td>800</td>
<td>1 1.500</td>
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<tr>
<td>T900SU 650</td>
<td>GJZ 612 1001 R 0003</td>
<td>465 ... 650</td>
<td>1000</td>
<td>1 1.500</td>
<td></td>
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<tr>
<td>T900SU 850</td>
<td>GJZ 612 1001 R 0004</td>
<td>610 ... 850</td>
<td>1250</td>
<td>1 1.500</td>
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</table>
Thermal overload relays T...
Technical data

Load rating of auxiliary contacts

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<th>Type</th>
<th>T7DU</th>
<th>T900aDU/SU</th>
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<tbody>
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<td>Auxiliary switch</td>
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<td></td>
</tr>
<tr>
<td>Rated operating voltage $U_e$</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Rated thermal current $I_{th}$</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rated operating current $I_e$</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>at AC 15 to 240 V</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>at AC 15 to 440 V</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>at AC 15 to 500 V</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>at DC 13 to 24 V</td>
<td>-</td>
<td>1.25</td>
</tr>
<tr>
<td>to 60 V</td>
<td>-</td>
<td>0.50</td>
</tr>
<tr>
<td>to 120 V</td>
<td>-</td>
<td>0.25</td>
</tr>
<tr>
<td>to 250 V</td>
<td>-</td>
<td>0.12</td>
</tr>
<tr>
<td>Maximum potential difference</td>
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</tr>
<tr>
<td>between the NO and NC contacts</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Short-circuit protection $gL/gG$</td>
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<td>4</td>
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<tr>
<td>STOTZ circuit-breaker type:</td>
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<tr>
<td>S 271</td>
<td>A</td>
<td>K1</td>
</tr>
<tr>
<td>S 281</td>
<td>A</td>
<td>K1</td>
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</table>

Function of the thermal overload relays TA25DU ... T900DU/SU

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<tr>
<th>Press blue button</th>
<th>Contacts</th>
<th>Manual</th>
<th>Relay tripped</th>
<th>Relay not tripped</th>
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<tbody>
<tr>
<td></td>
<td>NC 95-96</td>
<td>open</td>
<td>closed</td>
<td>closed</td>
</tr>
<tr>
<td></td>
<td>NO 97-98</td>
<td>closed</td>
<td>open</td>
<td>open</td>
</tr>
<tr>
<td>Button R</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NC 95-96</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>NO 97-98</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Button R/O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NC 95-96</td>
<td>-</td>
<td>opens when</td>
<td>opens when</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Button’s pressed</td>
<td>Button’s released</td>
</tr>
<tr>
<td></td>
<td>NO 97-98</td>
<td>-</td>
<td>opens when</td>
<td>opens when</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Button’s released</td>
<td>Button’s released</td>
</tr>
</tbody>
</table>

Position of the connection terminals

TA25DU, TA42DU, TA75DU, TA80DU
TA200DU
TA450DU/SU, T900DU/SU
Thermal overload relays

Accessories

Ordering details

Mounting kits for mounting thermal overload relays onto contactors
Relays TA25DU to TA200DU can be mounted onto the contactors without mounting kits.

Mounting kits for single set-ups

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>for thermal overload relay</th>
<th>Mounting onto</th>
<th>Price / piece</th>
<th>Packing unit price</th>
<th>Weight / piece kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB25/25 A</td>
<td>1SAZ 201 108 R 0001</td>
<td>TA25DU 25 A snapped onto</td>
<td>1</td>
<td>0.050</td>
<td></td>
<td>0.075</td>
</tr>
<tr>
<td>DB25/32 A</td>
<td>1SAZ 201 108 R 0002</td>
<td>TA25DU 32 A snapped onto</td>
<td>1</td>
<td>0.050</td>
<td></td>
<td>0.075</td>
</tr>
<tr>
<td>DB80</td>
<td>1SAZ 301 110 R 0001</td>
<td>TA42DU 35 mm onto</td>
<td>1</td>
<td>0.170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB200</td>
<td>1SAZ 401 110 R 0001</td>
<td>TA110DU and TA200DU</td>
<td>1</td>
<td>0.230</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FASTON terminal blocks LC ...

Description
The FASTON terminal blocks are supplied as complete mounting kits for thermal overload relays TA25DU and as mounting kit for single set-ups DB25... A maximum of 2 6.3 mm tab connectors or 2 2.8 mm tab connectors can be connected per pole to the FASTON terminal blocks.

⚠️ The connection points are safe from finger-touch and safe from touch by the back of the hand to VDE 0106, Part 100.

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Mounting onto :</th>
<th>Price / piece</th>
<th>Packing unit price</th>
<th>Weight / piece kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC30-T</td>
<td>GJL 280 1912 R 0001</td>
<td>Relay TA25DU</td>
<td>1</td>
<td>0.021</td>
<td></td>
</tr>
<tr>
<td>LC26-B1</td>
<td>GJL 280 1912 R 0004</td>
<td>Mounting kit DB25/25 A + DB25/32 A</td>
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<td>0.015</td>
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</tbody>
</table>

Terminal block 10 mm²

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>for contactor overload relays</th>
<th>Price / piece</th>
<th>Pack. unit price</th>
<th>Weight / piece kg</th>
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</thead>
<tbody>
<tr>
<td>DX25</td>
<td>1SAZ 20 1307 R 0002</td>
<td>TA25DU ≤ 25 A and DB25/25 A</td>
<td>1</td>
<td>0.030</td>
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</tr>
</tbody>
</table>

Identification markers for thermal overload relays TA25DU – T900DU

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Description</th>
<th>Pack.</th>
<th>Weight / piece</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA50</td>
<td>FPTN 472 625 R 0001</td>
<td>50 label carriers</td>
<td>Bag</td>
<td>0.100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 transparent protection covers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 non-adhesive labels</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>75 self-adhesive labels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thermal overload relays
Accessories
Ordering details

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Mounting onto:</th>
<th>Price / pack</th>
<th>Pack. unit</th>
<th>Weight / pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal shroud (for protection against direct contact). Contactor terminals and TOL terminals are covered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT900/700</td>
<td>GJZ 520 1935 R 0002</td>
<td>T900 DU/SU + EH370/550/700</td>
<td></td>
<td></td>
<td>0.450</td>
</tr>
<tr>
<td>LT900/800</td>
<td>GJZ 520 1937 R 0002</td>
<td>T900DU/SU + EH800</td>
<td></td>
<td></td>
<td>0.600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Price / pack</th>
<th>Pack. unit</th>
<th>Weight / pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT200/A</td>
<td>1SAZ 401 901 R1001</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>For relay / description</th>
<th>Price / pack</th>
<th>Pack. unit</th>
<th>Weight / pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote tripping control</td>
<td>The coil serves to remotely trip the thermal overload relays TA25DU, T450/900DU/SU. The coil is not approved for continuous operation. Pulse duration 0.2 ... 0.35 s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DS25-A-24</td>
<td>1SAZ 201 501 R0001</td>
<td>24 V</td>
<td>1</td>
<td></td>
<td>0.100</td>
</tr>
<tr>
<td>DS25-A-48</td>
<td>1SAZ 201 501 R0002</td>
<td>48 V</td>
<td>1</td>
<td></td>
<td>0.100</td>
</tr>
<tr>
<td>DS25-A-110</td>
<td>1SAZ 201 501 R0003</td>
<td>110 V</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td>DS25-A-220/380</td>
<td>1SAZ 201 501 R0005</td>
<td>220/380 V</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td>DS25-A-500</td>
<td>1SAZ 201 501 R0006</td>
<td>500 V</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>For relay / description</th>
<th>Price / pack</th>
<th>Pack. unit</th>
<th>Weight / pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote reset coil</td>
<td>The coil serves to reset the thermal overload relays TA25DU, T450/900DU/SU. The overload relay must be set to “manual reset” for this purpose. The coil is not approved for continuous operation. Pulse duration 0.2 ... 0.35 s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR25-A-24</td>
<td>1SAZ 201 504 R0001</td>
<td>24 V</td>
<td>1</td>
<td></td>
<td>0.100</td>
</tr>
<tr>
<td>DR25-A-48</td>
<td>1SAZ 201 504 R0002</td>
<td>48 V</td>
<td>1</td>
<td></td>
<td>0.100</td>
</tr>
<tr>
<td>DR25-A-110</td>
<td>1SAZ 201 504 R0003</td>
<td>110 V</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td>DR25-A-220/380</td>
<td>1SAZ 201 504 R0005</td>
<td>220/380 V</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td>DR25-A-500</td>
<td>1SAZ 201 504 R0006</td>
<td>500 V</td>
<td>1</td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

Circuit diagrams

TA25DU with DS25-A

TA25DU with DR25-A

ABB STOTZ-KONTAKT GmbH
### Electronic overload relays E16DU/UMC22

#### Ordering details

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range (A)</th>
<th>Max. fuse (A)</th>
<th>Price / Pack. unit (piece)</th>
<th>Weight / piece (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E16DU tripping class 10 for contactors B6, B7, BC6, BC7, B6S, B7S, A9, A12, A16</td>
<td>1SAX 111 201 R 0001</td>
<td>0.1 ... 0.32</td>
<td>1</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>E16DU 0.32 10</td>
<td>1SAX 111 201 R 0002</td>
<td>0.3 ... 1.00</td>
<td>4</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>E16DU 2.7 10</td>
<td>1SAX 111 201 R 0003</td>
<td>0.9 ... 2.70</td>
<td>10</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>E16DU 6.3 10</td>
<td>1SAX 111 201 R 0004</td>
<td>2.0 ... 6.30</td>
<td>20</td>
<td>1</td>
<td>0.150</td>
</tr>
<tr>
<td>E16DU 18.9 10</td>
<td>1SAX 111 201 R 0005</td>
<td>5.7 ... 18.90</td>
<td>50</td>
<td>1</td>
<td>0.150</td>
</tr>
</tbody>
</table>

| E16DU tripping class 20 for contactors B6, B7, BC6, BC7, B6S, B7S, A9, A12, A16 | 1SAX 111 201 R 0001 | 0.1 ... 0.32     | 1             | 1                         | 0.150               |
| E16DU 0.32 20          | 1SAX 111 201 R 0002 | 0.3 ... 1.00      | 4             | 1                         | 0.150               |
| E16DU 2.7 20           | 1SAX 111 201 R 0003 | 0.9 ... 2.70      | 10            | 1                         | 0.150               |
| E16DU 6.3 20           | 1SAX 111 201 R 0004 | 2.0 ... 6.30      | 20            | 1                         | 0.150               |
| E16DU 18.9 20          | 1SAX 111 201 R 0005 | 5.7 ... 18.90     | 50            | 1                         | 0.150               |

| E16DU tripping class 30 for contactors B6, B7, BC6, BC7, B6S, B7S, A9, A12, A16 | 1SAX 111 201 R 0001 | 0.1 ... 0.32     | 1             | 1                         | 0.150               |
| E16DU 1.0 30           | 1SAX 111 201 R 0002 | 0.3 ... 1.00      | 4             | 1                         | 0.150               |
| E16DU 2.7 30           | 1SAX 111 201 R 0003 | 0.9 ... 2.70      | 10            | 1                         | 0.150               |
| E16DU 6.3 30           | 1SAX 111 201 R 0004 | 2.0 ... 6.30      | 20            | 1                         | 0.150               |
| E16DU 18.9 30          | 1SAX 111 201 R 0005 | 5.7 ... 18.90     | 50            | 1                         | 0.150               |

- Not suitable for single-phase motors and direct current (DC) motors!

#### Universal Motor Controller UMC22-FBP, 0.2...63 A

| UMC22-FBP.0 | 1SAJ 510 000 R 0100 | 0.2 ... 63 | | | 1 |

- Integrated motor control functions – direct, reverse-start, star-delta starting, servo-drive functions
- Diagnostic functions – overload, phase failure, trip – trip categories 5, 10, 20, 30
- Integrated storage of parameters and motor data
- 6 digital inputs, 3 relay outputs

#### Accessories for Universal Motor Controller UMC22-FBP

- Setting of motor and bus parameters

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Price / Pack. unit (piece)</th>
<th>Weight / piece (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS100-PAN</td>
<td>1SAJ 510 001 R 0001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Mounting kit for separate mounting of E 16 DU on wall or Din-rail

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Price / Pack. unit (piece)</th>
<th>Weight / piece (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB16E</td>
<td>1SAX 101 110 R 0001</td>
<td>E16DU</td>
<td>0.02</td>
</tr>
</tbody>
</table>
### Electronic overload relays E200/320/500/800DU

**Ordering details**

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Setting range</th>
<th>for contactor</th>
<th>Price / piece</th>
<th>Pack. unit</th>
<th>Weight / piece</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>E200DU</td>
<td>1SAX 511 001 R 0001</td>
<td>65 ... 200</td>
<td>A145 ... A185</td>
<td>1</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E320DU</td>
<td>1SAX 611 001 R 0002</td>
<td>105 ... 320</td>
<td>A210 ... A300</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E500DU</td>
<td>1SAX 711 001 R 0001</td>
<td>170 ... 500</td>
<td>AF400 ... AF460</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E800DU</td>
<td>1SAX 811 001 R 0001</td>
<td>270 ... 800</td>
<td>AF580 ... AF750</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mounting kits for electronic overload relays

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT500/AF460 L</td>
<td>1SAX 701 902 R 1001</td>
<td>Mounting kit for E500DU to AF400, 460 with reversing connector</td>
</tr>
<tr>
<td>DT500/AF460 S</td>
<td>1SAX 701 902 R 1011</td>
<td>Mounting kit for E500DU to AF400, 460</td>
</tr>
<tr>
<td>DT800/AF750 L</td>
<td>1SAX 801 902 R 1001</td>
<td>Mounting kit for E800DU to AF580, 750 with reversing connector</td>
</tr>
<tr>
<td>DT800/AF750 S</td>
<td>1SAX 801 902 R 1011</td>
<td>Mounting kit for E800DU to AF580, 750</td>
</tr>
</tbody>
</table>

### Terminal shrouds

<table>
<thead>
<tr>
<th>Type</th>
<th>Order code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT200E</td>
<td>1SAX 501 904 R 0001</td>
<td>Terminal shroud for E200DU</td>
</tr>
<tr>
<td>LT320E</td>
<td>1SAX 601 904 R 0001</td>
<td>Terminal shroud for E320DU</td>
</tr>
<tr>
<td>LT500E</td>
<td>1SAX 701 904 R 0001</td>
<td>Terminal shroud for E500DU</td>
</tr>
<tr>
<td>LT800E</td>
<td>1SAX 801 904 R 0001</td>
<td>Terminal shroud for E800DU</td>
</tr>
</tbody>
</table>

**Contactor A300 with E320DU and terminal shroud**

**Cover for A-contactor-terminals**

**Switch to adjust class 10, 20 or 30**
Thermal overload relays T...

Description

Application
Thermal overload relays T are used in connection with contactors A, BC, AE and EH to protect motors with a rated operating voltage of up to 690 V AC and 800 V DC.

Product range

Standard relays
Types: T7DU, TA25DU, TA42DU, TA75DU, TA80DU, TA110DU, T/TA200DU, T/TA450DU/SU, T900DU/SU

- Relays T7 to T/TA200 are connected directly into the motor circuit and the motor current flows through them.
- Relays T/TA450DU and T900DU are powered via converters with a linear characteristic.
- Relays T/TA450SU and T900SU are powered via converters with saturation characteristic and therefore have longer tripping times.

See section "Protection with heavy starting", see Page 16

Special designs
Thermal overload relays with different approvals and certificates, see Page 24. Relays to protect EEx e motors, see Page 16

Design and function

General
The relays and the accessories comply with the major international (IEC), European (EN) and national standards (DIN-VDE, NFC-UTE, BS, etc...) and meet the approval and licensing regulations necessary worldwide.

The thermal overload relays are three-pole relays
They have bimetallic releases (1 per phase) through which the motor current flows and are indirectly heated. The bimetallic releases bend subject to the influence of heating and this results in tripping of the relay. The auxiliary contacts change their switch position.

The relays feature a setting scale in Amperes. In compliance with international and national standards, the setting current is the rated motor current and not the tripping current (no tripping at 1.05 x I setting current, tripping at 1.2 x I setting current).

The tripping curves (starting from cold and warm state, three and two-phase) are shown in the technical data, Page 22.

The relays are constructed so that they protect themselves in the event of overload until the series-connected short-circuit protection trips, as shown in the tables.

Technical data
All relays feature:
- **Trip-free mechanism:** Tripping in the event of a fault is not prevented even if the Reset button is pressed.
- **Temperature compensation:** - see Page 16
- **Phase failure protection in accordance with IEC 947-4-1:** This device shortens the tripping times in the event of phase failure and thus improves the motor protection within the limits of the setting range.

- **Tripping category:** 10 A, in the case of thermal overload relays T ... DU
  30, in the case of thermal overload relays T ... SU.

- **Reset and test functions**, see Page 17

Auxiliary contacts
The relays feature two integrated auxiliary contacts
- one NC contact, marked by 95 - 96
- one NO contact, marked by 97 - 98

The two contacts are electrically isolated and are thus suitable for use in two different circuits (control circuit and signalling circuit).
Thermal overload relays T 7DU, TA25DU ... T900DU

Description

Switching frequency
Thermal overload relays T cannot be operated at any arbitrary switching frequency in order to avoid tripping. Applications involving up to 15 operations per hour are acceptable. Higher switching frequencies are permitted if the duty ratio and the motor starting time are allowed for and if the motor’s making current does not appreciably exceed 6 times the rated operating current. Please refer to the adjacent diagram for guideline values for the permitted switching frequency.

Example: Starting time of the motor: 1 second
Duty ratio: 40 %
means a permitted switching frequency of max. 60 operations per hour

Use of the CUSTORAPID® motor protection is recommended for higher switching frequencies and alternating loading, e.g. for frequent starting and braking. Use of a combination of thermal overload relays and CUSTORAPID® is recommended in the case of locked rotors on motors with thermally critical rotors.

Protection with heavy starting
Relays T450SU/T900SU can be used for particularly severe starting conditions. The setting ranges specified on Pages 41 and 42 apply to non-recurrent looping through of the cables. The relay may also be used for lower motor rated currents. This is achieved by looping the cables through several times. The setting range specified on the rating plate is inversely proportional to the number of cables looped through.

For instance: T450TU/SU with a setting range of 130 ... 185 A is also suitable for currents of 65 ... 92.5 A if the cables are looped through twice; the figures are 43.3 ... 61.6 A for looping the cables through three times.

Special version for EEx e motors
Relays T7DM, TA25DU ... T900DU / SU are suitable for protection of EEx e motors. They have been tested and approved by the “German National Standards Laboratory” (PTB) in Braunschweig, Germany.

When selecting the overload relay, check suitability on the basis of the tripping curves. The values for the ratio of pick-up current Ia to rated current In and the shortest tE time are crucial, and these must be specified on the PTB Approval Certificate and on the motor’s rating plate. The relay must trip within the tE time, i.e. the tripping curve, starting from cold state, must run below the coordinate point Ia/In and the tE time.

Example for suitability of an overload relay T/TA:
The motor with increased safety has the following data:
Output = 7.5 kW, Ia/In = 7.4 tE time = 11 seconds.
In accordance with the adjacent tripping curve, the tripping time lies below the tE time of the motor.
The special relay version for EEx e motors differs from the normal version as follows:

- Special test of the tripping times at the works
- Special order code

Tripping curves for the individual setting ranges and the PTB Approvals Certificates may be ordered.

Reference numbers of the PTB:

<table>
<thead>
<tr>
<th>Type</th>
<th>Reference No. of the PTB</th>
<th>Type</th>
<th>Reference No. of the PTB</th>
</tr>
</thead>
<tbody>
<tr>
<td>T7DU V1000</td>
<td>3.43-187/98</td>
<td>T / TA200DU V1000</td>
<td>3.53-5315/93</td>
</tr>
<tr>
<td>TA25DU V1000</td>
<td>3.53/38 7.3023</td>
<td>T / TA450DU, T900DU V1000</td>
<td>3.53/38 1.671</td>
</tr>
<tr>
<td>TA42DU, TA75DU, TA80DU V1000</td>
<td>3.53/38 0.418</td>
<td>TA110DU V1000</td>
<td>3.43-760/98</td>
</tr>
<tr>
<td>T450SU, T900SU V1000</td>
<td>3.53/38 1.672</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Limit values for tripping at ambient temperatures other than 20 °C

- Ambient temperature compensation:
The overload relays are protected against influences of ambient temperature by a bimetallic compensation element which detects the ambient temperature.

This design means that tripping occurs between -5 °C and +40 °C within the ranges defined by IEC 947-4-1. See the adjacent curve for the extended range of -25 °C resp. +55 °C.

- Example:
Tripping at -25 °C. Tripping occurs at ±1.5 times the setting current.

- Reset:
Types E16DU, T7DU, TA25DU ... T900DU/SU feature a convertible Manual/Automatic reset.

- Condition as delivered:
Manual reset.
Thermal overload relays T

### Technical data

#### General technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>T7DU</th>
<th>TA25DU</th>
<th>TA42DU</th>
<th>TA75DU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IEC 947–4–1, VDE 0660, NFC 63 650, BS 4941, EN 60947–4–1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals, certificates</td>
<td>see page 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage $U_i$ V</td>
<td>690</td>
<td>660/690</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to IEC 158–1, IEC 947–4–1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulse withstand voltage $U_{imp}$ kV</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to IEC 947–4–1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible ambient temperature °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Storage temperature °C</td>
<td>– 40 to +70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– for operation (compensated) °C</td>
<td>– 25 to +55 (limit values, see page 18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climatic resistance to DIN 50017</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Resistant to changeable climate KFW, 30 cycles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– onto contactor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– with AB.. mounting kit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection terminals and attachment type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main conductors (motor side)</td>
<td>TA25DU setting ranges: 0.1...0.16 A 24...32 A to 18...25 A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screw terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Screw terminal</td>
<td>M3.5</td>
<td>M4</td>
<td>–</td>
<td>M6</td>
</tr>
<tr>
<td>– with terminal block</td>
<td>–</td>
<td>–</td>
<td>M5</td>
<td>–</td>
</tr>
<tr>
<td>– with busbars or cable lugs</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Connection cross-sections mm²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– single-core or stranded</td>
<td>2 x 0.75 ... 2.5</td>
<td>1 x 2.5 ... 25 or 2 x 2.5 ... 16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– flexible with wire end ferrule</td>
<td>2 x 0.5 ... 1.5</td>
<td>1 x 2.5 ... 25 or 2 x 2.5 ... 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– busbars mm²</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Connections and auxiliary connectors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screw terminal (screw size)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– with self-disengaging clamping piece</td>
<td>M 3.5</td>
<td></td>
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<tr>
<td>Connection cross-section</td>
<td></td>
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</tr>
<tr>
<td>– single-core or stranded mm²</td>
<td>2 x 0.75 ... 2.5</td>
<td>2 x 0.75 ... 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– flexible with wire end ferrule mm²</td>
<td>2 x 0.5 ... 1.5</td>
<td>2 x 0.75 ... 2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure to IEC 144, IEC 529</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All terminals are safe from finger-touch and safe from touch by the back of the hand to VDE 0106, Part 100 (no extra terminal shrouds are required up to and including TA 110 DU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Technical data of the conducting paths

<table>
<thead>
<tr>
<th>Type</th>
<th>T7DU</th>
<th>TA25DU</th>
<th>TA42DU</th>
<th>TA75DU</th>
<th>TA80DU</th>
<th>TA110DU</th>
<th>T/TA200DU</th>
<th>T/TA450DU</th>
<th>T900DU</th>
<th>T/TA450SU/T900SU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of paths</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Setting ranges</td>
<td>see Ordering details</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Tripping class to IEC 947–4–1 / VDE 0660, Part 1021</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
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<tr>
<td>Frequency range Hz</td>
<td>0 ... 400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50/60</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Switching frequency up to 15 ops./h or 60 ops./h with 40 % if the breaking current does not exceed 6 x Iₚ and the starting time does not exceed 1 s</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Resistance per phase in mΩ and heat dissipation per phase at maximum setting current</td>
<td>see page 20 and 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Required fuses for short-circuit protection</td>
<td>see page 20 and 21</td>
<td></td>
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## Thermal overload relays T
### Technical data

### General technical data (cont.)

<table>
<thead>
<tr>
<th></th>
<th>TA80DU</th>
<th>TA110DU</th>
<th>T/TA200DU</th>
<th>T/TA450DU/SU</th>
<th>T900DU/SU</th>
</tr>
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<tbody>
<tr>
<td><strong>IEC</strong></td>
<td></td>
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<tr>
<td><strong>947–4–1</strong></td>
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<tr>
<td><strong>VDE</strong></td>
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<tr>
<td><strong>0660</strong></td>
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<td><strong>NFC</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>63 650</strong></td>
<td></td>
<td></td>
<td></td>
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<td><strong>BS</strong></td>
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<td><strong>4941</strong></td>
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<td><strong>60947-4-1</strong></td>
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</tr>
<tr>
<td><strong>see page 24</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V</strong></td>
<td>660/690</td>
<td></td>
<td>1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>68 °C</strong></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>-40 to +70 °C</strong></td>
<td>- 40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>-25 to +55 °C</strong></td>
<td>68</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Resistant to changeable climate KFW; 30 cycles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>any, but please avoid vertical mounting position wherever possible</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ms</strong></td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>x g</strong></td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>x g</strong></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>M6</strong></td>
<td>–</td>
<td></td>
<td>4 screws M5</td>
<td></td>
<td>4 screws M6</td>
</tr>
<tr>
<td><strong>M6 HC, M8</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>M6 –</strong></td>
<td>–</td>
<td>–</td>
<td>M10</td>
<td>M10</td>
<td>M10</td>
</tr>
<tr>
<td><strong>mm²</strong></td>
<td>1 x 2.5 ... 25 or 2 x 2.5 ... 16</td>
<td>16 ... 35</td>
<td>25 ... 120</td>
<td>2 x 240</td>
<td>2 x 300</td>
</tr>
<tr>
<td><strong>mm²</strong></td>
<td>1 x 2.5 ... 25 or 2 x 2.5 ... 10</td>
<td>16 ... 35</td>
<td>25 ... 95</td>
<td>2 x 240</td>
<td>2 x 300</td>
</tr>
<tr>
<td><strong>mm²</strong></td>
<td>–</td>
<td>–</td>
<td>20 x 4</td>
<td>25 x 5</td>
<td>40 x 5. 6 and 8</td>
</tr>
<tr>
<td><strong>M 3.5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>mm²</strong></td>
<td>2 x 0.75 ... 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>mm²</strong></td>
<td>2 x 0.75 ... 2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All terminals are safe from finger-touch and safe from touch by the back of the hand to VDE 0106, part 100.

All terminals are safe from finger-touch and safe from touch by the back of the hand to VDE 0106, part 100, only with additional terminal shrouds.
# Thermal overload relays T

## Technical data

### Resistances and power losses per phase

**Short-circuit protection**

<table>
<thead>
<tr>
<th>Setting ranges</th>
<th>Short-circuit protection (fuses, circuit-breakers)</th>
<th>Assignment class 2 (1)</th>
<th>Assignment class 1 (1)</th>
<th>Resistance per phase</th>
<th>Power loss per phase at upper current setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>from ... to</td>
<td>gL/gG aM S 223 K</td>
<td>gL/gG S 223 K</td>
<td>mW</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>A A</td>
<td>A A</td>
<td>A A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 ... 0.16</td>
<td>0.5</td>
<td>–</td>
<td>20</td>
<td>K 6</td>
<td>62.300</td>
</tr>
<tr>
<td>0.16 ... 0.24</td>
<td>1</td>
<td>–</td>
<td>20</td>
<td>27.000</td>
<td>1.6</td>
</tr>
<tr>
<td>0.24 ... 0.40</td>
<td>2</td>
<td>–</td>
<td>20</td>
<td>11.700</td>
<td>1.9</td>
</tr>
<tr>
<td>0.4 ... 0.60</td>
<td>2</td>
<td>–</td>
<td>20</td>
<td>4.610</td>
<td>1.7</td>
</tr>
<tr>
<td>0.6 ... 1.00</td>
<td>4</td>
<td>–</td>
<td>20</td>
<td>1.660</td>
<td>1.7</td>
</tr>
<tr>
<td>1.0 ... 1.60</td>
<td>6</td>
<td>–</td>
<td>20</td>
<td>0.830</td>
<td>1.6</td>
</tr>
<tr>
<td>1.6 ... 2.40</td>
<td>6</td>
<td>–</td>
<td>20</td>
<td>0.270</td>
<td>1.6</td>
</tr>
<tr>
<td>2.4 ... 4.00</td>
<td>10</td>
<td>–</td>
<td>20</td>
<td>0.107</td>
<td>1.7</td>
</tr>
<tr>
<td>4.0 ... 6.00</td>
<td>10</td>
<td>–</td>
<td>20</td>
<td>0.049</td>
<td>1.8</td>
</tr>
<tr>
<td>6.0 ... 9.00</td>
<td>10</td>
<td>–</td>
<td>20</td>
<td>0.021</td>
<td>1.7</td>
</tr>
<tr>
<td>9.0 ... 12.00</td>
<td>20</td>
<td>–</td>
<td>20</td>
<td>0.010</td>
<td>1.4</td>
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</tbody>
</table>

### Setting ranges

<table>
<thead>
<tr>
<th>Setting ranges</th>
<th>Short-circuit protection (fuses, circuit-breakers)</th>
<th>Assignment class 2 (1)</th>
<th>Assignment class 1 (1)</th>
<th>Resistance per phase</th>
<th>Power loss per phase at upper current setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>from ... to</td>
<td>gL/gG aM S 223 K</td>
<td>gL/gG S 223 K</td>
<td>mW</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>A A</td>
<td>A A</td>
<td>A A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 ... 0.16</td>
<td>0.5</td>
<td>–</td>
<td>25</td>
<td>K 6</td>
<td>85850.000</td>
</tr>
<tr>
<td>0.16 ... 0.25</td>
<td>0.63</td>
<td>–</td>
<td>25</td>
<td>35150.000</td>
<td>2.2</td>
</tr>
<tr>
<td>0.25 ... 0.4</td>
<td>1.25</td>
<td>–</td>
<td>25</td>
<td>13750.000</td>
<td>2.2</td>
</tr>
<tr>
<td>0.4 ... 0.63</td>
<td>2</td>
<td>–</td>
<td>25</td>
<td>5370.000</td>
<td>2.2</td>
</tr>
<tr>
<td>0.63 ... 1.00</td>
<td>4</td>
<td>–</td>
<td>25</td>
<td>2190.000</td>
<td>2.2</td>
</tr>
<tr>
<td>1.0 ... 1.40</td>
<td>4</td>
<td>2</td>
<td>1.6</td>
<td>25</td>
<td>11200.000</td>
</tr>
<tr>
<td>1.3 ... 1.80</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>25</td>
<td>670.000</td>
</tr>
<tr>
<td>1.7 ... 2.40</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>25</td>
<td>383.000</td>
</tr>
<tr>
<td>2.2 ... 3.10</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>25</td>
<td>229.000</td>
</tr>
<tr>
<td>2.8 ... 4.00</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>25</td>
<td>137.000</td>
</tr>
<tr>
<td>3.5 ... 5.00</td>
<td>16</td>
<td>10</td>
<td>6</td>
<td>25</td>
<td>87.500</td>
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<td>4.5 ... 6.50</td>
<td>20</td>
<td>16</td>
<td>8</td>
<td>25</td>
<td>51.000</td>
</tr>
<tr>
<td>6.0 ... 8.50</td>
<td>25</td>
<td>20</td>
<td>10</td>
<td>25</td>
<td>30.400</td>
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<tr>
<td>7.5 ... 11.00</td>
<td>35</td>
<td>25</td>
<td>16</td>
<td>–</td>
<td>18.200</td>
</tr>
<tr>
<td>10 ... 14.00</td>
<td>35</td>
<td>25</td>
<td>16</td>
<td>–</td>
<td>11.200</td>
</tr>
<tr>
<td>13 ... 19.00</td>
<td>50</td>
<td>35</td>
<td>20</td>
<td>–</td>
<td>6.300</td>
</tr>
<tr>
<td>18 ... 25.00</td>
<td>63</td>
<td>50</td>
<td>25</td>
<td>–</td>
<td>4.700</td>
</tr>
<tr>
<td>24 ... 32.00</td>
<td>80</td>
<td>63</td>
<td>32</td>
<td>–</td>
<td>3.2000</td>
</tr>
</tbody>
</table>

(1) Assignment class 1 to IEC 947-4-13: A short-circuit may cause damage to the relay necessitating exchange. (Corresponds to class a to IEC 292-1)

Assignment class 2 to IEC 947-4-12: No damage or changes to the response values occur in the event of a short-circuit (corresponds to class c to IEC 292-1).
## Technical data

### Resistances and power losses per phase

#### Short-circuit protection

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Short-circuit protection (fuses, circuit-breakers)</th>
<th>Assignment class 1 (1)</th>
<th>Resistance per phase</th>
<th>Power loss per phase at upper current setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>from ... to A</td>
<td>Assignment class 2 (1) gL / gG aM S 273 S 703</td>
<td>gL / gG aM</td>
<td>mW</td>
<td>W</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Thermal overload relay TA42DU

| 18 ... 25 | 63 | 50 | 50 | 50 | 160 | 5.5 | 3.43 |
| 22 ... 32 | 80 | 63 | 50 | 50 | 160 | 2.89 | 2.91 |
| 29 ... 42 | 100 | 80 | 63 | 63 | 160 | 1.84 | 3.24 |

#### Thermal overload relay TA75DU

| 18 ... 25 | 63 | 50 | 50 | 50 | 160 | 5.5 | 3.43 |
| 22 ... 32 | 80 | 63 | 50 | 50 | 160 | 2.89 | 2.91 |
| 29 ... 42 | 100 | 80 | 63 | 63 | 160 | 1.84 | 3.24 |

#### Thermal overload relay TA80DU

| 29 ... 42 | 100 | 80 | 63 | 63 | 160 | 1.84 | 3.24 |
| 36 ... 52 | 125 | 100 | 63 | 80 | 160 | 1.3 | 3.51 |
| 45 ... 63 | 160 | 125 | – | 100 | 250 | 0.936 | 3.72 |
| 60 ... 80 | 200 | 160 | – | 100 | 250 | 0.615 | 3.94 |

#### Thermal overload relay TA110DU

| 65 ... 90 | 200 | 160 | 250 | 315 | 0.540 | 4.37 |
| 80 ... 110 | 224 | 200 | 315 | 378 | 0.378 | 4.57 |

#### Thermal overload relay TA200DU

| 100 ... 135 | 224 | 200 | 315 | 385 | 0.318 | 5.79 |
| 110 ... 150 | 250 | 224 | 355 | 390 | 0.255 | 6.74 |
| 130 ... 175 | 315 | 250 | 400 | 420 | 0.214 | 6.55 |
| 150 ... 200 | 315 | 250 | 500 | 520 | 0.182 | 7.28 |

#### Thermal overload relay TA450SU

| 40 ... 60 | 125 | 100 | not applicable | – | 2.2 |
| 55 ... 80 | 160 | 125 | to | – | 2.2 |
| 70 ... 105 | 200 | 160 | overload relays with | – | 2.2 |
| 95 ... 140 | 315 | 250 | current transformer | – | 2.2 |

#### Thermal overload relay TA450DU/SU

| 130 ... 185 | 355 | 250 | not applicable | – | 2.2 |
| 165 ... 235 | 400 | 315 | to | – | 2.2 |
| 220 ... 310 | 500 | 400 | overload relays with | – | 2.2 |
| 285 ... 400 | 630 | 500 | current transformer | – | 2.2 |

#### Thermal overload relay T900DU/SU

| 265 ... 375 | 500 | 400 | not applicable | – | 2.2 |
| 355 ... 500 | 800 | 630 | to | – | 2.2 |
| 465 ... 650 | 1000 | 800 | overload relays with | – | 2.2 |
| 610 ... 850 | 1250 | 1000 | current transformer | – | 2.2 |

(1) Assignment class 1 to IEC 947-4-13: A short-circuit may cause damage to the relay necessitating exchange. (Corresponds to class a to IEC 292-1)

Assignment class 2 to IEC 947-4-12: No damage or changes to the response values occur in the event of a short-circuit (corresponds to class c to IEC 292-1)
Thermal overload relays
T7DU, TA25DU ... T200DU, T450DU, T900DU

Tripping curves

TA25DU
Thermal overload relays T ... DU are three-pole relays which can be converted from manual to automatic reset. The Reset button can also be used for disconnection. The built-in auxiliary contacts are electrically isolated and are therefore suitable for two different circuits (control circuit and signalling circuit). All relays feature a facility for temperature compensation and phase failure protection. The overload relays up to size TA110DU are safe from finger-touch and safe from touch by the back of the hand.

TA7DU

TA110DU

T900DU
Terminal shrouds are available for size T200 DU to T900DU/SU. Terminal connections are delivered in open position, with Pozidrive cross-head screws (±) and screwdriver guide.

Tripping curves of the thermal overload relays (group curves)

T7DU

TA25DU

TA42DU / TA75DU / TA80DU

T / TA200DU

T450DU / T900DU

T / TA450SU / T900SU
# Thermal overload relays T..., V1000

for EEx e motors

## Selection table

Selection table for suitability of the overload relays for EEx e motors.
Tripping times of the thermal overload relays as a function of a multiple of the setting current from cold state (tolerance ± 20 of the tripping time); PTB approvals, see Page 18

<table>
<thead>
<tr>
<th>Setting range of the thermal overload relays</th>
<th>Tripping times of the thermal overload relays at multiple of setting current:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ... to A</td>
<td>3</td>
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</tbody>
</table>

### Thermal overload relays TA25DU ... V1000

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Tripping times</th>
<th>A ... A</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 ... 0.16</td>
<td>17.3 A</td>
<td>10 A</td>
</tr>
<tr>
<td>0.16 ... 0.25</td>
<td>16.8 A</td>
<td>10 A</td>
</tr>
<tr>
<td>0.25 ... 0.4</td>
<td>16.3 10 A</td>
<td>10 A</td>
</tr>
<tr>
<td>0.4 ... 0.63</td>
<td>17.3 10 A</td>
<td>10.3 A</td>
</tr>
<tr>
<td>0.63 ... 1.0</td>
<td>20 12.6 A</td>
<td>8.4 A</td>
</tr>
<tr>
<td>1.0 ... 1.4</td>
<td>18.3 11.2 A</td>
<td>8 A</td>
</tr>
<tr>
<td>1.3 ... 1.8</td>
<td>18.8 11.1 A</td>
<td>7.5 A</td>
</tr>
<tr>
<td>1.7 ... 2.4</td>
<td>19.6 11.5 A</td>
<td>8 A</td>
</tr>
<tr>
<td>2.2 ... 3.1</td>
<td>18.3 10.5 A</td>
<td>7.6 A</td>
</tr>
<tr>
<td>2.8 ... 4.0</td>
<td>18.8 11.2 A</td>
<td>8 A</td>
</tr>
<tr>
<td>3.5 ... 5.0</td>
<td>17.8 10.9 A</td>
<td>7.7 A</td>
</tr>
<tr>
<td>4.5 ... 6.5</td>
<td>17.8 10.5 A</td>
<td>7.5 A</td>
</tr>
<tr>
<td>6.0 ... 8.5</td>
<td>17.8 10.9 A</td>
<td>7.7 A</td>
</tr>
<tr>
<td>7.5 ... 11</td>
<td>18.8 11.5 A</td>
<td>8.3 A</td>
</tr>
<tr>
<td>10 ... 14</td>
<td>17.8 10.9 A</td>
<td>7.7 A</td>
</tr>
<tr>
<td>13 ... 19</td>
<td>20.5 11.9 A</td>
<td>8.8 A</td>
</tr>
<tr>
<td>18 ... 25</td>
<td>22.4 13.3 A</td>
<td>8 A</td>
</tr>
<tr>
<td>24 ... 32</td>
<td>23.7 14 A</td>
<td>10 A</td>
</tr>
</tbody>
</table>

### Thermal overload relays TA42DU, TA75DU, TA80DU ... V1000

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Tripping times</th>
<th>A ... A</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ... 25</td>
<td>41 23.2 A</td>
<td>16 A</td>
</tr>
<tr>
<td>22 ... 32</td>
<td>37 21 A</td>
<td>13.8 A</td>
</tr>
<tr>
<td>29 ... 42</td>
<td>34 18.5 A</td>
<td>12.6 A</td>
</tr>
<tr>
<td>36 ... 52</td>
<td>43 23.9 A</td>
<td>16.1 A</td>
</tr>
<tr>
<td>45 ... 63</td>
<td>37.4 21.3 A</td>
<td>15.2 A</td>
</tr>
<tr>
<td>60 ... 80</td>
<td>46.7 23 A</td>
<td>15.7 A</td>
</tr>
</tbody>
</table>

### Thermal overload relays TA110DU ... V1000

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Tripping times</th>
<th>A ... A</th>
</tr>
</thead>
<tbody>
<tr>
<td>66 ... 90</td>
<td>32 16.7 A</td>
<td>11.5 A</td>
</tr>
<tr>
<td>80 ... 110</td>
<td>34.5 18.2 A</td>
<td>12.2 A</td>
</tr>
</tbody>
</table>

### Thermal overload relays TA200DU ... V1000

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Tripping times</th>
<th>A ... A</th>
</tr>
</thead>
<tbody>
<tr>
<td>66 ... 90</td>
<td>27.7 15.8 A</td>
<td>10.6 A</td>
</tr>
<tr>
<td>80 ... 110</td>
<td>26.1 14.1 A</td>
<td>9.7 A</td>
</tr>
<tr>
<td>100 ... 135</td>
<td>24.4 13.3 A</td>
<td>8.9 A</td>
</tr>
<tr>
<td>110 ... 150</td>
<td>30 15.8 A</td>
<td>10.6 A</td>
</tr>
<tr>
<td>130 ... 175</td>
<td>30.1 15.8 A</td>
<td>11.0 A</td>
</tr>
<tr>
<td>150 ... 200</td>
<td>42.2 21.8 A</td>
<td>14.5 A</td>
</tr>
</tbody>
</table>

### Thermal overload relays T450DU ... V1000

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Tripping times</th>
<th>A ... A</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 ... 185</td>
<td>14.9 8.9 A</td>
<td>7.1 A</td>
</tr>
<tr>
<td>165 ... 235</td>
<td>18 10 A</td>
<td>7.1 A</td>
</tr>
<tr>
<td>220 ... 310</td>
<td>16.8 10 A</td>
<td>7.1 A</td>
</tr>
<tr>
<td>285 ... 400</td>
<td>17 10 A</td>
<td>7.5 A</td>
</tr>
</tbody>
</table>

### Thermal overload relays T900DU ... V1000

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Tripping times</th>
<th>A ... A</th>
</tr>
</thead>
<tbody>
<tr>
<td>265 ... 375</td>
<td>16 8.9 A</td>
<td>7 A</td>
</tr>
<tr>
<td>355 ... 500</td>
<td>17 10.6 A</td>
<td>7.5 A</td>
</tr>
<tr>
<td>465 ... 650</td>
<td>20 11.9 A</td>
<td>7.9 A</td>
</tr>
<tr>
<td>610 ... 850</td>
<td>18.8 11.2 A</td>
<td>7.9 A</td>
</tr>
</tbody>
</table>
Cross-sections of cables for test in accordance with VDE 0660, Part 100 (IEC 947-1) German version EN 60 947-1

Table 1). Copper test conductor for test currents up to 400 A.

<table>
<thead>
<tr>
<th>Test current range (A)</th>
<th>Conductor cross-section (mm²)</th>
<th>AWG / MCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.0</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>1.5</td>
<td>16</td>
</tr>
<tr>
<td>12</td>
<td>2.5</td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>2.5</td>
<td>12</td>
</tr>
<tr>
<td>20</td>
<td>4.0</td>
<td>10</td>
</tr>
<tr>
<td>25</td>
<td>6.0</td>
<td>10</td>
</tr>
<tr>
<td>32</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>50</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>65</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>85</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>100</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>115</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>130</td>
<td>70</td>
<td>0</td>
</tr>
<tr>
<td>165</td>
<td>70</td>
<td>0</td>
</tr>
<tr>
<td>200</td>
<td>95</td>
<td>0</td>
</tr>
<tr>
<td>225</td>
<td>95</td>
<td>0</td>
</tr>
<tr>
<td>250</td>
<td>120</td>
<td>0</td>
</tr>
<tr>
<td>275</td>
<td>150</td>
<td>0</td>
</tr>
<tr>
<td>300</td>
<td>185</td>
<td>0</td>
</tr>
<tr>
<td>350</td>
<td>240</td>
<td>0</td>
</tr>
</tbody>
</table>

Footnotes to Tables 1, 2 and 3:
1) The test current must be higher than the first value in the first column and must be lower than or the same as the second value in this column.
2) To simplify the testing procedure and with the consent of the manufacturer, conductors with a smaller cross-section than the one determined for the test current may be used.
3) The table shows cross-sections of conductors alternatively in the metric system and in the AWG/MCM system and buses in mm and inches. A comparison of the AWG/MCM system and metric cross-sections is given in Table 1.
4) Optionally, either one of the two conductors given for the test current range may be used.
5) It is assumed that buses with the larger surface area are arranged vertically. Buses may be arranged horizontally if so directed by the manufacturer.
6) If 4 buses are used, they must be arranged in two pairs with a mean clearance of at most 100 mm.

Table 2). Copper test conductor for test currents over 400 A to 800 A.

<table>
<thead>
<tr>
<th>Test current range (A)</th>
<th>Conductor cross-section (mm²)</th>
<th>AWG / MCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>150</td>
<td>2</td>
</tr>
<tr>
<td>500</td>
<td>185</td>
<td>2</td>
</tr>
<tr>
<td>630</td>
<td>240</td>
<td>3</td>
</tr>
<tr>
<td>800</td>
<td>300</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3). Copper test buses for test currents over 400 A to 3150 A.

<table>
<thead>
<tr>
<th>Test current range (A)</th>
<th>Copper buses (mm²)</th>
<th>Dimensions (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>500</td>
<td>0.25</td>
</tr>
<tr>
<td>500</td>
<td>630</td>
<td>0.25</td>
</tr>
<tr>
<td>630</td>
<td>800</td>
<td>0.25</td>
</tr>
<tr>
<td>800</td>
<td>1000</td>
<td>0.25</td>
</tr>
<tr>
<td>1000</td>
<td>1250</td>
<td>0.25</td>
</tr>
<tr>
<td>1250</td>
<td>1600</td>
<td>0.25</td>
</tr>
<tr>
<td>1600</td>
<td>2000</td>
<td>0.25</td>
</tr>
<tr>
<td>2000</td>
<td>2500</td>
<td>0.25</td>
</tr>
<tr>
<td>2500</td>
<td>3150</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Footnotes to Tables 1, 2 and 3:
1) The test current must be higher than the first value in the first column and must be lower than or the same as the second value in this column.
2) To simplify the testing procedure and with the consent of the manufacturer, conductors with a smaller cross-section than the one determined for the test current may be used.
3) The table shows cross-sections of conductors alternatively in the metric system and in the AWG/MCM system and buses in mm and inches. A comparison of the AWG/MCM system and metric cross-sections is given in Table 1.
4) Optionally, either one of the two conductors given for the test current range may be used.
5) It is assumed that buses with the larger surface area are arranged vertically. Buses may be arranged horizontally if so directed by the manufacturer.
6) If 4 buses are used, they must be arranged in two pairs with a mean clearance of at most 100 mm.

General technical data

Approvals and certificates

Explanation of symbols:

- Submitted for approval, delivery time on request
- No approval required except in special cases
- Submission for approval intended
- Approved with restrictions
- Normal version approved: Rating plates bear the test mark if mandatory.
- Special design approved

<table>
<thead>
<tr>
<th>Unit type</th>
<th>Approvals</th>
<th>Ships' classification societies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test mark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abbreviation</td>
<td></td>
<td>CSA / ul / UL / UL / PTB / BV / GL / LRS / DNV / PRS / RINa / MRS</td>
</tr>
<tr>
<td>valid for</td>
<td></td>
<td>Canada / USA / USA / Germany / France / Germany / Great Britain / Norway / Poland / Italy / Russia</td>
</tr>
</tbody>
</table>

Thermal overload relays

T7DU

T25DU

T42DU

T25DU

TA80DU

TA110DU

T / TA200DU

T / TA450DU / SU

T900DU / SU

(2) except Types SU.
# Electronic overload relay E16DU

## Technical data

### General technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>E16DU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standards:</strong> (major European and international standards)</td>
<td>IEC 60947-4-1 / IEC 60947-5-1 EN 60947-4-1 / EN 60947-5-1</td>
</tr>
<tr>
<td><strong>Approvals and certificates</strong></td>
<td>see page 30</td>
</tr>
<tr>
<td>Rated insulation voltage $U_i$ V</td>
<td>690</td>
</tr>
<tr>
<td>Rated operating voltage $U_e$ V</td>
<td>690</td>
</tr>
<tr>
<td>Impulse withstand voltage $U_{imp}$ kV</td>
<td>6</td>
</tr>
<tr>
<td>Permissible ambient temperature °C</td>
<td>- Storage - Operation</td>
</tr>
<tr>
<td></td>
<td>- 25 to +70</td>
</tr>
<tr>
<td></td>
<td>- 25 to +70</td>
</tr>
<tr>
<td>Climatic resistance according to</td>
<td>IEC 68-2-1, IEC 68-2-2, IEC 68-2-14, IEC 68-2-30</td>
</tr>
<tr>
<td>Mounting position</td>
<td>any</td>
</tr>
<tr>
<td>Resistance to shock</td>
<td>Shock duration ms multiple of g</td>
</tr>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Resistance to vibrations</td>
<td>(±1 mm, 10 ... 100 Hz) multiple of g</td>
</tr>
<tr>
<td></td>
<td>- 15</td>
</tr>
<tr>
<td>Mounting</td>
<td>- onto contactor hooking on contactors, screwing on in main terminals</td>
</tr>
<tr>
<td></td>
<td>- with DB.. mounting kit for single set-ups by screws: 2 x M4 or</td>
</tr>
<tr>
<td>Connection terminals and attachment type</td>
<td></td>
</tr>
<tr>
<td>Main conductors (load side) and auxiliary contacts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Screw terminal (screw size) M3.5</td>
</tr>
<tr>
<td></td>
<td>- with self-disengaging clamping piece</td>
</tr>
<tr>
<td></td>
<td>- with terminal block</td>
</tr>
<tr>
<td></td>
<td>- with busbars or cable lugs</td>
</tr>
<tr>
<td></td>
<td>• Tightening torque Nm</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• Connection cross-sections mm²</td>
</tr>
<tr>
<td></td>
<td>- single-core or stranded</td>
</tr>
<tr>
<td></td>
<td>- flexible with wire end ferrule</td>
</tr>
<tr>
<td></td>
<td>2 x 0.75...4</td>
</tr>
<tr>
<td></td>
<td>2 x 0.75...4</td>
</tr>
<tr>
<td>Protection degree</td>
<td>to IEC 60947-1/EN 60947-1 All terminals are safe from finger-touch and safe from touch by the back of the hand to VDE 0106, Part 100</td>
</tr>
</tbody>
</table>

### Technical data of the conducting paths

<table>
<thead>
<tr>
<th>Type</th>
<th>E16DU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of conducting paths</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Setting ranges</strong></td>
<td>see ordering details page 13</td>
</tr>
<tr>
<td><strong>Tripping classes to IEC 60947-4-1/EN 60947-4-1</strong></td>
<td>see ordering details page 13</td>
</tr>
<tr>
<td><strong>Frequency range Hz</strong></td>
<td>50 and 60</td>
</tr>
<tr>
<td><strong>Switching frequency without early tripping</strong></td>
<td>80 ops./h with 40% if the making current does not exceed 6 x In and the starting time does not exceed 1s.</td>
</tr>
<tr>
<td><strong>Resistance per phase in Ω and power loss per phase in W at max. setting current</strong></td>
<td>see page 30</td>
</tr>
<tr>
<td><strong>Required fuses for short-circuit protection</strong></td>
<td>see page 30</td>
</tr>
</tbody>
</table>

### Load rating of auxiliary contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>E16DU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact</strong></td>
<td>NC (95-96) NO (97-98)</td>
</tr>
<tr>
<td><strong>Rated operating voltage $U_a$ V</strong></td>
<td>600 600</td>
</tr>
<tr>
<td><strong>Rated thermal continuous current A</strong></td>
<td>6 6</td>
</tr>
<tr>
<td><strong>Rated operating current $I_a$</strong> at AC-15 230 V</td>
<td>A 3 3</td>
</tr>
<tr>
<td>at AC-15 400 V</td>
<td>A 1.1 1.1</td>
</tr>
<tr>
<td>at AC-15 500 V</td>
<td>A 0.9 0.9</td>
</tr>
<tr>
<td>at AC-15 690 V</td>
<td>A 0.7 0.7</td>
</tr>
<tr>
<td>at DC-13 24 V</td>
<td>A 1.5 1.5</td>
</tr>
<tr>
<td>at DC-13 60 V</td>
<td>A 0.5 0.5</td>
</tr>
<tr>
<td>at DC-13 110 V</td>
<td>A 0.4 0.4</td>
</tr>
<tr>
<td>at DC-13 220 V</td>
<td>A 0.2 0.2</td>
</tr>
<tr>
<td><strong>Short-circuit protection fuse gG</strong></td>
<td>A 6 6</td>
</tr>
<tr>
<td><strong>STOTZ safety circuit-breaker S271 S281</strong></td>
<td>(1) (1)</td>
</tr>
</tbody>
</table>

(1) on request
Electronic overload relays E200DU ... E800DU

Technical data

General technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>E200DU</th>
<th>E320DU</th>
<th>E500DU</th>
<th>E800DU</th>
</tr>
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<tbody>
<tr>
<td>Standards:</td>
<td>IEC 60947-4-1 / IEC 60947-5-1</td>
<td>EN 60947-4-1 / EN 60947-5-1</td>
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</tr>
<tr>
<td>Approvals and certificates</td>
<td>see page 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage $U_i$</td>
<td>V</td>
<td>690</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating voltage $U_e$</td>
<td>V</td>
<td>690</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulse withstand voltage $U_{imp}$</td>
<td>kV</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible ambient temperature</td>
<td>°C</td>
<td>- Storage: -25 to +70</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>°C</td>
<td>- Operation: -25 to +70</td>
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<tr>
<td>Mounting position</td>
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<td></td>
</tr>
<tr>
<td>Resistance to shock</td>
<td>Shock duration ms multiple of g</td>
<td>30</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Resistance to vibrations to EN 61373</td>
<td>category 1, class B</td>
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<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>hooking on contactors, screwing on in main terminals by screws: 2 x M4 or &quot;L&quot; by screws: 4 x M5/ M6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection terminals and attachment type</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Auxiliary contacts.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Screw terminal (screw size)</td>
<td>M3.5</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• Tightening torque Nm</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Connection cross-sections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- single-core or stranded mm²</td>
<td>2 x 0.75...4</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- flexible with wire end ferrule mm²</td>
<td>2 x 0.75...4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection terminals and attachment type</td>
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<td></td>
</tr>
<tr>
<td>Main conductors.</td>
<td>M8</td>
<td>M10</td>
<td>(M10)</td>
<td>(M12)</td>
</tr>
<tr>
<td>Protection degree to IEC 60947-1/EN 60947-1</td>
<td>All terminals are safe from finger-touch and safe from touch by the back of the hand to VDE 0106, Part 100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Technical data of the conducting paths

<table>
<thead>
<tr>
<th>Type</th>
<th>E200DU</th>
<th>E320DU</th>
<th>E500DU</th>
<th>E800DU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of conducting paths</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting ranges</td>
<td>60 ... 200</td>
<td>100 ... 320</td>
<td>150 ... 500</td>
<td>250 ... 800</td>
</tr>
<tr>
<td>Tripping classes to IEC 60947-4-1/EN 60947-4-1</td>
<td>10, 20, 30 eligible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency range Hz</td>
<td>50 and 60 (only for a.c. operating 3 phase)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Load rating of auxiliary contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>E200DU</th>
<th>E320DU</th>
<th>E500DU</th>
<th>E800DU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact</td>
<td>NC (95-96)</td>
<td>NO (97-98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating voltage $U_e$</td>
<td>V</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Rated thermal continuous current A</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating current $I_e$</td>
<td>A</td>
<td>230 V</td>
<td>400 V</td>
<td>500 V</td>
</tr>
<tr>
<td>at AC-15</td>
<td>3</td>
<td>1.1</td>
<td>0.9</td>
<td>0.7</td>
</tr>
<tr>
<td>at AC-15 230 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at AC-15 400 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at AC-15 500 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at AC-15 690 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at DC-13 24 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at DC-13 60 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at DC-13 110 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at DC-13 220 V</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection fuse</td>
<td>gG</td>
<td>A</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>STOTZ safety circuit-breaker:</td>
<td>S271</td>
<td>S281</td>
<td>(1)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

(1) on request
## UMC22-FBP

### Technical data

#### General technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>UMC22-FBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating voltage (U_e) (three-phase system) (V\ AC/Hz)</td>
<td>max. 690/50</td>
</tr>
<tr>
<td>Rated operating current range (A)</td>
<td>0.24 ... 63</td>
</tr>
<tr>
<td>Trip classes</td>
<td>5, 10, 20, 30</td>
</tr>
<tr>
<td>Short-circuit-protection</td>
<td>separate fuses on power line side</td>
</tr>
<tr>
<td>Supply voltage (V\ DC)</td>
<td>19.2 ... 31.2, including ripple</td>
</tr>
<tr>
<td>Supply current (mA)</td>
<td>max. 130 (at 18 ... 30 V DC)</td>
</tr>
<tr>
<td>Total device power dissipation (W)</td>
<td>max. 3.1 (at 24 V DC)</td>
</tr>
<tr>
<td>LEDs on front</td>
<td>LED 1, green: device ready for operation, LED 2, yellow: motor current &gt; 33 % of (I_s), LED 3, red: fault (trip, device fault, etc.)</td>
</tr>
</tbody>
</table>

#### Mechanical relay contact lifetime

| 250 V AC / 0.5 A | 500 000 switching cycles |
| 250 V AC / 1.5 A | 100 000 switching cycles |

#### Terminal conductor cross section \(mm^2\)

| max. 2.5, max. 2 x 1.5 |

#### Current transformer bushing holes

11 mm Ø (25 mm²)

#### Internal clearance and creepage distances \(mm\)

> 5.5 (safety insulation up to 250 V AC)

#### Mounting

on DIN rail (EN 50022-35) or wall mounting with 4 screws M4

#### Dimensions (W x H x D) \(mm\)

70 x 105 x 110 (incl. FieldBusPlug and Control Panel)

#### Net weight \(kg\)

0.39 (current transf. + control unit)

#### Degree of protection

IP 20

#### Storage temperature range \(°C\)

-25...+70

#### Operating temperature range \(°C\)

0...+55

#### Technical description Order Code

2CDC 135 004 D02xx

#### FieldBusPlug connection

see FBP catalogue

#### Digital inputs

<table>
<thead>
<tr>
<th>Number of digital inputs</th>
<th>6 (DI0 ... DI5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply for digital inputs</td>
<td>18 ... 30V, 70 mA</td>
</tr>
<tr>
<td>1-Signal (range including ripple)</td>
<td>+13 V ... +31.2 V</td>
</tr>
<tr>
<td>0-Signal (range including ripple)</td>
<td>-31.2 V ... +13 V</td>
</tr>
<tr>
<td>Input current per channel</td>
<td>(24 V DC) typ. 6.0 mA</td>
</tr>
<tr>
<td>Input resistor to 0 V</td>
<td>3.9 kOhm</td>
</tr>
<tr>
<td>Line length unshielded</td>
<td>max. 600 m</td>
</tr>
<tr>
<td>Line length shielded</td>
<td>max. 1000 m</td>
</tr>
</tbody>
</table>

#### Digital outputs

| Number of digital relay outputs | 3 (DO0 ... DO2) |
| Grouping of contacts | 3 contacts with 1 common |

#### Switching capacity per relay contact

AC15:

- 120 V AC, max. 3 A, 240 V AC, max. 1.5 A

DC13:

- 24 V DC, max. 0.1 A
- 125 V DC, max. 0.22 A
- 250 V DC, max. 0.11 A

max. load for all contacts | 4 A (terminal 5 or 6) |

min load for switching signals | 12 V, 1 W or 1 VA |

Conductor holes through the current transformers max. 25 mm² (max. diameter incl. insulation 11 mm)
Electronic overload relays E16DU, E200DU, E320DU, E500DU, E800DU
Technical data

Load rating of auxiliary switches

<table>
<thead>
<tr>
<th>Type</th>
<th>E16DU</th>
<th>E200DU, E320DU</th>
<th>E500DU, E800DU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NC</td>
<td>95-96</td>
<td>97-98</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>97-98</td>
<td></td>
</tr>
<tr>
<td>Rated operating voltage $U_e$ V</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Rated thermal continuous current $I_e$ A</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Rated operating current $I_o$ for:
- at AC-15 230 V A 3
- at AC-15 400 V A 1.1
- at AC-15 500 V A 0.7
- at DC-13 24 V A 1.5
- at DC-13 60 V A 0.5
- at DC-13 110 V A 0.4
- at DC-13 220 V A 0.2

Short-circuit protection gG A 6

STOTZ safety circuit-breaker:
- S271
- S281

* on request

Notes for applications with frequent starts

In order to avoid overloads, motors must not be operated with just any starting frequency. With frequent start of motors the rated current of the motor doesn’t play the decisive part anymore but much rather the higher starting current (typical 6 x the rated motor current) as well as the starting frequency, the start-up time and the power-on time. A periodical operation of the motor is exemplified in the current-time-curve below:

Sometimes calculations are done using the power-on time $PT$. The value of $PT$ can be deduced as follows:

$$ PT = \frac{t_{on}}{t_{tot}} $$

The electronic overload relay simulates the thermal behaviour of a motor in a model. The tripping threshold of the overload relay is situated at $(1.125 \pm 0.075) \times$ rated current. The temperature of the motor can have the following characteristics, when it gets started frequently. As shown in this example the mean temperature of the motor stays beneath the permissible maximum temperature, however, on start-up the motor temperature can exceed this temperature barrier. In this case the overload relay trips.

With each start-up, the motor will heat up immensely though for a short time period only (increase in the temperature characteristic of the motor). The heat will distribute itself throughout the motor once the start-up process is finished as well as in breaks when the motor is not running (decrease in the temperature characteristic of the motor). This way the mean temperature of the motor rises. The light curve shows the increase of the mean temperature. To prevent damage to the motor it has to be stopped if the temperature of the motor exceeds the maximum permissible temperature. In this case the overload relay trips.

The tripping curve of the overload relays gives an orientation for the permissible duration of a motor start-up for cases, when due to long power-on times ($PT$) or due to frequent starts the mean effective value of the current reaches the rated current. The mean effective value $I_{eff}$ is calculated as follows:

$$ I_{eff} = \sqrt{I_{rup}^2 \cdot t_{rup} + I_{rated}^2 \cdot (t_{on} - t_{rup})} $$

For overload relays E... the maximum start-up times can be deducted from the curve “warm” for $I_{eff} \leq I_{rated}$ as an orientation. The start-up times should be 10% under the tripping times of the curve (see table).
Electronic overload relays E16DU
for contactors and mini contactors

Technical data

Resistances and power losses

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Short-circuit protection (fuses, miniature circuit-breakers)</th>
<th>Resistance per phase at upper setting current</th>
<th>Power loss per phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ... A</td>
<td>gL/gG</td>
<td>Ω</td>
<td>W</td>
</tr>
</tbody>
</table>

Electronic overload relay E16DU

<table>
<thead>
<tr>
<th>Setting range</th>
<th>Resistance per phase at upper setting current</th>
<th>Power loss per phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 ... 0.32</td>
<td>0.97</td>
<td>0.1</td>
</tr>
<tr>
<td>0.3 ... 1.00</td>
<td>0.113</td>
<td>0.11</td>
</tr>
<tr>
<td>0.9 ... 2.70</td>
<td>0.014</td>
<td>0.1</td>
</tr>
<tr>
<td>2.0 ... 6.30</td>
<td>0.0024</td>
<td>0.1</td>
</tr>
<tr>
<td>5.7 ... 18.90</td>
<td>0.0008</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Approvals and certificates

<table>
<thead>
<tr>
<th>Approvals</th>
<th>Ships' classification societies</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL USA</td>
<td>GL Germany</td>
</tr>
<tr>
<td>CSA Canada</td>
<td>LRS Great Britain</td>
</tr>
<tr>
<td></td>
<td>BV France</td>
</tr>
<tr>
<td></td>
<td>DNV Norway</td>
</tr>
</tbody>
</table>

■ Normal version approved; rating plates bear the test mark if mandatory
☐ Submitted for approval

* Protection of intrinsically safe motors (EN 50019) class Ex "e" to DIN VDE 0165/02.91
(= Protection of intrinsically safe motors (EN 50019) of enclosure increased safety "e" in accordance with the provisions for "Installation of electrical systems in explosion-hazard areas" to DIN VDE 0165/02.91.)
Thermal /electronic overload relays

Accessories

Dimensions

**TA25DU**

![Diagram of TA25DU]

* For TA25DU 32

**TA25DU + DB25**

![Diagram of TA25DU + DB25]

* For TA25DU 32

** For DB25/32 A mounting kit for single set-up

**TA25DU + DS25-A**

![Diagram of TA25DU + DS25-A]

* For TA25DU 32

**Drilling plan**

(TA25DU + DB25/32 A oder DB25/32 A for single set-ups)

**TA42DU**

![Diagram of TA42DU]

**TA25DU + DR25-A**

![Diagram of TA25DU + DR25-A]

* For TA25DU 32
Thermal overload relays
Accessories
Dimensions

TA75DU

TA80DU

* For TA75DU 80

TA42DU, TA75DU, TA80DU + DB80

Drilling plan
(TA42DU, TA75DU und TA80DU + DB80
for single set-up)

TA110DU
Thermal overload relays
Accessories
Dimensions

T / TA200DU

T / TA450DU/SU

T900DU/SU

(dimensions in mm)
Electronic overload relays

Accessories

Dimensions

(Dimensions in mm)

E16DU

E16DU + DB16E

AF400, AF460 + 1 x CAL18
+ electronic overload relays E500DU
Electronic overload relays
Accessories
Dimensions

(Dimensions in mm)

AF400 / AF460 + E500DU + DT500 / AF460S

AF400 / AF460 + E500DU + DT500 / AF460L
Technical Catalogue

Thermal Overload Relays
Electronic Overload Relays

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