## Technical specifications

### General data

<table>
<thead>
<tr>
<th>Type</th>
<th>3RP20 05</th>
<th>3RP20 25</th>
<th>3RP15 05</th>
<th>3RP15 31</th>
<th>3RP15 32</th>
<th>3RP15 11</th>
<th>3RP15 12</th>
<th>3RP15 33</th>
<th>3RP15 25</th>
<th>3RP15 55</th>
<th>3RP15 40</th>
<th>3RP15 60</th>
<th>3RP15 74</th>
<th>3RP15 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage</td>
<td>AC V</td>
<td>300; 500 for 3RP15 05-1BT20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution degree</td>
<td>3, Overvoltage category III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working range at excitation</td>
<td>0.85 ... 1.1 × $U_e$ at AC; 0.8 ... 1.25 × $U_e$ for DC; 0.95 ... 1.05 × rated frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Rated power

- Power consumption at 230 V AC, 50 Hz
  - W
  - VA

### Rated operating currents $I_e$

- AC-15 at 230 V AC, 50 Hz
  - A

- AC-14, DC-13
  - A

- DC-13 at 24 V
  - A

- DC-13 at 48 V
  - A

- DC-13 at 60 V
  - A

- DC-13 at 110 V
  - A

- DC-13 at 230 V
  - A

### Required DIAZED fuse

- Operational class $g_l/g_G$
  - A

### Operating frequency

- when loaded with $I_e$, 230 V AC
  - 1/h

- when loaded with 3RT10 16 contactor, AC 230 V
  - 1/h

### Recovery time

- ms

### Minimum ON period

- ms

### Residual current

- mA

### Voltage drop

- VA

### Short-time loading capacity

- –

### Setting accuracy

- typical ± 5%

### Repeat accuracy

- ± 1 %

### Mechanical endurance

- operating cycles

### Permissible ambient temperature

- during operation
  - °C

- during storage
  - °C

### Degree of protection

- Cover IP40

### Conductor cross-sections

- Screw connection
  - (to connect 1 or 2 conductors;
  - for standard screwdriver (size 2 and Pozidriv 2)
  - solid
  - mm²

- finely stranded
  - mm²

- AWG conductors, solid or stranded
  - terminal screw
  - tightening torque
  - NM

- Spring-loaded terminal
  - (to connect 1 or 2 conductors; for
  - 22.5 mm time relay use screwdriver
  - with 3 mm blade or 8WA2 807
  - opening tool)
  - solid
  - mm²

- finely stranded
  - mm²

- AWG conductors, solid or stranded
  - mm²

1) If nothing else is stated.
2) Maximum inrush current 1 A/100 ms.
3) For 3RP15 05-..R, NC contact $→ I_e = 1 A$.
4) $I_e ≥ 1 kA$, weld-free acc. to IEC 60947-5-1.
5) With 3RP15 05-..BW30/..AW30 and 3RP15 25-..BW30, 10 to 250 ms, voltage-dependent.
6) Minimum ON period with 3RP15 05-..BW30, 150 ms, until instantaneous contact has switched.
7) For correct operation, observe minimum ON period.
### General data

<table>
<thead>
<tr>
<th>Type</th>
<th>3RP20 05</th>
<th>3RP15 05</th>
<th>3RP15 11</th>
<th>3RP15 40</th>
<th>3RP15 60</th>
<th>3RP15 74</th>
<th>3RP15 27</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Permissible mounting position**
- any

**Shock resistance**
- Half-sine acc. to IEC 60068-2-27
- g/ms
- 15/11

**Vibration resistance acc. to IEC 60068-2-6**
- Hz/mm
- 10 ... 55/0.35

**EMC tests**
- acc. to basic specification
- EN 61000-6-2/EN 61000-6-4

### Type

<table>
<thead>
<tr>
<th>Type</th>
<th>7PV33 48</th>
<th>7PV41 48</th>
<th>7PV43 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage</td>
<td>AC V 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overvoltage category C to DIN VDE 0110</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Working range of excitation**
- + 10 ... − 15 %
- 24 V − 15 ... + 30 %

**Rated power**
- Power consumption at 230 V AC, 50 Hz
- VA 11

**Rated operating currents I_{e}**
- AC-1 at AC 230 V, 50 Hz
- A 8

**Operating frequency**
- 1/h
- 600
- 1/h

**Recovery time**
- ms
- 50
- 100

**Minimum ON period**
- ms
- 50
- 100

**Setting accuracy**
- ± 0.03 %
- ± 10 ms

**Repeat accuracy**
- ± 0.03 %
- ± 2 %

**Mechanical endurance**
- operating cycles
- $5 \times 10^6$
- $2 \times 10^7$

**Permissible ambient temperature**
- during operation
- °C − 10 ... + 60
- − 20 ... + 60

**Degree of protection**
- acc. to EN 60529
- IP65
- IP50

**Permissible mounting position**
- any
## General data

<table>
<thead>
<tr>
<th>Type</th>
<th>3RT19 16-2C</th>
<th>3RT19 16-2E</th>
<th>3RT19 16-2F</th>
<th>3RT19 26-2C</th>
<th>3RT19 26-2E</th>
<th>3RT19 26-2F</th>
<th>3RT19 26-2G</th>
<th>3RT19 16-2L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage</td>
<td>AC V 300</td>
<td>0.8 ... 1.1 × Uₘₚ</td>
<td>0.85 ... 1.1 × Uₘₚ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution degree 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overvoltage category III to DIN VDE 0110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working range of excitation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Power consumption at 230 V AC, 50 Hz</td>
<td>W 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating currents Iₑ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC-140; DC-13</td>
<td>A 0.3 for 3RT19 16</td>
<td>A 0.5 for 3RT19 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC-15 at 230 V AC, 50 Hz</td>
<td>A 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC-15 at 24 V</td>
<td>A 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC-13 at 110 V</td>
<td>A 0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC-13 at 230 V</td>
<td>A 0.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required DIAZED fuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational class glG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• when loaded with Iₑ 230 V AC</td>
<td>1/1</td>
<td>2500</td>
<td>2500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• when loaded with 3RT1016 contactor, AC 230 V</td>
<td>1/1</td>
<td>2500</td>
<td>5000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery time</td>
<td>ms 50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum ON period</td>
<td>ms 35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual current (two-wire)</td>
<td>mA ≤ 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage drop with conducting output</td>
<td>VA ≤ 3.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-time loading capacity</td>
<td>A 10 (to 10 ms)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting accuracy with reference to upper limit of scale</td>
<td>≤ ± 15 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeat accuracy</td>
<td>≤ ± 1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical endurance operating cycles</td>
<td>100 × 10⁶</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible ambient temperature during operation</td>
<td>°C 25 ... 60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>during storage</td>
<td>°C 40 ... 85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of protection acc. to EN 60529</td>
<td>Cover IP40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conductor connection</td>
<td>solid</td>
<td>mm² 2 × (0.5 ... 1.5),</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>finely stranded with end sleeve</td>
<td>mm² 2 × (0.75 ... 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>solid or stranded</td>
<td>mm² 2 × (0.5 ... 2.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AWG 2 × (18 ... 14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal screw</td>
<td>M 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tightening torque</td>
<td>NM 0.8 ... 1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible mounting position</td>
<td>any</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock resistance Half-sine acc. to IEC 60068-2-27</td>
<td>g/ms 15/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration resistance acc. to IEC 60068-2-6</td>
<td>Hz/mm 10 ... 55/0.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMC tests acc. to basic specification</td>
<td>IEC 61000-6-2/IEC 61000-6-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overvoltage protection</td>
<td>Varistor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>integrated into time relay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>integrated into 3RT1916</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Functions

### 3RP15/3RP20/7PV function table

<table>
<thead>
<tr>
<th>Function</th>
<th>Function chart</th>
<th>3RP20 time relay and 3RP19 01 label set</th>
<th>3RP15 time relay and 3RP19 01 label set</th>
<th>7PV time relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 changeover contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with ON-delay</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>OFF-delay with auxiliary voltage</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>OFF-delay without auxiliary voltage</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>ON-delay and OFF-delay with auxiliary voltage ( (t = t_{on} = t_{off}) )</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>flashing, starting with interval (pulse/interval 1:1)</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>clock-pulse, starting with interval (dead interval, pulse time, and time setting ranges each separately adjustable)</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>passing make contact</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>passing break contact with auxiliary voltage</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>pulse shaping with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>additive ON-delay with auxiliary voltage</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
<tr>
<td>1 normally open contact (semiconductor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON-delay</td>
<td>A1/A2</td>
<td>15/18</td>
<td>15/18</td>
<td>7PV</td>
</tr>
</tbody>
</table>

1) Note on function with start contact: a new control signal at terminal B after the operating time has started resets the operating time to zero. This does not apply to "G", "G" and "H", "H" which are not retriggerable.

2) For the flashing function, the start between interval "D" and pulse "Di" is selectable.

3) This function is indicated on the unit with the identification letter "C".

4) This function is indicated on the unit with the identification letter "H".

5) This function is indicated on the unit with the identification letter "B".

### General data

- **Time Relays**
- **Functions**
- **3RP15/3RP20/7PV function table**

1) Note on function with start contact: a new control signal at terminal B after the operating time has started resets the operating time to zero. This does not apply to "G", "G" and "H", "H" which are not retriggerable.

2) For the flashing function, the start between interval "D" and pulse "Di" is selectable.

3) This function is indicated on the unit with the identification letter "C".

4) This function is indicated on the unit with the identification letter "H".

5) This function is indicated on the unit with the identification letter "B".
### Time Relays

#### General data

<table>
<thead>
<tr>
<th>Function</th>
<th>Function chart</th>
<th>3RP20 time relay and 3RP19 01 label set</th>
<th>3RP15 time relay and 3RP19 01 label set</th>
<th>Identification letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time relay energized</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact open</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2 changeover contacts

**with ON-delay**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ON-delay and instantaneous contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF-delay with auxiliary voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF-delay with auxiliary voltage and instantaneous contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF-delay without auxiliary voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON-delay and OFF-delay with auxiliary voltage ( (t = t_{ON} = t_{OFF}) )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON-delay and OFF-delay with auxiliary voltage and instantaneous contact ( (t = t_{ON} = t_{OFF}) )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>flashing, starting with interval (pulse/interval)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>flashing, starting with interval (pulse/interval 1:1) and instantaneous contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>passing make contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>passing make contact and instantaneous contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Note on function with start contact: a new control signal at terminal B after the operating time has started resets the operating time to zero. This does not apply to G, G, and H, H, which are not retriggerable.
### General data

#### Function chart

<table>
<thead>
<tr>
<th>Function</th>
<th>Function chart</th>
<th>3RP20 time relay and 3RP19 01 label set</th>
<th>3RP15 time relay and 3RP19 01 label set</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 changeover contacts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>passing break contact with auxiliary voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pulse shaping with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pulse shaping with auxiliary voltage and instantaneous contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>additive ON-delay with auxiliary voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>additive ON-delay with auxiliary voltage and instantaneous contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>star-delta function</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 normally open contacts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>star-delta function  ( \gamma \Delta )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 normally open contacts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>star-delta function with overtravel function ( ^{n} ) (idling)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Note on function with start contact: a new control signal at terminal B after the operating time has started resets the operating time to zero. This does not apply to G, G\( ^{1} \) and H, H\( ^{1} \), which are not retriggerable.

2) For function diagrams showing the various possibilities of operation of the 3RP15 60-15 30 (see Page 8/11).
**Time Relays**

### General data

#### 3RP15 function table

**Possibilities of operation of the 3RP15 60-1S.30 time relay**

<table>
<thead>
<tr>
<th>Operation</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation 1</td>
<td>A./A2</td>
<td>Start contact B./A2 is opened when supply voltage A./A2 is applied. The supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the <em>Δ</em> timing. The idling time (overtravel time) is started by applying a control signal to B./A2. When the set time <em>t</em>(_{\text{idling}}) (30 to 600 s) has elapsed, the output relays (17/16 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.</td>
</tr>
<tr>
<td>Operation 1</td>
<td>B./A2</td>
<td>Start contact B./A2 is closed when supply voltage A./A2 is applied. If the control signal B./A2 is already present when the supply voltage A./A2 is applied, no timing is started. The timing is only started when the control signal B./A2 is switched off.</td>
</tr>
<tr>
<td>Operation 1</td>
<td>17/18</td>
<td>Start contact B./A2 opens while delta time is running and is applied again. If the control signal on B./A2 is applied and switched off again during the delta time although the idling time has not yet elapsed, the idling time (overtravel time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.</td>
</tr>
<tr>
<td>Operation 1</td>
<td>17/16</td>
<td>Operation 2: Start contact B./A2 is closed when supply voltage A./A2 is applied. If the control signal B./A2 is already present when the supply voltage A./A2 is applied, no timing is started. The timing is only started when the control signal B./A2 is switched off.</td>
</tr>
<tr>
<td>Operation 1</td>
<td>17/18</td>
<td>Operation 2: Start contact B./A2 closes while star time is running. If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.</td>
</tr>
<tr>
<td>Operation 1</td>
<td>17/28</td>
<td>Operation 2: Start contact B./A2 opens while delta time is running and is applied again. If the control signal on B./A2 is applied and switched off again during the delta time although the idling time has not yet elapsed, the idling time (overtravel time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.</td>
</tr>
<tr>
<td>Operation 2</td>
<td>17/18</td>
<td>Operation 3: Start contact B./A2 closes while star time is running. If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.</td>
</tr>
<tr>
<td>Operation 2</td>
<td>17/28</td>
<td>Operation 3: Start contact B./A2 closes while star time is running. If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.</td>
</tr>
<tr>
<td>Operation 3</td>
<td>17/16</td>
<td>Operation 3: Start contact B./A2 closes while star time is running. If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.</td>
</tr>
</tbody>
</table>

#### Notes:

- Observe response time (dead time) of 400 ms on energizing supply voltage until contacts 17/18 and 17/16 close.

#### Application example based on standard operation (operation 1)

For example, use of 3RP15 60 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new time relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in idling mode for a specific time which can be set from 30 to 600 s. If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation. If the pressure does not fall within this idling time, the motor is switched off.

The pressure switch controls the timing via B./A2. The supply voltage is applied to A./A2 and the start contact B./A2 is open, i.e. there is no control signal on B./A2 when the supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing through terminals B./A2. The compressor is started, enters *Y* operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (overtravel time) is started, and the compressor enters no-load operation for the set period of time between 30 to 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).
Time Relays

General data

Circuit diagrams

Internal circuit diagrams (terminal designation to DIN 46199, Part 5)

3RP15 05-.A
3RP15 05-.A
3RP15 3-.A
3RP20 05
3RP20 05

AC/DC 24...66 V
AC/DC 90...240 V

passing make contact
passing break contact with auxiliary voltage
passing break contact with auxiliary voltage
passing make contact

3RP15 05-.A
3RP15 05-.A
3RP20 05
3RP20 00
3RP15 05-.A

U = AC/DC 24 ... 66 V
AC/DC 90 ... 240 V

AC/DC 24-66V
AC/DC 90-240V

ON-delay, two-wire design
OFF-delay without auxiliary voltage
pulse-forming with auxiliary voltage

3RP15 05-.B, 3RP15 25-1B
3RP15 05-.B
3RP15 05-.B
3RP15 05-.B
3RP15 05-.B

ON-delay, 3RP15 25-1B
OFF-delay with auxiliary voltage
ON-delay and OFF-delay with auxiliary voltage
ON-delay and OFF-delay with auxiliary voltage
ON-delay and OFF-delay with auxiliary voltage

3RP20 05
3RP20 05
3RP20 00
3RP20 00
3RP20 05

also for AC/DC 48/60 V
(see Page 8/13 3RP15 25-1BR30)

ON-delay and OFF-delay with auxiliary voltage
flashing
additive ON-delay with auxiliary voltage
multi-function relay
(same functions as 3RP15 05-1A)
additive ON-delay with auxiliary voltage and instantaneous contact
ON-delay and instantaneous contact

passing make contact and instantaneous contact

star-delta time relay

with ON-delay

ON-delay (A)

flashing, starting with interval (D)

flashing, starting with pulse (Di)

△ Important!
The terminal designations for 7PV are different from the designations for the 3RP1 terminals.
## General data

<table>
<thead>
<tr>
<th>Model</th>
<th>Symbol</th>
<th>ON-delay (0)</th>
<th>ON-delay and instantaneous contact (1)</th>
<th>OFF-delay with auxiliary voltage (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7PV41 48-1BG30</td>
<td><img src="image1" alt="" /></td>
<td>ON-delay (0)</td>
<td>ON-delay and instantaneous contact (1)</td>
<td>OFF-delay with auxiliary voltage (C)</td>
</tr>
<tr>
<td>7PV41 48-1BP30</td>
<td><img src="image2" alt="" /></td>
<td>ON-delay (0)</td>
<td>ON-delay and instantaneous contact (1)</td>
<td>OFF-delay with auxiliary voltage (C)</td>
</tr>
<tr>
<td>7PV43 48-1AG30</td>
<td><img src="image3" alt="" /></td>
<td>ON-delay (A)</td>
<td>OFF-delay with auxiliary voltage (C)</td>
<td></td>
</tr>
<tr>
<td>7PV43 48-1AP30</td>
<td><img src="image4" alt="" /></td>
<td>ON-delay (A)</td>
<td>OFF-delay with auxiliary voltage (C)</td>
<td></td>
</tr>
</tbody>
</table>

### Important!
The terminal designations for 7PV are different from the designations for the 3RP1 terminals.

## Position of the connection terminals

### 3RP20 05-A

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP20 25-A

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP20 05-BW30

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP15 05-1A

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP15 05-1AW

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP15 05-1B

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP15 05-1BT

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP15 05-1BW

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>

### 3RP15 05-RW

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>A3</td>
</tr>
<tr>
<td>16</td>
<td>A2</td>
</tr>
</tbody>
</table>
Position of the connection terminals

3RP15 1

A1 A3 15
for 1 changeover contact
16 18 A2

3RP15 25-1A

A1 A3 15
for 1 changeover contact
16 18 A2

3RP15 27

A1 A3 15
for 1 NO contact
16 18 A2

3RP15 55

A1 A3 15
for 1 changeover contact
16 18 A2

3RP15 60

A1 A3 15
for 1 NO contact
16 18 28 A2

3RP15 7

A1 A3 17
for 1 NO contact
16 18 28 A2

LZX socket: MR78750
Size S00 to S3

Socket TPX9921
for time relays 7PV33; 7PV4.
Size S00 to S3

Note: all the diagrams show the view onto the connection terminals.

3RP15/3RP20/7PV circuit diagrams

Control circuits (example circuits)
with 3RP15 74 and 3RP15 76 star-delta time relays

for pushbutton operation
Size S00 to S3

Control circuit (example circuit)
with 3RP15 60 star-delta time relays

Legend:
S0 button "OFF"
S1 button "ON"
S maintained-contact button
K1 line contactor
K2 star contactor
K3 delta contactor
K4 timer or time relay
F0 fuse
F1 overload relay
P1 pressure switch

The 17/18 contact is only closed on the star level; it is open on the delta level as well as when the power is switched off.

1) Depending on the version.
Time Relays

General data

3RT19 circuit diagrams

Control circuits (example circuits)
with delayed 3RT19 6-2G star-delta auxiliary switch block.

for pushbutton operation

Size S00

for maintained-contact operation

Size S00

Sizes S0 to S3

Sizes S0 to S3

Legend:

- S0 "OFF" button
- S1 "ON" button
- S Maintained-contact switch
- K1 Line contactor
- K2 Star contactor
- K3 Delta contactor
- K4 Timer or time relay
- F0 Fuse
- F1 Overload relay

Contact 27/28 of the solid-state time-delay auxiliary switch block with star-delta function is only closed on the star level. It is open on the delta level as well as when the power is switched off.

Solid-state time relay block

for size S00 to S3 3RT10 contactors and 3RH11 auxiliary contacts

3RT19 16-2C...

3RT19 26-2C...

3RT19 16-2D.../3RT19 26-2D...

Diagram showing the connections and symbols for the different components such as contactors, timers, and auxiliary switches.
Time Relays

**Overview**

**Standards**
The time relays comply with:
- EN 60721-3-3 "Environmental conditions"
- EN 61812-1 (VDE 0435 Part 2021) "Solid-state relays, time relays"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage controlgear, switchgear and systems – Electromechanical controlgear"

**3RP15 time relays, width 22.5 mm**

**Accessories**
- Push-in lugs for screw mounting
- Sealable cover
- Label set for marking the multifunction relay

**Area of application**
Time relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

**Casing design**
All time relays are suitable for snap-on mounting onto 35 mm standard mounting rails to EN 60715 or for screw fixing.

**Functions**
- Changing the time setting ranges and the functions are only effective when carried out in de-energized state.
- Start input B1 or B3 must only be triggered when the supply voltage is applied.
- The same potential must be applied to A1 and B1 or A3 and B3. With two-voltage versions, only one voltage range must be connected.
- The activation of loads parallel to the start input is not permissible when using AC control voltage (see circuit diagrams).
- Surge suppression is integrated in the time relay. This prevents the generation of voltage peaks on the supply voltage when the relay is switched on and off. No damping measures are integrated at the contacts.
- 3RP15 05-.R must not be operated next to heat sources > 60 °C.

**Parallel load on start input**

![Parallel load on start input diagram]
### Selection and ordering data

**Screw-type and spring-loaded connection**

Solid-state time relays for general use in control systems and mechanical engineering with:

- 1 changeover contact or 2 changeover contacts

#### Time Relays in 22.5 mm industrial enclosure

<table>
<thead>
<tr>
<th>Version</th>
<th>Time setting range ( t )</th>
<th>Rated control supply voltage ( U_s )</th>
<th>DT</th>
<th>Screw connection</th>
<th>PS*</th>
<th>Weight per PU</th>
<th>Order No.</th>
<th>Spring-loaded terminal</th>
<th>PS*</th>
<th>Weight per PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>3RP15 05-1BT20</td>
<td>0.05 ... 3 h</td>
<td>AC 50/60 Hz, DC</td>
<td>V</td>
<td>3RP15 05-1BT20</td>
<td>0.05 A</td>
<td>0.120</td>
<td>1 unit</td>
<td>3RP15 05-2BT20</td>
<td>0.05 A</td>
<td>0.120</td>
</tr>
<tr>
<td>3RP15 25-1BP30</td>
<td>1.5 ... 30 h</td>
<td>24/100 ... 127 V</td>
<td>24/200 ... 240 V</td>
<td>1.5 ... 30 h</td>
<td>24/100 ... 127 V</td>
<td>24/200 ... 240 V</td>
<td>1.5 ... 30 h</td>
<td>24/100 ... 127 V</td>
<td>24/200 ... 240 V</td>
<td>1.5 ... 30 h</td>
</tr>
</tbody>
</table>

**3RP15 05 time relays, multifunction, 15 time setting ranges**

The functions can be adjusted by means of rotary switches. Indicator labels can be used to adjust different functions of the 3RP15 05 time relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

With LED and:

1 changeover contact, 10 functions, 15 time setting ranges

2 changeover contacts, 16 functions, 15 time setting ranges

#### 3RP15 1 time relays, ON-delay, 1 time setting range

<table>
<thead>
<tr>
<th>with LED and</th>
<th>0.5 ... 10 s</th>
<th>24/100 ... 127 V</th>
<th>24/200 ... 240 V</th>
<th>1 unit</th>
<th>0.090</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 changeover contact</td>
<td>1.5 ... 30 s</td>
<td>24/100 ... 127 V</td>
<td>24/200 ... 240 V</td>
<td>1 unit</td>
<td>0.105</td>
</tr>
<tr>
<td>5 ... 100 s</td>
<td>24/200 ... 240 V</td>
<td>1 unit</td>
<td>0.106</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3RP15 25 time relays, ON-delay, 15 time setting ranges

<table>
<thead>
<tr>
<th>with LED and</th>
<th>0.5 ... 10 s</th>
<th>24/100 ... 127 V</th>
<th>24/200 ... 240 V</th>
<th>1 unit</th>
<th>0.120</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 changeover contact</td>
<td>1.5 ... 30 s</td>
<td>24/100 ... 127 V</td>
<td>24/200 ... 240 V</td>
<td>1 unit</td>
<td>0.125</td>
</tr>
<tr>
<td>5 ... 100 s</td>
<td>24/200 ... 240 V</td>
<td>1 unit</td>
<td>0.126</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3RP15 27 time relays, ON-delay, two-wire design, 4 time setting ranges

<table>
<thead>
<tr>
<th>1 NO contact (semiconductor)</th>
<th>0.05 ... 4 s</th>
<th>24 ... 66 V</th>
<th>24 ... 66 V</th>
<th>1 unit</th>
<th>0.090</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 ... 30 s</td>
<td>24 ... 66 V</td>
<td>24 ... 66 V</td>
<td>1 unit</td>
<td>0.100</td>
<td></td>
</tr>
<tr>
<td>12 ... 240 s</td>
<td>24 ... 66 V</td>
<td>24 ... 66 V</td>
<td>1 unit</td>
<td>0.100</td>
<td></td>
</tr>
</tbody>
</table>

1) For functions, see 3RP19 01-0, label set.

2) At switch position \( \omega_1 \), no timing. For test purposes (ON/OFF function) on site, relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

3) Operating range 0.8 to 1.1 \( U_s \),
4) Operating range 0.7 to 1.1 \( U_s \),

5) Positively driven: NO and NC are never closed simultaneously; contact gap 2.0 \( \text{mm} \) is ensured, minimum make-break capacity 12 V, 3 mA.

6) The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no star-delta, no instantaneous contact).
### Time Relays

**Screw and spring-loaded connection**

Solid-state time relays for general use in control systems and mechanical engineering with:
- 1 changeover contact or 2 changeover contacts

<table>
<thead>
<tr>
<th>Version</th>
<th>Time setting range (t)</th>
<th>Rated control supply voltage</th>
<th>DT</th>
<th>AC 50/60 Hz</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>adjustable by</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rotary switch to V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V fiat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3RP15 3. time relays, OFF-delay, with auxiliary voltage, 1 time setting range

- with LED and 1 changeover contact: 0.05 ... 1 s
- with LED and 1 changeover contact: 0.15 ... 3 s
- 2 changeover contacts: 0.05 ... 10 s
- 2 changeover contacts: 0.15 ... 30 s
- 2 changeover contacts: 3 ... 60 s
- 2 changeover contacts: 5 ... 100 s

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Screw connection</th>
<th>PS*</th>
<th>Weight per PU approx.</th>
<th>DT</th>
<th>Spring-loaded terminal</th>
<th>PS*</th>
<th>Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3RP15 31-1AQ30</td>
<td>1 unit 0.135 C</td>
<td>3RP15 31-2AQ30</td>
<td>1 unit 0.124</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3RP15 31-1AP30</td>
<td>1 unit 0.136 C</td>
<td>3RP15 31-2AP30</td>
<td>1 unit 0.125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3RP15 32-1AQ30</td>
<td>2 unit 0.135 C</td>
<td>3RP15 32-2AQ30</td>
<td>1 unit 0.125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3RP15 32-1AP30</td>
<td>2 unit 0.136 C</td>
<td>3RP15 32-2AP30</td>
<td>1 unit 0.125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3RP15 33-1AQ30</td>
<td>2 unit 0.135 C</td>
<td>3RP15 33-2AQ30</td>
<td>1 unit 0.125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3RP15 33-1AP30</td>
<td>2 unit 0.136 C</td>
<td>3RP15 33-2AP30</td>
<td>1 unit 0.125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3RP15 40 time relays, OFF-delay, without auxiliary voltage, 7 time setting ranges

1) Setting of output contacts in as-supplied state not defined (bistable relay).
2) Operating range 0.7 to 1.25 x Uₜ.
3) Operating range 0.85 to 1.1 x Uₜ.
4) With selection of, no timing. For test purposes (ON/OFF function) on site.
5) Operating range 0.8 to 1.1 x Uₜ.
6) For typical circuit, see General data.

#### 3RP15 55 time relays, clock-pulse relay, 15 time setting ranges

- with LED and 1 changeover contact: 0.05 ... 1 s
- with LED and 1 changeover contact: 0.15 ... 3 s
- 2 changeover contacts: 0.05 ... 10 s
- 2 changeover contacts: 0.15 ... 30 s
- 2 changeover contacts: 3 ... 60 s
- 2 changeover contacts: 5 ... 100 s

#### 3RP15 60 time relays, star-delta function, dead interval 50 ms and overtravel time, 1 time setting range

- 3 NO contacts: Star-delta function
  - 1 ... 20 s
  - 1 ... 60 s
  - overtravel time (idling) 30 ... 600 s

#### 3RP15 7. time relays, star-delta function, 1 time setting range

- 1 NO contact: 1 ... 20 s
  - instantaneous
  - and 1 NO contact: 3 ... 60 s
  - (common contact: rotary terminal 17)

---

* This quantity or a multiple thereof can be ordered.

---

8/19  Siemens LV 10 · 2004
# Time Relays

## Time relays in 22.5 mm industrial enclosure

### Label sets

Accessory for 3RP15 05 (not included in the scope of supply). The label set offers the possibility of labeling time relays with the set function in English and German.

<table>
<thead>
<tr>
<th>Version</th>
<th>Function</th>
<th>Code letter</th>
<th>Application</th>
<th>DT</th>
<th>Order No.</th>
<th>PS*</th>
<th>Weight per PU approx. kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete set with 8 functions 1 set = 5 units</td>
<td>with ON-delay OFF-delay with auxiliary voltage ON-delay and OFF-delay with auxiliary voltage flashing, starting with interval passing make contact passing break contact with auxiliary voltage pulse-forming with auxiliary voltage additive ON-delay with auxiliary voltage</td>
<td>A B C D E F G H</td>
<td>for relays with 1 changeover contact and 3RP15 05-RW30</td>
<td>3RP19 01-0A</td>
<td>1 set</td>
<td>0.003</td>
<td></td>
</tr>
</tbody>
</table>

| Complete set with 16 functions 1 set = 5 units | with ON-delay OFF-delay with auxiliary voltage ON-delay and OFF-delay with auxiliary voltage flashing, starting with interval passing make contact passing break contact with auxiliary voltage pulse-forming with auxiliary voltage additive ON-delay with auxiliary voltage and instantaneous contact ON-delay and instantaneous contact OFF-delay with auxiliary voltage and instantaneous contact ON-delay and OFF-delay with auxiliary voltage and instantaneous contact flashing, starting with interval, and instantaneous contact passing make contact and instantaneous contact passing break contact with auxiliary voltage and instantaneous contact pulse-forming with auxiliary voltage and instantaneous contact star-delta function | A B C D E F G H | for relays with 2 changeover contacts | 3RP19 01-0B | 1 set | 0.003 |

### Covering caps and push-in lugs

- **Push-in lug** for screw fixing for relays with 1 or 2 changeover contacts

- **Sealable cap** for securing against unauthorized adjustment of setting knobs for relays with 1 or 2 changeover contacts

### Tools for opening spring-loaded terminal connections

- **8WA2 803** Length: approx. 100 mm; 3.5 x 0.5 (green) for all 3RP20 time relays with spring-loaded terminal connections

- **8WA2 804** Length: approx. 175 mm; 3.5 x 0.5 (green) for all 3RP20 time relays with spring-loaded terminal connections

- **8WA2 807** Length: approx. 160 mm, 2.5 x 0.4 (green) for all 3RP15 time relays with spring-loaded terminal connections

* This quantity or a multiple thereof can be ordered.
Time Relays

Overview

Standards

The time relays comply with:
- EN 60721-3-3 "Environmental conditions"
- EN 61812-1 (VDE 0435 Part 2021) "Solid-state relays, time relays"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage controlgear, switchgear and systems – Electromechanical controlgear"
- EN 61140 "Safe electrical isolation"

3RP20 time relay, width 45 mm

45 mm SIRIUS Design time relays

Functions

- Changing the time setting ranges and the functions is only effective when carried out in de-energized state.
- Start input B1 or B3 must only be triggered when the supply voltage is applied.
- The same potential must be applied to A1 and B1 or A3 and B3. With two-voltage version, only one voltage range must be connected.
- The activation of loads parallel to the start input is not permissible when using AC (see diagrams).
- Surge suppression is integrated in the time relay. This prevents the generation of voltage peaks on the supply voltage when the relay is switched on and off. No additional damping measures are necessary.

Time relay with multifunction

The functions can be adjusted by means of rotary switches. Indicator labels can be used to adjust different functions of the 3RP20 05 time relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A1 and B1.

3RP20 05 with one changeover contact

corresponds to the functions of 3RP15 05-A.

3RP20 05 with two changeover contacts

corresponds to the functions of 3RP15 05-B.

Parallel load on start input

Accessories

Label set for marking the multifunction relay

Area of application

Time relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.
**Selection and ordering data**

**Multifunction**

The functions can be adjusted by means of rotary switches\(^1\). Indicator labels can be used to adjust different functions of the 3RP20 05 time relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

---

### 3RP20 05 time relays, multifunction, 15 time setting ranges

<table>
<thead>
<tr>
<th>Version</th>
<th>Time setting range</th>
<th>Rated control supply voltage (U_s)</th>
<th>DT Screw connection</th>
<th>PS* Weight per PU approx.</th>
<th>Order No.</th>
<th>PS* Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AC 50-60 Hz V</td>
<td>DC V</td>
<td></td>
<td>Order No.</td>
<td></td>
</tr>
<tr>
<td>3RP20 05-1BW30</td>
<td>0.05 ... 1 s</td>
<td>24/100 ... 127 24</td>
<td>3RP20 05-1AQ30</td>
<td>1 unit 0.118</td>
<td>3RP20 05-2AQ30</td>
<td>1 unit 0.120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24/200 ... 240 24</td>
<td>3RP20 05-1AP30</td>
<td>1 unit 0.118</td>
<td>3RP20 05-2AP30</td>
<td>1 unit 0.121</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 ... 240(^2)</td>
<td>3RP20 05-1BW30</td>
<td>1 unit 0.128</td>
<td>3RP20 05-2BW30</td>
<td>1 unit 0.131</td>
</tr>
</tbody>
</table>

---

### 3RP20 25 time relays, ON-delay, 15 time setting ranges

<table>
<thead>
<tr>
<th>Version</th>
<th>Time setting range</th>
<th>Rated control supply voltage (U_s)</th>
<th>DT Screw connection</th>
<th>PS* Weight per PU approx.</th>
<th>Order No.</th>
<th>PS* Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AC 50-60 Hz V</td>
<td>DC V</td>
<td></td>
<td>Order No.</td>
<td></td>
</tr>
<tr>
<td>3RP20 25-1AP30</td>
<td>0.05 ... 1 s</td>
<td>24/100 ... 127 24</td>
<td>3RP20 25-1AQ30</td>
<td>1 unit 0.106</td>
<td>3RP20 25-2AQ30</td>
<td>1 unit 0.110</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24/200 ... 240 24</td>
<td>3RP20 25-1AP30</td>
<td>1 unit 0.106</td>
<td>3RP20 25-2AP30</td>
<td>1 unit 0.108</td>
</tr>
</tbody>
</table>

---

1) For functions, see 3RP19 01-0. label set, Page 8/20.

2) Units with safe electrical isolation.

3) With switch position \(\infty\), no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

4) Operating range \(0.8 \ldots 1.1 \times U_s\).

5) Operating range \(0.7 \ldots 1.1 \times U_s\).
### Selection and ordering data

<table>
<thead>
<tr>
<th>Version</th>
<th>Time setting range 1</th>
<th>Rated control supply voltage $U_s$</th>
<th>DT</th>
<th>Order No.</th>
<th>PS*</th>
<th>Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AC 50-60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7PV41  48 time relays, ON-delay, 6 analog time setting ranges</td>
<td>with LED and 2 delayed changeover contacts or 1 delayed changeover contact + 1 instantaneous changeover contact</td>
<td>0.1 ... 1 s 1 ... 10 s 1 ... 10 min 0.1 ... 1 h 1 ... 10 h</td>
<td>24/110 24/220 ... 240</td>
<td>24</td>
<td>7PV41 48-1BG30</td>
<td>1 unit 0.125</td>
</tr>
<tr>
<td>7PV43  48 time relays, multifunction, 6 analog time setting ranges</td>
<td>with LED and changeover contact, ON-delay, OFF-delay with auxiliary voltage, pulse-forming, passing make contact (^1)</td>
<td>0.1 ... 1 s 1 ... 10 s 0.1 ... 1 min 1 ... 10 min 0.1 ... 1 h 1 ... 10 h</td>
<td>24/110 24/220 ... 240</td>
<td>24</td>
<td>7PV43 48-1AG30</td>
<td>1 unit 0.108</td>
</tr>
<tr>
<td>7PV33  48 time relays, multifunction, digitally adjustable, 11 time setting ranges</td>
<td>with LCD display, 1 changeover contact, ON-delay, OFF-delay with auxiliary voltage, flashing, pulse starting, interval starting, passing make contact, pulse-forming, non-volatile setting parameters; the elapsed time is not saved (^2)</td>
<td>0.01 s ... 9999 h</td>
<td>24/110 ... 240</td>
<td>24</td>
<td>7PV33 48-2AX34</td>
<td>1 unit 0.133</td>
</tr>
</tbody>
</table>

**Sockets**

<table>
<thead>
<tr>
<th>Socket</th>
<th>Configuration</th>
<th>Order No.</th>
<th>PS*</th>
<th>Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7PX9 921</td>
<td>11-pole socket with rear connection</td>
<td>7PX9 921</td>
<td>1 unit 0.051</td>
<td></td>
</tr>
<tr>
<td>LZX:MT78750</td>
<td>11-pole socket for DIN rail and mounting</td>
<td>LZX:MT78750</td>
<td>1 unit 0.063</td>
<td></td>
</tr>
</tbody>
</table>

1) No parallel load on terminal B1 permitted!
2) Possibility of connecting parallel load to terminal B1!

**Note**

7PV41 and 7PV43 are obsolete types! Do not plan with them in new applications and projects. A new development with a wider functionality and a modified base is due in the middle of 2004.

For new applications we recommend the use of 7PV33.

* This quantity or a multiple thereof can be ordered.
Time Relays

Time relays for mounting onto contactors

Selection and ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Auxiliary contacts Function</th>
<th>Rated control supply voltage $U_0$</th>
<th>Time setting range $t$ DT</th>
<th>Order No.</th>
<th>PS*</th>
<th>Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time relay energized</td>
<td>S</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time relay closed</td>
<td>S</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contact open</td>
<td>S</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For size S00, 1) with screw connection

![Image](image1.png)

Terminal designations to EN 46199 Part 5

- **ON-delay (varistor integrated)**
  - 1 NO + 1 NC
  - $U_0$: AC/DC 24
  - $t$: 0.05...1
  - Order No.: 3RT19 16-2EJ11
  - PS*: 1 unit
  - Weight: 0.085 kg

- **OFF-delay without auxiliary voltage (varistor integrated)**
  - 1 NO + 1 NC
  - $U_0$: AC/DC 24
  - $t$: 0.05...1
  - Order No.: 3RT19 16-2EJ31
  - PS*: 1 unit
  - Weight: 0.084 kg

For sizes S0 to S12, 2) with screw connection

![Image](image2.png)

- **OFF-delay without auxiliary voltage**
  - 1 NO + 1 NC
  - $U_0$: AC/DC 24
  - $t$: 0.05...1
  - Order No.: 3RT19 16-2EJ11
  - PS*: 1 unit
  - Weight: 0.089 kg

- **Star-delta function (varistor integrated)**
  - 1 NO, delayed + 1 NO, instantaneous, dead time 50 ms
  - $U_0$: AC/DC 24
  - $t$: 1.5...30
  - Order No.: 3RT19 16-2EJ11
  - PS*: 1 unit
  - Weight: 0.089 kg

For sizes S00, 1) with screw connection

![Image](image3.png)

- **OFF-delay without auxiliary voltage**
  - 1 NO + 1 NC
  - $U_0$: AC/DC 24
  - $t$: 0.05...1
  - Order No.: 3RT19 16-2EJ11
  - PS*: 1 unit
  - Weight: 0.089 kg

1) The terminals for the rated control supply voltage are connected to the contactor by the integrated spring-type contacts of the solid-state time-delay auxiliary switch block when mounting.

2) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.

3) The terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch block must be connected to the corresponding contactor by connecting leads.

* This quantity or a multiple thereof can be ordered.
## Time Relays

### Time relays for mounting onto contactors

<table>
<thead>
<tr>
<th>Function</th>
<th>Time relay energized</th>
<th>Contact closed</th>
<th>Contact open</th>
<th>Contactor energized</th>
</tr>
</thead>
</table>

### For size S00, with semiconductor output and screw connection

#### for mounting onto the front of contactors

The electrical connection between the time-relay block and the contactor beneath is established automatically when it is snapped on.

- **ON-delay, two-wire version (varistor integrated)**
  - 3RT19 16-2C...
  - 3RT19 16-2D...

- **OFF-delay with auxiliary voltage (varistor integrated)**
  - 3RT19 16-2C...
  - 3RT19 16-2D...

### For sizes S0 to S3, with semiconductor output and screw connection

#### for mounting onto coil terminals on top of the contactors

The electrical connection between the relay block and the corresponding contactor is established by screwing the two connecting pins of the time-relay block to coil terminals A1/A2 on top of the contactor.

- **ON-delay, two-wire version (varistor integrated)**
  - 3RT19 26-2C...
  - 3RT19 26-2D...

- **OFF-delay with auxiliary voltage (varistor integrated)**
  - 3RT19 26-2C...
  - 3RT19 26-2D...

1) Not for 3RT10 4 contactor with 24 to 42 V rated control supply voltage.

* This quantity or a multiple thereof can be ordered.

<table>
<thead>
<tr>
<th>Type</th>
<th>V</th>
<th>S</th>
<th>Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>kg</td>
</tr>
</tbody>
</table>

**Rated control supply voltage $U_s$, Time setting range $t_{DT}$, Order No., PS***