Circuit diagram symbols
## CIRCUIT DIAGRAM SYMBOLS

### Electrical network elements

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="three-phase line or cable" /></td>
<td>three-phase line or cable</td>
<td><img src="image" alt="single-phase line or cable" /></td>
<td>single-phase line or cable</td>
</tr>
<tr>
<td><img src="image" alt="short circuit" /></td>
<td>short circuit</td>
<td><img src="image" alt="earth electrode" /></td>
<td>earth electrode</td>
</tr>
<tr>
<td><img src="image" alt="outgoing feeder" /></td>
<td>outgoing feeder</td>
<td><img src="image" alt="supply incoming feeder" /></td>
<td>supply incoming feeder</td>
</tr>
<tr>
<td><img src="image" alt="resistor" /></td>
<td>resistor</td>
<td><img src="image" alt="variable resistor" /></td>
<td>variable resistor</td>
</tr>
<tr>
<td><img src="image" alt="reactor or transformer, motor or generator winding" /></td>
<td>reactor or transformer, motor or generator winding</td>
<td><img src="image" alt="iron core reactor" /></td>
<td>iron core reactor</td>
</tr>
<tr>
<td><img src="image" alt="capacitor" /></td>
<td>capacitor</td>
<td><img src="image" alt="impedance (Z, R, L or C)" /></td>
<td>impedance (Z, R, L or C)</td>
</tr>
<tr>
<td><img src="image" alt="star-connected winding" /></td>
<td>star-connected winding</td>
<td><img src="image" alt="delta-connected winding" /></td>
<td>delta-connected winding</td>
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<tr>
<td><img src="image" alt="varistor or surge arrester" /></td>
<td>varistor or surge arrester</td>
<td><img src="image" alt="spark gap or overvoltage limiter" /></td>
<td>spark gap or overvoltage limiter</td>
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<tr>
<td><img src="image" alt="diode" /></td>
<td>diode</td>
<td><img src="image" alt="thyristor" /></td>
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<td><img src="image" alt="inverter" /></td>
<td>inverter</td>
<td><img src="image" alt="rectifier" /></td>
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<td>Symbol</td>
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<tr>
<td>J</td>
<td>source of current</td>
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<tr>
<td>M</td>
<td>metering</td>
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<td></td>
<td>measuring device</td>
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<td>electrical power outlet</td>
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<td></td>
<td>switch disconnector</td>
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<td></td>
<td>isolator</td>
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<td>fuse</td>
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<tr>
<td></td>
<td>switch-fuse</td>
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<tr>
<td></td>
<td>circuit-breaker</td>
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<tr>
<td></td>
<td>circuit-breaker fitted with a (thermal) overload and (magnetic) short-circuit trip relay</td>
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<td></td>
<td>contactor</td>
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<td></td>
<td>fuse contactor</td>
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<td>drawout circuit-breaker</td>
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<td>changeover switch</td>
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<td>transformer</td>
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<tr>
<td></td>
<td>changeover circuit-breaker</td>
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</tbody>
</table>
### Abbreviations

- **UPS**: uninterruptible power supply  
- **PIM**: permanent insulation monitor  
- **RCD**: residual current device  
- **IT**: unearthed neutral and earthed exposed conductive part  
- **N**: neutral  
- **NC**: normally closed  
- **NO**: normally open  
- **PE**: protective conductor  
- **PEN**: combined protective and neutral conductor  
- **Ph₁, Ph₂, Ph₃**: phase 1, 2, and 3  
- **TN**: earthed neutral and neutral-connected exposed conductive part  
- **TNC**: earthed neutral, neutral-connected exposed conductive part, combined neutral and protective conductor  
- **TNS**: earthed neutral, neutral-connected exposed conductive part, separate neutral conductor and protective conductor  
- **TT**: earthed neutral and earthed exposed conductive part  
- **Z₁//Z₂**: signifies that impedances Z₁ and Z₂ are in parallel.
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- **IEC 801-4**: Electromagnetic compatibility for industrial-process measurement and control equipment. Part 4. Electrical for transient/burst requirements

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  - **IEC 831-1** (1988): shunt power capacitors of the self-healing type for a.c. systems having a rated voltage up to and including 660 V. Part 1: General - Performance, testing, and rating - Safety requirements - Guide for installation and operation
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