












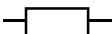








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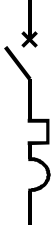


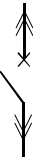
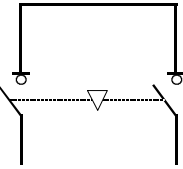
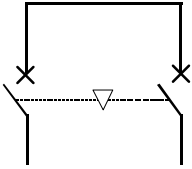

# Circuit diagram symbols

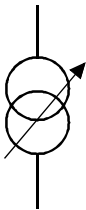
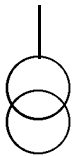
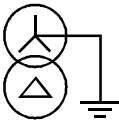

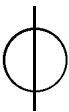



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## CIRCUIT DIAGRAM SYMBOLS

### ■ electrical network elements

	three-phase line or cable		single-phase line or cable
	short circuit		earth electrode
	outgoing feeder		supply incoming feeder
	resistor		variable resistor
	reactor or transformer, motor or generator winding		iron core reactor
	capacitor		impedance (Z, R, L or C)
	star-connected winding		delta-connected winding
	varistor or surge arrester		spark gap or overvoltage limiter
	diode		thyristor
	inverter		rectifier

 <p>source of current</p>	 <p>metering</p>
 <p>measuring device</p>	 <p>electrical power outlet</p>
 <p>switch disconnector</p>	 <p>isolator</p>
 <p>fuse</p>	 <p>switch-fuse</p>
 <p>circuit-breaker</p>	 <p>circuit-breaker fitted with a (thermal) overload and (magnetic) short-circuit trip relay</p>
 <p>contactor</p>	 <p>fuse contactor</p>
 <p>drawout circuit-breaker</p>	 <p>changeover switch</p>
 <p>changeover circuit-breaker</p>	 <p>transformer</p>

	transformer fitted with an on-load tap changer		voltage transformer
	artificial neutral or earthing transformer		battery
	current transformer		A.C. generator or alternator
	asynchronous generator		motor

#### ■ 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
- Ph<sub>1</sub>, Ph<sub>2</sub>, Ph<sub>3</sub> : 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
- Z<sub>1</sub>//Z<sub>2</sub> : signifies that impedances Z<sub>1</sub> and Z<sub>2</sub> are in parallel.

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- **IEC 617-7** (1983): graphic symbols for diagrams, part seven: switchgear, controlgear and protective devices

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