

TECHNICAL SPECIFICATION

Combined circuit breakers with electronic residual current devices –JEL3



Description of the operating system:

It is a combination of automatic circuit breaker and residual current electromagnetic device. It combines part of the properties of the two elements. The circuit breaker reacts at short circuit in the protected circuit, and the electromagnetic residual current device - at failure in the conductors' insulation. It compares the rate of the currents through the conductors in an electronic comparator. The residual current device operates normally at voltage feed. The voltage is needed for the comparator's energizing – a semi-conductor element with constantly set leakage current rate. This rate is compared with the actual rate. When the margin of the comparison is neutral, the residual current device does not operate, but at failure in the protected circuit insulation when it exceeds the set margin it operates and switches off the protection. For the normal

operation of the residual current device, the power supplying circuit voltage must be over 170V and there must be no time variation.

Functions:

- switching off heavy-loaded electrical circuits at short circuit or overload
- switching off heavy-loaded electrical circuits at insulation damage of the conductors to the consumers
- switching off heavy-loaded electrical circuits at presence of a person under voltage
- used to protect not only particular consumers/ circuits, but also the whole panel
- remarkable with high reliability of current characteristics
- control: manual switching on and automatic switching off at exit failure

Technical data:

- Rated operating voltage: 230/400V 50 Hz
- Circuit breaker rated current: according to the table
- Residual current responsiveness: 30 mA
- Time delay until break:
 - of the residual current device: $<0.1s$ at $I \Delta n$ and $<0.04s$ at $2I \Delta n$
 - of the circuit breaker: $<0.1s$
- Circuit breaker tripping curve: C
- Surge voltage wear resistance: $\geq 2000V$
- Breaking capacity: 10 000A
- Joining terminal: flat (tunnel) screw terminal
- Electrical wear resistance (number of cycles): ≥ 500
- Mechanical wear resistance (number of cycles): ≥ 2000
- IP code: IP >20
- Indication for operating (switched on) position

Connecting:

- power supply busbar
- flexible or rigid conductors with corresponding section

Mounting:

- on DIN-rail
- mounting position: vertical
- Breakers plastic material of UV rays and non-flammable
- Ambient temperature: -10°C + 65°C
- Installation altitude: up to 2000m

The residual current device is mounted in the distribution box, and after the device the neutral conductor and the earthing conductor must not be connected together. In order to work accurately, the device must have separate conductors for operational neutral conductor (N) and protective conductor (e.g. earthing system TN-S or TT with three or five conductors).

Variants:

Combined electronic residual device with circuit breaker 2P, 10kA

Type designation	Number of poles	Breaking capacity (kA)	Rated current (A)	Packing / box (pcs)	Leaking current I _{Δn} (mA)	Catalogue number
JEL 3 C6	2P	10	6	5 / 100	30	40906
JEL 3 C10	2P	10	10	5 / 100	30	40910
JEL 3 C16	2P	10	16	5 / 100	30	40916
JEL 3 C20	2P	10	20	5 / 100	30	40920
JEL 3 C25	2P	10	25	5 / 100	30	40925
JEL 3 C32	2P	10	32	5 / 100	30	40932
JEL 3 C40	2P	10	40	5 / 100	30	40940

Standards: EN 61009-1
EN 61009-2

