COVER 1

TERMINALS 2

NON-FLAMABLE BASE 3

CONTACT 4

TEST BUTTON 5

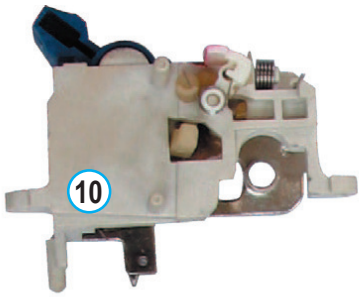
SECONDARY WINDING OF TT 6

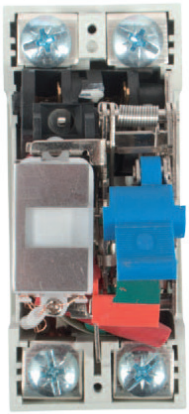
PRIMARY WINDING 7

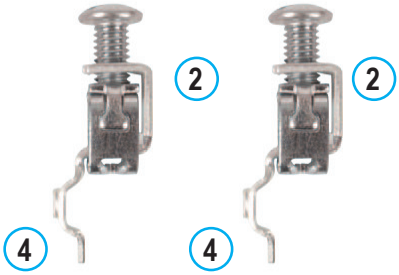
SUMMING CURRENT TRANSFORMER (TT) WITH TOROID 8

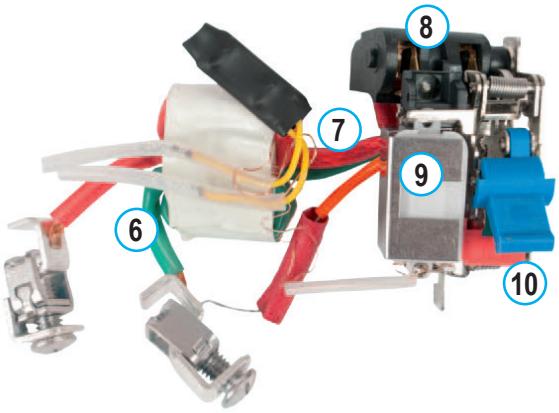
ELECTROMAGNETIC RELAY 9

BREAKING (RELEASE) UNIT 10



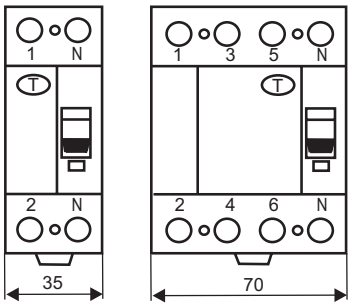


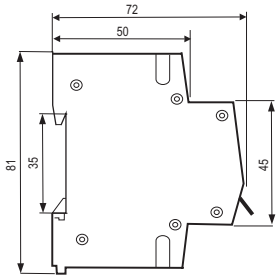




Type AC for AC current

Documents corresponding to the product:
EN 61008-1
EN 61008-2; EN 60947-1





The residual current device works with no extra power supply to the operating mechanism. It compares the magnitude of the currents through the neutral and phase conductors. The conductors are coiled on toroid and together with the secondary winding form a measurement transformer. The power conductors are coiled in such a way that the magnetic fields generated at electrical current flow through them are mutually neutralized. At failure in the insulation of some of the conductors or at presence of a person under voltage, the system is misbalanced and the magnetic fields can not be neutralized. This residual field generates in the secondary current winding, called current leakage. The device breaks when the value of this current exceeds the limit value of the residual current breaker.

Functions:
- 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; 50/60 Hz
* Rated current: according to the table
* Responsiveness: 30; 100; 300; 500mA
* Time delay until break: <0.1s at I Δ n and <0.04s at 2I Δ n
* Surge voltage wear resistance: ≥2000V
* Short circuit current wear resistance: 4500A, 6000A
* Joining terminal: flat (tunnel) screw terminal made of 1.5 coldly draw-plated plane Q235A
* Type of the plastic:
- material: self-extinguishing nylon PA66
- permitivity strength: >18MV/m
* Contact head: silver graphite CAg(5)
* Static contact: pure copper T2Y2 type
* Electrical wear resistance (number of cycles):≥5000
* Mechanical wear resistance (number of cycles):≥10000
* IP code: IP>20
* Indication for operating (switched on) position
* Plastic material of the breakers of UV rays and non-flammable
* Ambient temperature: -10°C + 45°C
* Installation altitude: up to 2000m

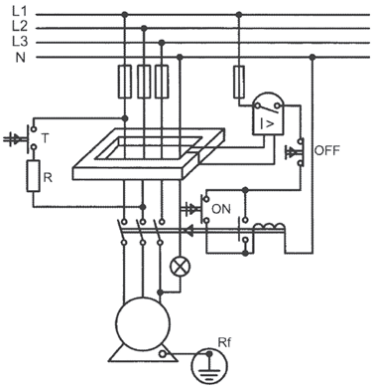
Connecting:
- power supply busbar (only for bipolar)
- flexible or rigid conductors with corresponding section

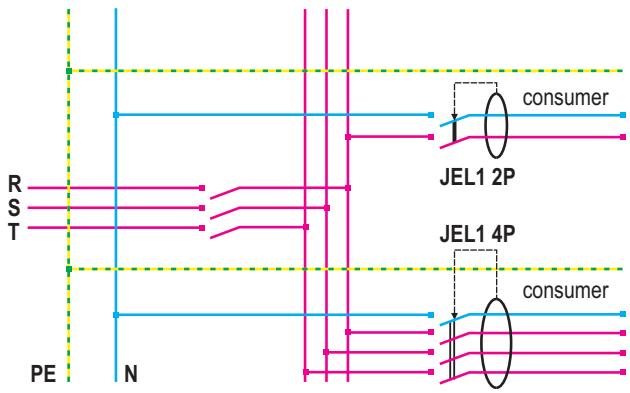
Mounting:
- on DIN-rail
- mounting position: vertical

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 three- or five-conductor grid with separate protective conductor (PE) (e.g. earthing system TN-S or TT with three or five conductors). The corpus of the consumer depending on the grid type must be connected either to the protective conductor or be earthed. (Fig.1)

Fig. 1

Connecting scheme





Type A for AC/DC current

Documents corresponding to the product:
EN 61008-1
EN 61008-2; EN 60947-1

Residual current protection type A - JEL 1A.

These are Residual Current Devices (RCDs) JEL 1A with enhanced sensibility and fast - operating protection devices applicable in circuits with harmonic or direct pulsating current component presence.

Functions:
* switching off electrical circuits on load at conductor insulation breaking to the consumer
* switching off electrical circuits on load at direct and indirect contact
* switching off electrical circuits on load at alternating earth fault currents during consequent light impact
* switching off consumers at harmonic presence due to luminescent lights
* switching off consumers in DC circuits at fault currents presence
* mechanical indicator for ON position

Technical data:
* Rated operating voltage: 230/400V; 50 Hz
* Rated current: according to the table
* Responsiveness: 30; 100; 300; 500mA
* Time delay until break: <0.1s at I Δ n and <0.04s at 2I Δ n
* Short circuit current wear resistance: 6000A
* Electrical wear resistance (number of cycles):≥5000
* Mechanical wear resistance (number of cycles):≥10000
* IP code: IP>20

Connecting:
- power supply busbar (only for bipolar)
- flexible or rigid conductors with corresponding section

Mounting:
- on DIN-rail
- mounting position: vertical

Residual current devices JEL2, 4,5kA - Type AC - alternating fault current.
Impulse withstand voltage 2000VAC

Type	Number of poles	Breaking capacity (kA)	Rated current In (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
					30	100	300	500
JEL 2	2	4.5	10.0	1 / 60	40710	40712	40713	40714
JEL 2	2	4.5	16.0	1 / 60	40716	40717	40718	40719
JEL 2	2	4.5	20.0	1 / 60	40792	40793	40794	40795
JEL 2	2	4.5	25.0	1 / 60	40721	40722	40723	40724
JEL 2	2	4.5	32.0	1 / 60	40731	40732	40733	40734
JEL 2	2	4.5	40.0	1 / 60	40741	40742	40743	40744
JEL 2	2	4.5	63.0	1 / 60	40761	40762	40763	40764

Type	Number of poles	Breaking capacity (kA)	Rated current In (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
					30	100	300	500
JEL 2	4	4.5	10.0	1/30	40810	40812	40813	40814
JEL 2	4	4.5	16.0	1/30	40816	40817	40818	40819
JEL 2	4	4.5	20.0	1/30	40892	40893	40894	40895
JEL 2	4	4.5	25.0	1/30	40821	40822	40823	40824
JEL 2	4	4.5	32.0	1/30	40831	40832	40833	40834
JEL 2	4	4.5	40.0	1/30	40841	40842	40843	40844
JEL 2	4	4.5	63.0	1/30	40861	40862	40863	40864

Residual current devices JEL 1, 6kA - Type AC - alternating fault currents sensible. Impulse withstand voltage 2000VAC

Type	Number of poles	Breaking capacity (kA)	Rated current In (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
					30	100	300	500
JEL 1	2	6	10.0	1 / 60	40210	40212	40213	40214
JEL 1	2	6	16.0	1 / 60	40216	40217	40218	40219
JEL 1	2	6	20.0	1 / 60	40292	40293	40294	40295
JEL 1	2	6	25.0	1 / 60	40221	40222	40223	40224
JEL 1	2	6	32.0	1 / 60	40231	40232	40233	40234
JEL 1	2	6	40.0	1 / 60	40241	40242	40243	40244
JEL 1	2	6	63.0	1 / 60	40261	40262	40263	40264
JEL 1	2	6	80.0	1 / 60	40281	40282	40283	40284
JEL 1	2	6	100.0	1 / 60	40291	40296	40297	40298

Type	Number of poles	Breaking capacity (kA)	Rated current In (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
					30	100	300	500
JEL 1	4	6	10.0	1 / 30	40410	40412	40413	40414
JEL 1	4	6	16.0	1 / 30	40416	40417	40418	40419
JEL 1	4	6	20.0	1 / 30	40492	40493	40494	40495
JEL 1	4	6	25.0	1 / 30	40421	40422	40423	40424
JEL 1	4	6	32.0	1 / 30	40431	40432	40433	40434
JEL 1	4	6	40.0	1 / 30	40441	40442	40443	40444
JEL 1	4	6	63.0	1 / 30	40461	40462	40463	40464
JEL 1	4	6	80.0	1 / 30	40481	40482	40483	40484
JEL 1	4	6	100.0	1 / 30	40491	40496	40497	40498

Residual current devices JEL 1A, 6kA - Type A - alternating and pulsating direct fault currents sensible Impulse withstand voltage 2000VAC/ 400VDC

Type	Number of poles	Breaking capacity (kA)	Rated current In (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
					30	100	300	500
JEL 1A	2	6	10.0	1 / 60	40510	40512	40513	40514
JEL 1A	2	6	16.0	1 / 60	40516	40517	40518	40519
JEL 1A	2	6	20.0	1 / 60	40592	40593	40594	40595
JEL 1A	2	6	25.0	1 / 60	40521	40522	40523	40524
JEL 1A	2	6	32.0	1 / 60	40531	40532	40533	40534
JEL 1A	2	6	40.0	1 / 60	40541	40542	40543	40544
JEL 1A	2	6	63.0	1 / 60	40561	40562	40563	40564
JEL 1A	2	6	80.0	1 / 60	40581	40582	40583	40584
JEL 1A	2	6	100.0	1 / 60	40591	40596	40597	40598

Type	Number of poles	Breaking capacity (kA)	Rated current In (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
					30	100	300	500
JEL 1A	4	6	10.0	1 / 30	40610	40612	40613	40614
JEL 1A	4	6	16.0	1 / 30	40616	40617	40618	40619
JEL 1A	4	6	20.0	1 / 30	40692	40693	40694	40695
JEL 1A	4	6	25.0	1 / 30	40621	40622	40623	40624
JEL 1A	4	6	32.0	1 / 30	40631	40632	40633	40634
JEL 1A	4	6	40.0	1 / 30	40641	40642	40643	40644
JEL 1A	4	6	63.0	1 / 30	40661	40662	40663	40664
JEL 1A	4	6	80.0	1 / 30	40681	40682	40683	40684
JEL 1A	4	6	100.0	1 / 30	40691	40696	40697	40698

Documents corresponding to the product:
EN 61 009-1; EN 61009-2;

Description of the operating system:
It is a combination of automatic circuit breaker and residual current electromagnetic device. It combines the properties of the two elements. The circuit breaker reacts at short circuit or overload in the protected circuit, and the electromagnetic residual current device - at failure in the conductors' insulation. It compares the magnitude of the currents through the neutral and phase conductors. The conductors are coiled on toroid and together with the secondary winding form a measurement transformer. The power conductors are coiled in such a way that the magnetic fields generated at electrical current flow through them are mutually neutralized. At failure in the insulation of some of the conductors or at presence of a person under voltage, the system is misbalanced and the magnetic fields can not be neutralized. This residual magnetic field generates in the secondary current winding, called current leakage. When the value of this current exceeds the limit value of the residual current breaker the device breaks and the residual current device switches off from the power supply grid. The device operates without any extra power supply to the electromagnetic residual current and is not influenced by voltage varying or decreasing.

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 failure in the insulation after the breaker

Technical data:
* Rated operating voltage: 230V 50 Hz
* Circuit breaker rated current: according to the table
* Residual current responsiveness: 30; 100; 300; 500mA
* Time delay until break:
- of the residual current device: <0.1s at I Δ n and <0.04s at 2I Δ n
- of the circuit breaker: <0.1s
* Circuit breaker breaking curve: C
* Surge voltage wear resistance:≥2000V
* Breaking capacity: 10000
* Joining terminal: flat (tunnel) screw terminal made of 1.5 coldly draw-plated plane Q235A
* Type of the plastic:
- material: self-extinguishing nylon PA66
- dielectrical strength: >18MV/m
* Contact head: silver graphite CAg(5)
* Static contact: pure copper T2Y2 type
* Electrical wear resistance (number of cycles):≥5000
* Mechanical wear resistance (number of cycles):≥10000
* IP code: IP>20
* Indication for operating (switched on) position
* Breakers plastic material of UV rays and non-flammable
* Ambient temperature: -10°C + 45°C
* Installation altitude: up to 2000m

Connecting:
- flexible or rigid conductors with corresponding section

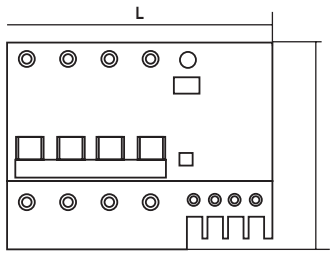
Mounting:
- on DIN-rail
- mounting position: vertical

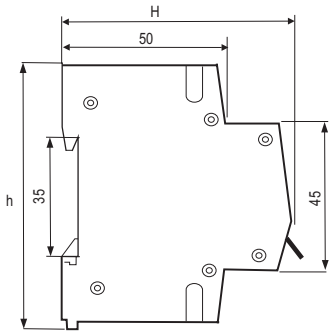
The residual current device is mounted in the distribution box, and after the device the neutral conductor and the earthing conductor must not be connected together. In order to work accurately, the device must have three- or five-conductor grid with separate operating neutral conductor (N) and separate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

Combined electromagnetic residual current device and circuit breaker 1P 10kA

Type designation	Number of poles	Breaking capacity (kA)	Sections of the mounting conductors (mm^2)	Rated current (A)	Packing / Box (pcs)	Catalogue number Leakage current I Δ n (mA) 30	100	300	500
JEL5	2	10	1.5	10	7 / 140	40010	40011	40013	40015
JEL5	2	10	2.5	16	7 / 140	40016	40017	40018	40019
JEL5	2	10	4.0	25	7 / 140	40025	40021	40023	40026
JEL5	2	10	6.0	32	7 / 140	40032	40031	40033	40035
JEL5	2	10	10.0	40	7 / 140	40040	40041	40043	40045

Documents corresponding to the product:
EN 61 009-1; EN 61009-2;





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; 100; 300; 500mA
* Time delay until break:
- of the residual current device: <0.1s at I Δ n and <0.04s at 2I Δ n
- of the circuit breaker: <0.1s
* Circuit breaker breaking curve: C
* Surge voltage wear resistance:≥2000V
* Breaking capacity: 4500A; 6000A
* 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 (for two- or three polar)
- flexible or rigid conductors with corresponding section

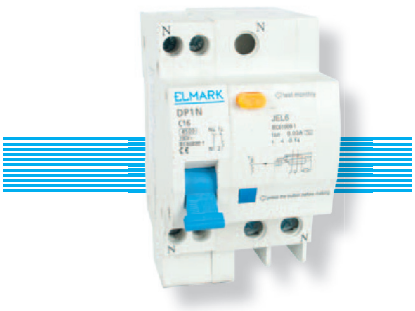
Mounting:
- on DIN-rail
- mounting position: vertical
* Breakers plastic material of UV rays and non-flammable
* Ambient temperature: -10°C + 45°C
* Installation altitude: up to 2000m

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).

Type	Overall dimensions (mm)		
	L	H	h
JEL 3	18	72	80
JEL 4	35	72	80
3P	88	95	
3P+N	115.5	95	

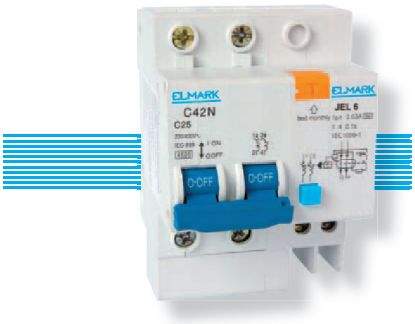
Combined electronic residual current device with circuit breaker 1P, 6kA

Type designation	Number of poles	Breaking capacity (kA)	Sections of the mounting conductors (mm^2)	Rated current (A)	Packing / Box (pcs)	Catalogue number Leakage current I Δ n (mA)			
						30	100	300	500
JEL 4 C10	2	6	1.5	10	5 / 100	40211E	40207E	40208E	40209E
JEL 4 C16	2	6	2.5	16	5 / 100	40215E	40245E	40235E	40237E
JEL 4 C20	2	6	4.0	20	5 / 100	40225E	40229E	40230E	40238E
JEL 4 C25	2	6	4.0	25	5 / 100	40240E	40204E	40246E	40268E
JEL 4 C32	2	6	10.0	32	5 / 100	40265E	40260E	40236E	40269E
JEL 4 C40	2	6	16.0	40	5 / 100	40274E	40270E	40273E	40275E



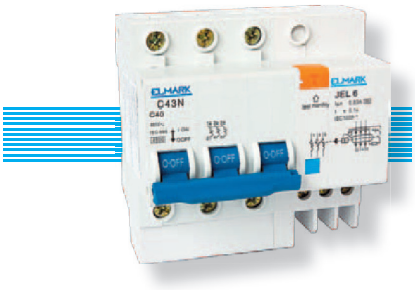
Combined electronic residual current device 1P + N.
Compares the leakage current between the phase and neutral conductors.

Type designation	Number of poles	Breaking capacity (kA)	Sections of the mounting conductors (mm^2)	Rated current (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA) 30	100	300	500
JEL 6 C10	2	4.5	1.5	10	12 / 240	40110	40111	40113	40114
JEL 6 C16	2	4.5	2.5	16	12 / 240	40116	40117	40118	40119
JEL 6 C25	2	4.5	4.0	25	12 / 240	40125	40121	40123	40126
JEL 6 C40	2	4.5	10.0	40	12 / 240	40140	40141	40133	40145
JEL 6 C50	2	4.5	16.0	50	12 / 240	40163	40161	40136	40165



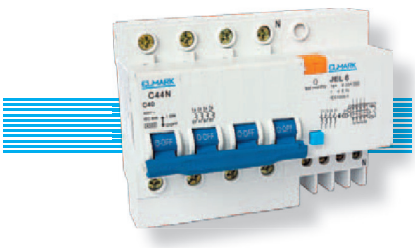
Combined electronic residual current device 2P.
Compares the leakage current between the phase and neutral conductors or between two phases.

Type designation	Number of poles	Breaking capacity (kA)	Sections of the mounting conductors (mm^2)	Rated current (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA) 30	100	300	500
JEL 6 C10	2	4.5	1.5	10	6 / 120	40211	40207	40208	40209
JEL 6 C16	2	4.5	2.5	16	6 / 120	40215	40245	40235	40237
JEL 6 C25	2	4.5	4.0	25	6 / 120	40225	40229	40230	40238
JEL 6 C40	2	4.5	10.0	40	6 / 120	40240	40204	40246	40268
JEL 6 C50	2	4.5	16.0	50	6 / 120	40265	40260	40236	40269



Combined electronic residual current device 3P.
Compares the leakage current between the phases.

Type designation	Number of poles	Breaking capacity (kA)	Sections of the mounting conductors (mm^2)	Rated current (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA) 30	100	300	500
JEL 6 C10	3	4.5	1.5	10	3 / 60	40310	40311	40313	40314
JEL 6 C16	3	4.5	2.5	16	3 / 60	40316	40317	40318	40319
JEL 6 C25	3	4.5	4.0	25	3 / 60	40325	40321	40323	40324
JEL 6 C40	3	4.5	10.0	40	3 / 60	40340	40341	40343	40344
JEL 6 C50	3	4.5	16.0	50	3 / 60	40363	40361	40336	40365

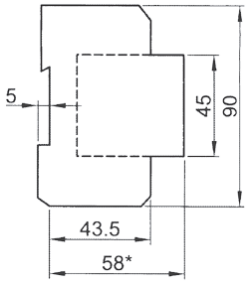


Combined electronic residual current device 3P+N.
Compares the leakage current between the three phases and neutral conductors.

Type designation	Number of poles	Breaking capacity (kA)	Sections of the mounting conductors (mm^2)	Rated current (A)	Packing/Box (pcs)	Catalogue number Leakage current I Δ n (mA) 30	100	300	500
JEL 6 C10	4	4.5	1.5	10	2 / 40	40411	40407	40408	40409
JEL 6 C16	4	4.5	2.5	16	2 / 40	40415	40445	40439	40438
JEL 6 C25	4	4.5	4.0	25	2 / 40	40425	40420	40428	40429
JEL 6 C40	4	4.5	10.0	40	2 / 40	40440	40404	40447	40446
JEL 6 C50	4	4.5	16.0	50	2 / 40	40465	40401	40436	40469

Documents corresponding to the product:
Standard EN61 643-1 EN 61 643-1

The breakers are in accordance with the directives of EC "Low voltage directives (LVD) no. 73/23 EEC" and "Electromagnetic Compatibility Directives (EMC) no. 89/336 EEC".



The surge arrestor consists of a semi-conductor valve element that opens at certain conditions. At normal conditions of the system, the surge arrestor has infinitely high resistance between the protected conductors and earthing circuit. At voltage increase due to atmospheric nature or system failure, the valve element opens and leads the excessive voltage to the grounded circuit.
After reversion of the normal voltage the valve element closes. The arrestor can endure high momentary overloading.

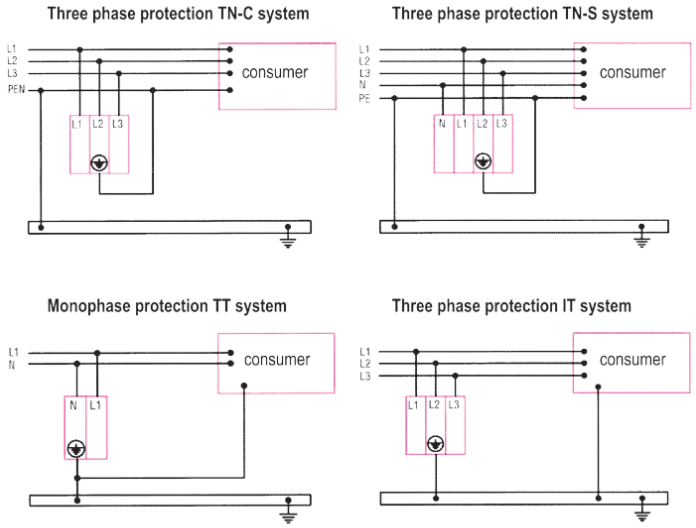
Functions:
- protection of heavy-loaded electrical circuits from overload
- used to protect not only particular consumers/circuits, but also the whole panel
- remarkable with high reliability of current characteristics
- control: automatic switching off at exit failure and recovery after eliminating the danger

Technical data:
* Rated operating voltage Uc: - the operating voltage of the surge arrester 275/440V; 50Hz
* Surge voltage Up: the voltage created in surge arrester terminals at rated discharge current running: according to the tables
* Rated discharge current In – the rated value of discharge current with a sinusoid 8/20μs, which can be repeatedly led to the ground: according to the tables
* Full discharge current Imax – the peak value of the discharge current with a sinusoid 8/20μs, which the surge arrester can bear once: according to the table
* Constant operating current: up to 800μA for 1P, 2P and 3P; up to 600μA for 1P + N, 3P + N
* Indication for damaged surge arrester
* Offered in types: 1P; 1P + N; 3P; 3P + N

Connecting:
* flexible or rigid conductors with corresponding section

Mounting:
* on DIN-rail
* mounting position: vertical
* mounting in the distribution box on the front or right before the breaker according to the attached schemes
* Breakers plastic material of UV rays and non-flammable
* Ambient temperature: -10°C + 45°C
* Installation altitude: up to 2000m

COLOUR CODE for all types 5κA - yellow; white – 10κA; green – 20 κA and red 40κA



The surge arrester selection is made according to the overload risk level or atmosphere activity, named B, C or D (from high to low risk level).
The company offers the following models of arresters:
Model SPD – Bxxxx – for systems with exceptionally high risk level. Mounted mainly in the beginning of the installation or in the main panel.
Model SPD – Cxxxx – for systems with high or average risk level. Mounted in the beginning of the installation or before the breaker.
Model SPD – Dxxxx – for systems with low risk level. Suitable for secondary protection of consumers in combination with SPD – Bxxxx/SPD – Cxxxx