

Modular devices



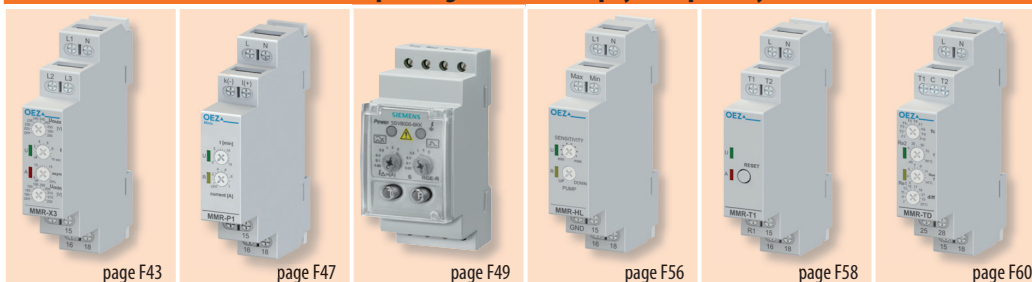
SUMMARY OF MODELS

Timers
switch according to internal program in real time



| Type | MAE-A | MAN-A | MAE-D | MAN-D | MAA-D |
|-------------------------|----------|-----------|---------------|--|----------|
| Design | analog | analog | digital | digital | digital |
| Arrangement of contacts | 001, 100 | 001, 100 | 001, 002, 100 | 001, 002 | 001, 002 |
| Permanent ON/OFF | yes | yes | yes | yes | yes |
| Run reserve | - | 100 hours | 3 years | 5 years | 5 years |
| Menu language | - | - | EN | CS, EN, DE, PL, RU, IT, FR, ES, PT, NL, DA, FI, NO, SV, TR | |
| Number of programs | - | - | 28 | 56 | 56 |
| Program test | - | - | yes | yes | yes |
| Holiday mode | - | - | - | yes | yes |
| Random switching mode | - | - | - | yes | yes |
| PIN code protection | - | - | - | yes | yes |
| Astro function | - | - | - | - | yes |

Monitoring relays
switch depending on monitored physical quantity



| Type | MMR-U3 MMR-X3 | MMR-P | 5SV8 | MMR-HL | MMR-T1 | MMR-T2, MMR-TD |
|------------------------------|---|--|---|--|---|---|
| Rated voltage U_c | AC 230 V | AC 230 V | AC 230 V | AC 230 V | AC 230 V | AC 230 V |
| Arrangement of contacts | 001 | 001 | 001, 002, 40 | 001 | 001 | 200 |
| Operating voltage of contact | AC 250 V | AC 250 V | AC 230 V | AC 250 V | AC 250 V | AC 250 V |
| Operating current of contact | 8 A | 16 A | 6 A | 16 A | 8 A | 16 A |
| Monitored quantity | Voltage | Current | Residual current | Level | Temperature | Temperature |
| Function | - overvoltage - undervoltage - phase failure - phase sequence ^{*)} - asymmetry ^{*)} | - indication at reach of: 0.1 ÷ 1 A 0.5 ÷ 5 A 2.5 ÷ 25 A (adjustable) | - indication at reach of: 0.03 ÷ 30 A (adjustable) | - liquid drawing off - liquid filling | - motor protection - local reset - remote reset - auto reset | - from -25 °C - up to +95 °C - 2 channels |

^{*)} It is only available for version X3.

RESIDUAL CURRENT MONITORING RELAYS 5SV8



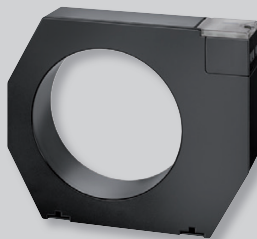
5SV8000-6KK



5SV8001-6KK



5SV8701-0KK



5SV8702-0KK



5SV8900-1KK

- Designed for monitoring of leakage current (residual/fault current) and protection against fire e.g. due to worsened insulation or sneak currents.
- Possibility of setting of residual current $I_{\Delta n}$ and setting of limit time of inactivity of $I_{\Delta t}$.
- Mounting on "U" rail.
- Measurement by means of external summation current transformer.
- Circuit breaker switching off by means of shunt trip or undervoltage release.

Analog residual current monitor

| Type | Order code | Description | Number of modules | Weight [kg] | Package [pcs] |
|-------------|------------|---|-------------------|-------------|---------------|
| 5SV8000-6KK | OEZ:42658 | analog, setting $I_{\Delta n}$ and $t_{\Delta n}$ | 2 | 0.180 | 1 |

Digital residual current monitor

| Type | Order code | Description | Number of modules | Weight [kg] | Package [pcs] |
|-------------|------------|---|-------------------|-------------|---------------|
| 5SV8001-6KK | OEZ:42659 | digital, setting $I_{\Delta n}$ and $t_{\Delta n}$ | 3 | 0.260 | 1 |
| 5SV8200-6KK | OEZ:42660 | digital, setting $I_{\Delta n}$ and $t_{\Delta n}$ 4-channel | 3 | 0.260 | 1 |

Current transformers for residual current monitor

| Type | Order code | Description | Weight [kg] | Package [pcs] |
|---------------------------|------------|--|-------------|---------------|
| 5SV8700-0KK | OEZ:42661 | internal diameter 20 mm, including holder on "U" rail according to EN 60715 wide 35 mm | 0.090 | 1 |
| 5SV8701-0KK | OEZ:42662 | internal diameter 30 mm, including holder on "U" rail according to EN 60715 wide 35 mm | 0.110 | 1 |
| 5SV8702-0KK ¹⁾ | OEZ:42663 | internal diameter 35 mm including holder on the panel | 0.200 | 1 |
| 5SV8703-0KK ¹⁾ | OEZ:42664 | internal diameter 70 mm including holder on the panel | 0.310 | 1 |
| 5SV8704-0KK ¹⁾ | OEZ:42665 | internal diameter 105 mm including holder on the panel | 0.600 | 1 |
| 5SV8705-0KK | OEZ:42666 | internal diameter 140 mm including holder on the panel | 1.350 | 1 |
| 5SV8706-0KK | OEZ:42667 | internal diameter 210 mm including holder on the panel | 2.250 | 1 |

¹⁾ Holder 5SV8900-1KK can be bought.

Accessories to current transformers

| Type | Order code | Description | Weight [kg] | Package [pcs] |
|-------------|------------|--|-------------|---------------|
| 5SV8900-1KK | OEZ:42668 | holder on "U" rail according to EN 60715 wide 35 mm for current transformers with internal diameter up to and including 105 mm | 0.010 | 2 |

RESIDUAL CURRENT MONITORING RELAYS 5SV8



5SV8000-6KK

Analog residual current monitor 5SV8000-6KK

- Designed for monitoring of leakage current (residual/ /fault current) and protection against fire e.g. due to worsened insulation or sneak currents.
- Possibility of setting of residual current $I_{\Delta n}$ and setting of limit time of inactivity of $t_{\Delta t}$ (see specifications) by means of rotary switches.

- Mounting on "U" rail.
- Measurement by means of external summation current transformer.
- Circuit breaker switching off by means of shunt trip or undervoltage release.

Local signalling

- First LED signals functionality of the relay and current transformer:
 - LED is lighting - the relay is in order
 - LED is not lighting - the relay is not supplied
 - LED is blinking - interrupted connection between the relay and the transformer, or broken secondary winding.
- The second LED signals magnitude of the passing current:
 - LED is lighting - signalling reach of 100 % residual current
 - LED is blinking - blinking period increases with increasing residual current.

Remote signalling

- By means of make-and-break contact (CO).
- Serves for signalling of reach of the set value of $I_{\Delta n}$ and/or for circuit breaker switching off via undervoltage release or shunt trip.

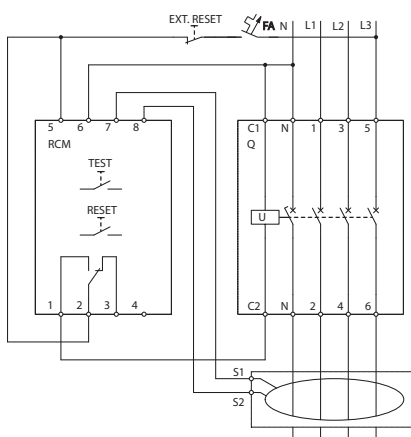
Control

- The TEST push-button serves for testing of the function of both the relay and circuit breaker - disconnects the circuit.
- If the relay trips (switches the circuit breaker off) it is necessary to reset it by the „RESET“ push-button, or interrupt its supply and thus perform the remote reset.
- The setting can be sealed.

| Type | Order code | Description | Number of modules | Weight [kg] | Package [pcs] |
|-------------|------------|---|-------------------|-------------|---------------|
| 5SV8000-6KK | OEZ-42658 | analog, setting $I_{\Delta n}$ and $t_{\Delta n}$ | 2 | 0.196 | 1 |

Diagram

Wiring diagram with a shunt trip



Wiring diagram with an undervoltage release

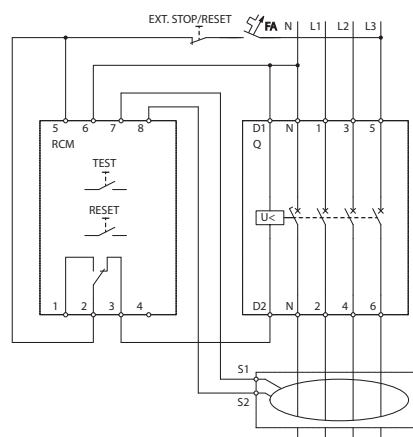


Diagram description

| Symbol | Description |
|-----------------|--|
| Q | miniature circuit breaker |
| RCM | monitoring relay |
| TEST | test push-button of the relay |
| RESET | local reset push-button |
| EXT. RESET | remote reset push-button |
| EXT. STOP/RESET | remote reset push-button or STOP push-button ¹⁾ |
| S1, S2 | terminals of current transformer |
| FA | protection of relay LTN-2C-1 |

¹⁾ STOP push-button only in combination with an undervoltage release

RESIDUAL CURRENT MONITORING RELAYS 5SV8



5SV8001-6KK

Digital residual current monitor 5SV8001-6KK

- Designed for monitoring of leakage current (residual/ /fault current) and protection against fire e.g. due to worsened insulation or sneak currents.
- Possibility of setting of residual current $I_{\Delta n}$ and setting of maximum inactivity time $t_{\Delta t}$ by means of push-buttons and the display (see table).
- Presentation of cause of trip and of current value of residual current on the display.

- Mounting on "U" rail.
- Measurement by means of external transformer.
- Circuit breaker switching off by means of shunt trip or undervoltage release.
- Possibility of setting of characteristic S - selective.

Local signalling

- The first LED signals functionality of the relay and trip in reach of the set residual current:
LED gives a green light - the relay is supplied
LED gives a red light - signalling of reach of 100 % residual current.
- The second LED signals reach of relative low set value:
LED gives a yellow light - signalling of reach of the set value.

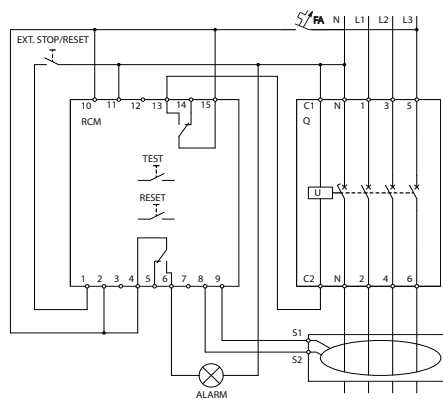
Remote signalling

- By means of make-and-break contact (CO).
- Serves for signalling of reach of the set value of $I_{\Delta n}$ and/or for circuit breaker switching off via undervoltage release or shunt trip.
- Possibility of remote switching off by applying voltage AC/ DC 110 ÷ 230 V on potential free terminals number 1 and 2.
- The TEST push-button serves for testing of the function of both the relay and circuit breaker - disconnects the circuit.
- If the relay trips (switches the circuit breaker off) it is necessary to reset it by the „RESET“ push-button, or interrupt its supply and thus perform the remote reset.
- The setting can be sealed.

| Type | Order code | Description | Number of modules | Weight [kg] | Package [pcs] |
|-------------|------------|--|-------------------|-------------|---------------|
| 5SV8001-6KK | OEZ:42659 | digital, setting $I_{\Delta n}$ and $t_{\Delta n}$ | 3 | 0.269 | 1 |

Diagram

Wiring diagram with a shunt trip



Wiring diagram with an undervoltage release

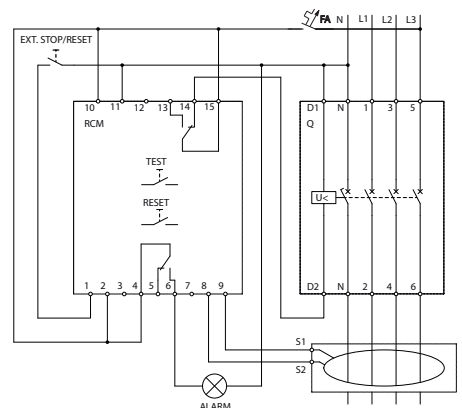


Diagram description

| Symbol | Description |
|-----------------|--|
| Q | miniature circuit breaker |
| RCM | monitoring relay |
| TEST | test push-button of the relay |
| RESET | local reset push-button |
| EXT. STOP/RESET | remote reset push-button or STOP push-button |
| S1, S2 | terminals of current transformer |
| ALARM | signalling of $I_{\Delta n}$ adjusted value reaching |
| FA | protection of relay LTN-2C-1 |

RESIDUAL CURRENT MONITORING RELAYS 5SV8



5SV8200-6KK

Digital residual current monitor 5SV8200-6KK

- Designed for monitoring of leakage current (residual/ /fault current) and protection against fire e.g. due to worsened insulation or sneak currents.
- Possibility of setting of residual current I_{dn} and setting of maximum inactivity time t_{dnr} by means of push-buttons and the display (see table).
- Presentation of cause of trip and of current value of residual current on the display.
- Mounting on "U" rail.
- Measurement by means of external transformer, it is possible to connect up to 4 transformers.
- Circuit breaker switching off by shunt trip.
- Possibility of setting of characteristic S - selective.

Local signalling

- The first LED signals functionality of the relay and trip in reach of the set residual current:
LED gives a green light - the relay is supplied
LED gives a red light - signalling of reach of 100 % residual current.
- The second LED signals reach of relative low set value:
LED gives a yellow light - signalling of reach of the set value.

Remote signalling

- By means of make-and-break contact (CO).
- Serves for signalling of reach of the set value of I_{dn} and/or for circuit breaker switching off via undervoltage release or shunt trip.
- Possibility of remote switching off by applying voltage AC/ DC 110 ÷ 230V on potential free terminal number 12.
- The TEST push-button serves for testing of the function of both the relay and circuit breaker - disconnects the circuit.
- If the relay trips (switches the circuit breaker off) it is necessary to reset it by the „RESET“ push-button, or interrupt its supply and thus perform the remote reset.
- The setting can be sealed.

| Type | Order code | Description | Number of modules | Weight [kg] | Package [pcs] |
|-------------|------------|---|-------------------|-------------|---------------|
| 5SV8200-6KK | OEZ:42660 | digital, setting I_{dn} and t_{dnr} , 4-channel | 3 | 0.295 | 1 |

RESIDUAL CURRENT MONITORING RELAYS 5SV8

Diagram

Wiring diagram with a shunt trip

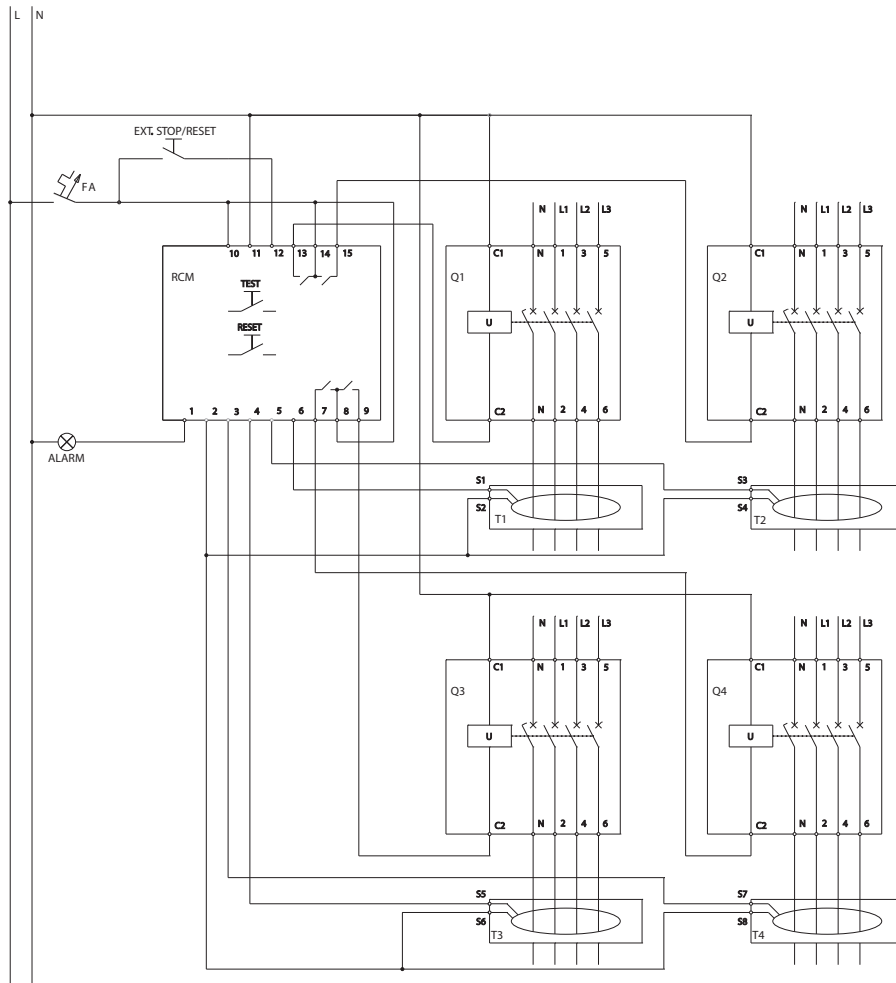


Diagram description

| Symbol | Description |
|-----------------|--|
| EXT. STOP/RESET | remote reset push-button or STOP push-button |
| RCM | monitoring relay |
| Q1 | circuit breaker 1 |
| FA | protection of relay LTN-2C-1 |
| TEST | test push-button of the relay |
| RESET | local reset push-button |
| ALARM | signalling of adjusted value reaching |
| Q1 | circuit breaker 1 |
| Q2 | circuit breaker 2 |
| Q3 | circuit breaker 3 |
| Q4 | circuit breaker 4 |
| T1 | circuit breaker current transformer 1 |
| T2 | circuit breaker current transformer 2 |
| T3 | circuit breaker current transformer 3 |
| T4 | circuit breaker current transformer 4 |
| S1, S2 | terminals of current transformer 1 |
| S3, S4 | terminals of current transformer 2 |
| S5, S6 | terminals of current transformer 3 |
| S7, S8 | terminals of current transformer 4 |

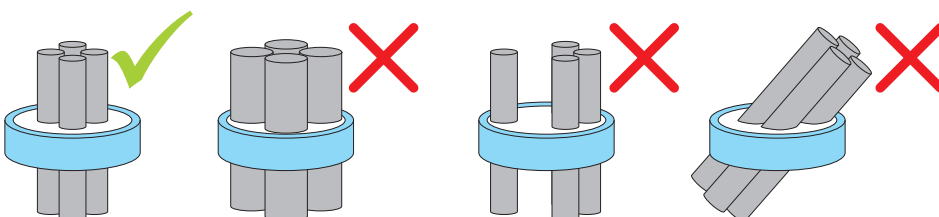
RESIDUAL CURRENT MONITORING RELAYS 5SV8

Specifications

| Type | 5SV8 000-6KK | 5SV8 001-6KK | 5SV8 200-6KK |
|---|---|--|--|
| Standards | EN 62020 IEC 62020 | EN 62020 IEC 62020 | EN 62020 IEC 62020 |
| Approval marks | CE | CE | CE |
| Number of independent circuits | 1 | 1 | 4 |
| Rated residual current | 0.03 ÷ 5 A | 0.03 ÷ 30 A | 0.03 ÷ 30 A |
| Maximum inactivity time | 0.02 ÷ 5 s | 0.02 ÷ 10 s | 0.02 ÷ 10 s |
| Type | A (up to $I_{\Delta n} = 3$ A) AC ($I_{\Delta n}$ from 3 up to 5 A) | A (up to $I_{\Delta n} = 3$ A) AC ($I_{\Delta n}$ from 3 up to 30 A) | A (up to $I_{\Delta n} = 3$ A) AC ($I_{\Delta n}$ from 3 up to 30 A) |
| Rated operating voltage U_e | AC 230 V | AC 230 V | AC 230 V |
| Operating voltage range | AC 164 ÷ 284 V | AC 164 ÷ 284 V | AC 164 ÷ 284 V |
| Rated frequency f_n | 50 Hz | 50 Hz | 50 Hz |
| Input power | 3 VA | 6 VA | 6 VA |
| Mounting on "U" rail according to EN 60715 - type | TH 35 | TH 35 | TH 35 |
| Degree of protection - on the front panel | IP41 | IP41 | IP41 |
| Degree of protection - of conductors terminal | IP20 | IP20 | IP20 |
| Other specifications | | | |
| External remote trip/reset | -/yes | yes/yes | yes/yes |
| Local signalling reaching of relative low value $I_{\Delta n}$ (ALARM) | yes | yes | yes |
| Remote signalling reaching of relative low value $I_{\Delta n}$ (ALARM) | - | yes | yes |
| Local signalling: | | | |
| power supply | yes | yes | yes |
| ALARM | yes | yes | yes |
| failure | yes | yes | yes |
| value $I_{\Delta n}$ | yes | yes | yes |
| Display | - | yes | yes |
| Sealing of control panel setting | yes | yes | yes |
| Transformer internal diameter | 30 ÷ 210 mm | 30 ÷ 210 mm | 30 ÷ 210 mm |
| Max. length of conductors to the transformer (screened conductor) | 10 m | 10 m | 10 m |
| Control circuit (inputs - external switching off / reset) | | | |
| Rated operating voltage U_c | - | AC/DC 110 ÷ 230 V. | AC 230 V |
| Operating voltage range | - | AC/DC 110 ÷ 284 V | AC 230 ÷ 284 V |
| Input power | - | 0.7 W | 0.7 W |
| Control circuit (outputs) | | | |
| Arrangement of contacts ¹⁾ | 001 | 002 | 40 |
| Rated operating voltage U_e | AC 230 V | AC 230 V | AC 230 V |
| Rated current I_e | 6 A | 6 A | 6 A |
| Max. switched power - AC-1 | 1 500 VA | 1 500 VA | 1 500 VA |
| Electrical endurance | 10x 10 ⁶ operating cycles | 10x 10 ⁶ operating cycles | 10x 10 ⁶ operating cycles |
| Rated frequency | 50 Hz | 50 Hz | 50 Hz |
| Connection | | | |
| Connection - Cu conductor - rigid (solid, stranded) | 0.2 ÷ 2 mm ² | 0.2 ÷ 2 mm ² | 0.2 ÷ 2 mm ² |
| Torque | 0.5 ÷ 0.6 Nm | 0.5 ÷ 0.6 Nm | 0.5 ÷ 0.6 Nm |
| Operating conditions | | | |
| Ambient temperature °C | -10 ÷ +50 °C | -10 ÷ +50 °C | -10 ÷ +50 °C |
| Relative humidity | 5 ÷ 95 % | 5 ÷ 95 % | 5 ÷ 95 % |
| Max. sea level | 2 000 m | 2 000 m | 2 000 m |

NOTICE

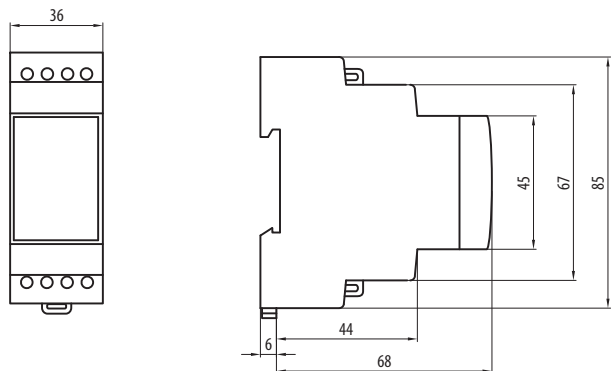
- All active conductors (including N conductor) must be led through the summation transformer.
- Cables, which are not led through the summation transformer, must be led 20 cm from the summation transformer as a minimum.
- The transformer must have internal diameter 1.5 larger than the external diameter of the conductors going through it.



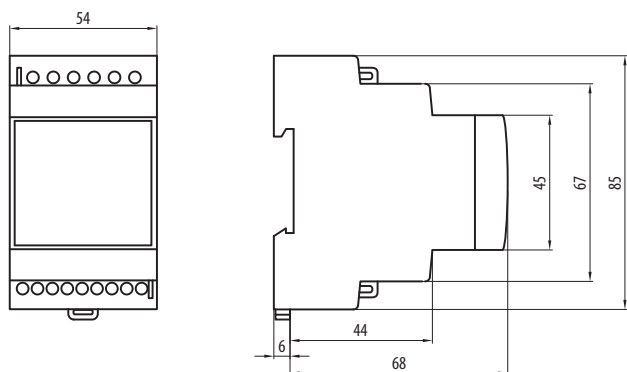
RESIDUAL CURRENT MONITORING RELAYS 5SV8

Dimensions

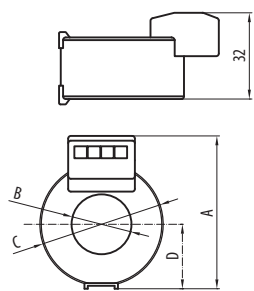
Residual current monitor 5SV8000-6KK



Residual current monitor 5SV8001-6KK, 5SV8200-6KK



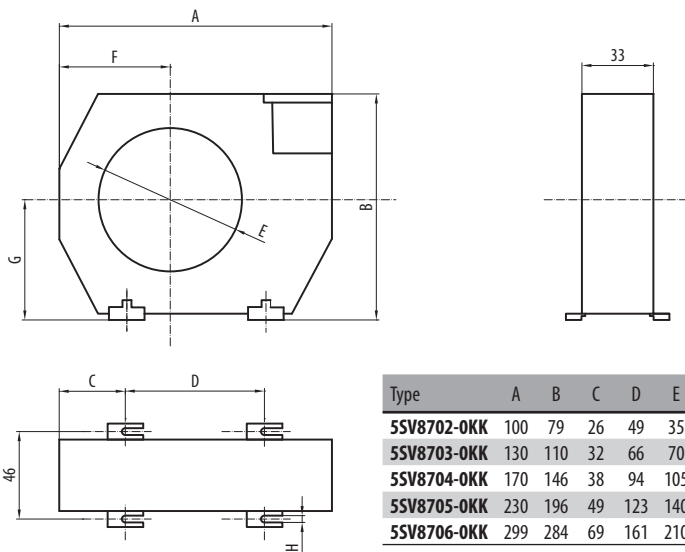
Measuring current transformers 5SV8700-0KK, 5SV8701-0KK



| Type | A | B | C | D |
|-------------|----|----|----|----|
| 5SV8700-0KK | 60 | 20 | 46 | 24 |
| 5SV8701-0KK | 70 | 30 | 59 | 30 |

| Type | Rated current | Max. current max. 2 s |
|-------------|---------------|-----------------------|
| 5SV8700-0KK | ≤ 40 A | 240 A |
| 5SV8701-0KK | ≤ 63 A | 380 A |

Measuring current transformers 5SV87...-0KK



| Type | A | B | C | D | E | F | G | H |
|-------------|-----|-----|----|-----|-----|-----|-----|-----|
| 5SV8702-0KK | 100 | 79 | 26 | 49 | 35 | 35 | 43 | 6.5 |
| 5SV8703-0KK | 130 | 110 | 32 | 66 | 70 | 52 | 57 | 6.5 |
| 5SV8704-0KK | 170 | 146 | 38 | 94 | 105 | 72 | 73 | 6.5 |
| 5SV8705-0KK | 230 | 196 | 49 | 123 | 140 | 97 | 98 | 6.5 |
| 5SV8706-0KK | 299 | 284 | 69 | 161 | 210 | 141 | 142 | 6.5 |

| Type | Rated current | Max. current max. 2 s |
|-------------|---------------|-----------------------|
| 5SV8702-0KK | ≤ 80 A | 480 A |
| 5SV8703-0KK | ≤ 200 A | 1 200 A |
| 5SV8704-0KK | ≤ 250 A | 1 500 A |
| 5SV8705-0KK | ≤ 500 A | 3 000 A |
| 5SV8706-0KK | ≤ 600 A | 3 600 A |

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