

- Modular, flush and internal panel mount version, with or without flag indicator, configurable prealarm indication and fail safe operation
- Versions with automatic toroid connection control
- Choice of supply voltage ranges
- Adjustable fault current $I_{\Delta n}$
- Adjustment and choice of tripping range for both fault current and delay time.

Earth leakage relays

With 1 operation threshold	17 - 2
With 2 operation thresholds	17 - 3
Toroidal current transformers	17 - 3
External multiplier	17 - 3

Dimensions	17 - 4
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Wiring diagrams	17 - 5
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Technical characteristics	17 - 6
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SEC. - PAGE



Page 17-2

FLUSH-MOUNT VERSION

R1D type

- 1 operation threshold
- External toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time.



Page 17-3

FLUSH-MOUNT VERSION

R2D type

- 2 operation thresholds
- External toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time
- Configurable fail safe operation.

R3D type

- 2 operation thresholds
- External toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time
- Configurable fail safe operation
- Flag indicator.



Page 17-3

FLUSH-MOUNT VERSION

R4D type

- 2 operation thresholds
- External toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time
- Configurable fail safe operation
- Fault current measurement
- Digital display
- Flag indicator
- Shunt tripping circuit.



Page 17-2

MODULAR VERSION

RM1 type

- 1 operation threshold
- External toroidal transformer
- Fixed tripping $I\Delta n$ and delay time.

RM type

- 1 operation threshold
- External toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time.



Page 17-2

MODULAR VERSION

RMT type

- 1 operation threshold
- Incorporated toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time.



Page 17-2

COMPACT PANEL MOUNT VERSION

RC type

- 1 operation threshold
- Incorporated toroidal transformer
- Adjustable tripping $I\Delta n$ and delay time
- 35mm to 110mm diameter.



Page 17-3

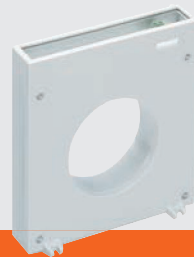
TOROIDAL CURRENT TRANSFORMERS

RT type

- Solid core
- 35mm to 210mm diameter.

RTA type

- Split core
- 110mm and 210mm diameter.



Page 17-3

EXTERNAL MULTIPLIER

RX10 type

- 10-fold multiplier.

Relays with 1 operation threshold



R1D...

Order code	Rated auxiliary supply voltage	Output contacts	Qty per pkg	Wt
	[V]	$\frac{1}{2}$ SPDT	n°	[kg]

1 OPERATION THRESHOLD.
Flush mount. External CT.

R1D48	24-48VAC/DC	1	1	0.280
R1D415	110-240-415V ①	1	1	0.280

① Supply voltage:
110...125VAC (50/60Hz)/DC
220...240VAC (50/60Hz)
380...415VAC (50/60Hz).

General characteristics

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Flush mount 96x96mm housing with transparent cover
- IEC degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS FOR R1D

- Configurable tripping set-point ($I_{\Delta n}$): 0.025...0.25A
0.25...2.5A
2.5...25A
25...250A (with external multiplier 31RX10)
- Configurable tripping delay time (t): 0.02...0.5s
0.2...5s.

Certification and compliance

Certification obtained: EAC.
Compliant with standards: IEC/EN/BS 60947-2.



RM1...

Order code	Rated auxiliary supply voltage	Output contacts	Qty per pkg	Wt
	[V]	$\frac{1}{2}$ SPDT	n°	[kg]

1 OPERATION THRESHOLD.
Modular, 35mm DIN (IEC/EN/BS 60715) rail mounting.
External CT. Fixed tripping set point and time.

RM148	24-48VAC/DC	1	1	0.175
RM1415	110-240-415V ①	1	1	0.175

1 OPERATION THRESHOLD.
Modular, 35mm DIN (IEC/EN/BS 60715) rail mounting.
External CT.

31RM48	24-48VAC/DC	1	1	0.190
31RM415	110-240-415V ①	1	1	0.190

1 OPERATION THRESHOLD.
Modular, 35mm DIN (IEC/EN/BS 60715) rail mounting.
 $\varnothing 28\text{mm}/\varnothing 1.1''$ incorporated CT. Configurable fail safe.

31RMT415	110-240-415V ①	2	1	0.375
-----------------	-------------------	---	---	-------

① Supply voltage:
110...125VAC (50/60Hz)/DC
220...240VAC (50/60Hz)
380...415VAC (50/60Hz).

General characteristics

- Earth leakage relay type A
- Configurable fail safe operation for RMT type only
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modular DIN 43880 housing, 2 modules, with transparent cover, suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715)
- IEC degree of protection: IP20 terminals, IP40 on front with cover.

SETTINGS FOR RM1

- Selectable tripping set-point ($I_{\Delta n}$): fixed 0.3A or 0.5A
- Selectable tripping time (t): fixed 0.02s or 0.5s.

ADJUSTMENTS FOR 31RM AND 31RMT

- Configurable tripping set-point ($I_{\Delta n}$): 0.025...0.25A
0.25...2.5A
2.5...25A
25...250A (with external multiplier 31RX10 for RM only)
- Configurable tripping delay time (t): 0.02...0.5s
0.2...5s.

Certification and compliance

Certification obtained: EAC.
Compliant with standards: IEC/EN/BS 60947-2.



31RM...



31RMT...



31RC60...

Order code	Rated auxiliary supply voltage	Output contacts	Qty per pkg	Wt
	[V]	$\frac{1}{2}$ SPDT	n°	[kg]

1 OPERATION THRESHOLD.
Compact panel mount. CT incorporated.

31RC@48	24-48VAC/DC	1	1	0.485
31RC@415	110-240-415V ①	1	1	0.485

① Supply voltage:
110...125VAC (50/60Hz)/DC
220...240VAC (50/60Hz)
380...415VAC (50/60Hz).
② Replace with the digit of the required diameter (35-60-80-110mm/
1.38-2.36-3.15-4.33").

General characteristics

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Compact housing for fixing on panel mounting plate
- IEC degree of protection: IP20 terminals.

ADJUSTMENTS FOR RC

- Configurable tripping set-point ($I_{\Delta n}$): 0.025...0.25A
0.25...2.5A
2.5...25A
- Configurable tripping delay time (t): 0.02...0.5s
0.2...5s.

Certification and compliance

Certification obtained: EAC.
Compliant with standards: IEC/EN/BS 60947-2.



31RC110...

Relays with 2 operation thresholds



R2D...



R3D...



R4D...

Ordering code	Rated auxiliary supply voltage	Output contacts	Qty per pkg	Wt
	[V]	2 SPDT	n°	[kg]

2 OPERATION THRESHOLDS.
Flush mount. External CT. Fail safe.

R2D415 110-240-415V 2 1 0.395

2 OPERATION THRESHOLDS.
Flush mount. External CT. Fail safe. Flag Indicator.

R3D415 110-240-415V 2 1 0.405

2 OPERATION THRESHOLDS.
Flush mount. External CT. Fault current measurement. Digital display. Fail safe. Flag indicator.

R4D415 110-240-415V 2 1 0.570

① Supply voltage:
110...125VAC (50/60Hz)
220...240VAC (50/60Hz)
380...415VAC (50/60Hz).

General characteristics

- Earth leakage relay type A
- 2 output relays each with changeover contact, configurable as 2 tripping or 1 tripping and 1 alarm
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Red tripping pre-alarm LED indicator (ALARM)
- Front TEST button
- Manual resetting by front RESET button or remote contact closing
- Automatic resetting by remote contact closing or rear jumper connection
- Constant toroid-relay circuit control
- Flag indicator (TRIP MEMORY) (R3D-R4D only)
- Digital fault current measurement and display with configurable tripping value memory (R4D only)
- Shunt tripping circuit operating test (TCS) (R4D only)
- Flush mount 96x96mm/3.78"x3.78" housing with transparent cover
- IEC degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS FOR R2D and R3D

- Configurable tripping set-point (I_{Δn}): 0.025...0.25A
2.5...25A
25...250A (with external multiplier 31RX10)
- Pre-alarm set-point: fixed 70%
- Configurable tripping delay time (t): 0.02...0.5s
0.2...5s.

ADJUSTMENTS FOR R4D

- Configurable tripping set-point (I_{Δn}): 0.03...0.3A
0.3...3A
3...30A
30...300A (with external multiplier 31RX10)
- Pre-alarm set-point: fixed 70%
- Configurable tripping delay time (t): 0.03...0.5s
0.3...5s.

Certification and compliance

Certification obtained: EAC.
Compliant with standards: IEC/EN/BS 60947-2.

Toroidal current transformers



31RT...



31RT...

Order code	Diameter	Openable	Qty per pkg	Wt.
	[mm/in]		n°	[kg]
31RT35	35/1.38"	No	1	0.200
31RT60	60/2.36"	No	1	0.245
31RT80	80/3.15"	No	1	0.410
31RT110	110/4.33"	No	1	0.400
31RT210	210/8.27"	No	1	1.200
31RTA110	110/4.33"	Yes	1	0.540
31RTA210	210/8.27"	Yes	1	1.820

Certification and compliance

Certification obtained: EAC.
Compliant with standards: IEC/EN/BS 60947-2.

External multiplier



31RX10

Order code	Description	Qty per pkg	Wt
		n°	[kg]
31RX10	10-fold multiplier suitable for R1D, RM, R2D, R3D and R4D types only	1	0.300

General characteristics

- To connect between toroid and relay.

Certification and compliance

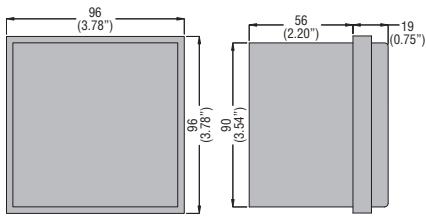
Certification obtained: EAC.
Compliant with standards: IEC/EN/BS 60947-2.

17 Earth leakage relays

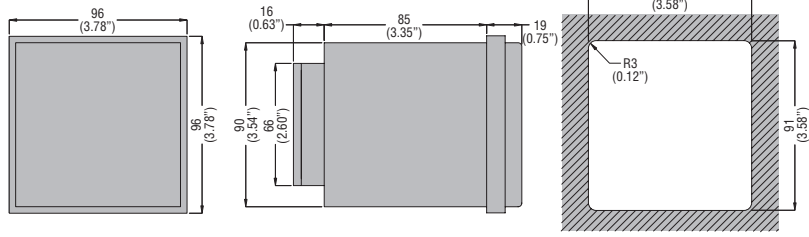
Dimensions [mm (in)]

EARTH LEAKAGE RELAYS

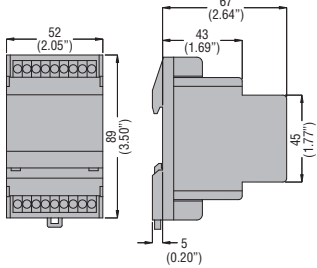
R1D - R2D - R3D



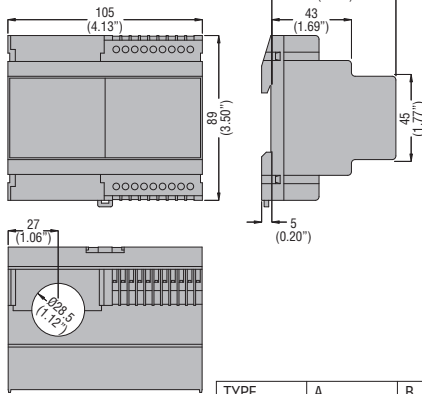
R4D



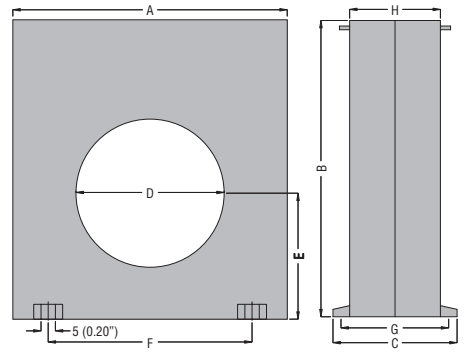
RM1 - 31RM



31RMT



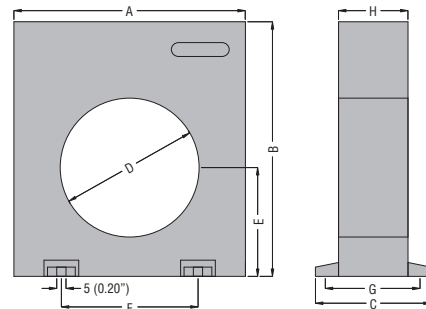
31RC



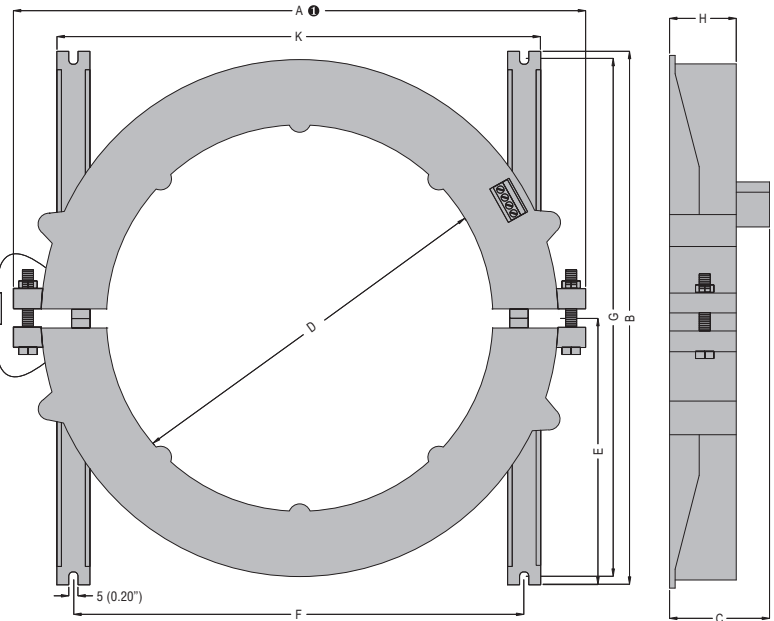
TYPE	A	B	C	D	E	F	G	H
31RC35	100 (3.94")	110 (4.33")	70 (2.75")	35 (1.38")	47 (1.85")	60 (2.36")	60 (2.36")	50 (1.97")
31RC60	100 (3.94")	110 (4.33")	70 (2.75")	60 (2.36")	47 (1.85")	60 (2.36")	60 (2.36")	50 (1.97")
31RC80	150 (5.90")	160 (6.30")	70 (2.75")	80 (3.15")	70 (2.75")	110 (4.33")	60 (2.36")	50 (1.97")
31RC110	150 (5.90")	160 (6.30")	70 (2.75")	110 (4.33")	70 (2.75")	110 (4.33")	60 (2.36")	50 (1.97")

TOROIDAL CURRENT TRANSFORMERS AND EXTERNAL MULTIPLIER

31RT35 - 31RT60 - 31RT80 - 31RT110 - 31RX10

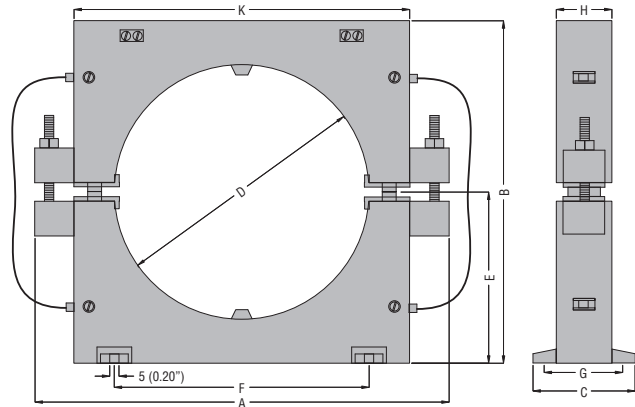


31RT210 - 31RTA210



● With screws, for 31RTA210 split-core type; fixed structure, without screws, for 31RT210 type.

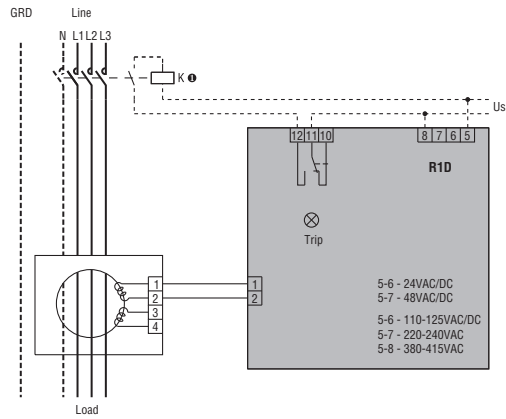
31RTA110



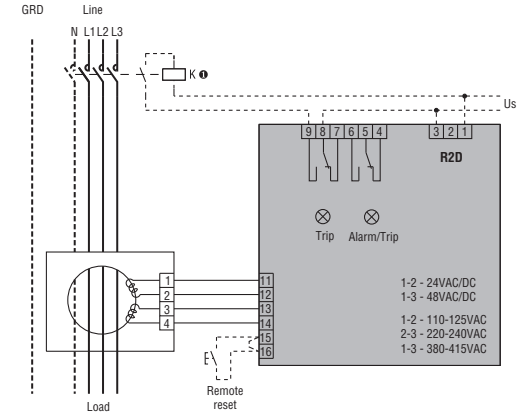
TYPE	A	B	C	D	E	F	G	H	K
31RT35	100 (3.94")	110 (4.33")	50 (1.97")	35 (1.38")	47 (1.85")	60 (2.36")	43 (1.69")	30 (1.18")	—
31RT60	100 (3.94")	110 (4.33")	50 (1.97")	60 (2.36")	47 (1.85")	60 (2.36")	43 (1.69")	30 (1.18")	—
31RT80	150 (5.90")	160 (6.30")	50 (1.97")	80 (3.15")	70 (2.75")	110 (4.33")	43 (1.69")	30 (1.18")	—
31RT110	150 (5.90")	160 (6.30")	50 (1.97")	110 (4.33")	70 (2.75")	110 (4.33")	43 (1.69")	30 (1.18")	—
31RT210	310 (12.20")	290 (11.41")	54 (2.12")	210 (8.27")	145 (5.71")	240 (9.45")	280 (11.02")	36 (1.42")	258 (10.16")
31RTA110	180 (7.09")	150 (5.90")	45 (1.77")	110 (4.33")	75 (2.95")	110 (4.33")	38 (1.50")	25 (0.98")	145 (5.71")
31RTA210	310 (12.20")	290 (11.41")	54 (2.12")	210 (8.27")	145 (5.71")	240 (9.45")	280 (11.02")	36 (1.42")	258 (10.16")
31RX10	100 (3.94")	110 (4.33")	50 (1.97")	—	—	60 (2.36")	43 (1.69")	30 (1.18")	—

EARTH LEAKAGE RELAYS

R1D

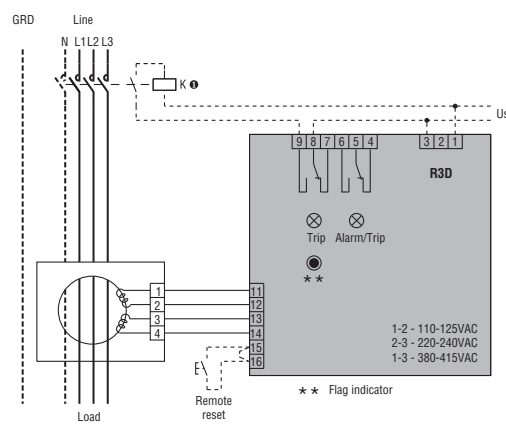


R2D



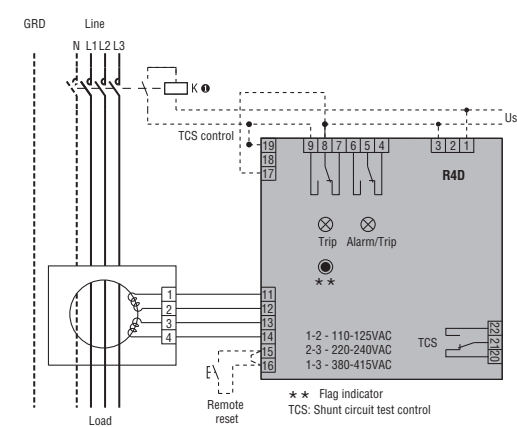
ⓘ The coil connection can vary depending on the connected type of device (contactor, breaker with shunt trip release or breaker with undervoltage trip release).

R3D



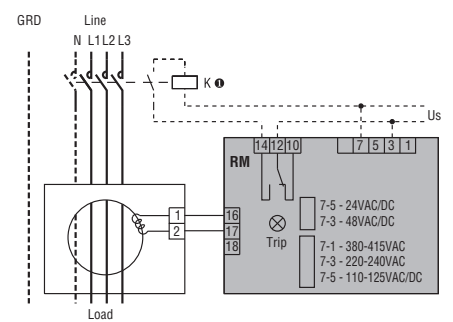
ⓘ The coil connection can vary depending on the connected type of device (contactor, breaker with shunt trip release or breaker with undervoltage trip release).

R4D



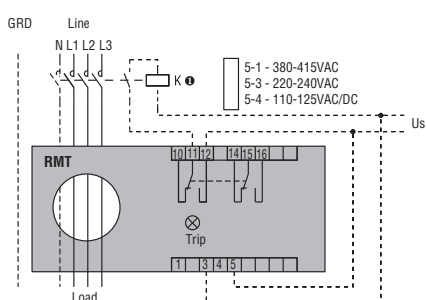
Type	Us	Us Wiring	TCS Wiring
R4D415	110-125VAC	1-2	17-18
	220-240VAC	2-3	17-18
	380-415VAC	1-3	17-19

RM1 - 31RM

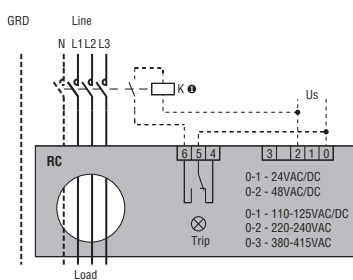


ⓘ The coil connection can vary depending on the connected type of device (contactor, breaker with shunt trip release or breaker with undervoltage trip release).

31RMT



31RC



ⓘ The coil connection can vary depending on the connected type of device (contactor, breaker with shunt trip release or breaker with undervoltage trip release).

17 Earth leakage relays

Technical characteristics



INDEX

TYPE	R1D ^①	R2D ^①	R3D ^①	R4D ^{①②③}
DESCRIPTION				
	Flush mount with transparent cover, 1 operating threshold	Flush mount with transparent cover, 2 operating thresholds constant toroid-relay circuit control	Flush mount with transparent cover, 2 operating thresholds constant toroid-relay circuit control	Flush mount with display and cover, 2 operating thresholds - constant toroid-relay circuit control
CONTROL CIRCUIT				
Toroidal transformer	External (see types given on page 17-3)			
Adjustments				
Tripping set-point (I Δ n)	0.025...0.25A (x0.1) 0.25...2.5A (x1) 2.5...25A (x10) 25...250A (external multiplier)		0.03...0.3A (x0.1) 0.3...3A (x1) 3...30A (x10) 30...300A (external multiplier)	
Prealarm set-point	—	70% I Δ n (fixed)	70% I Δ n (fixed)	70% I Δ n (fixed)
Tripping delay time (t)	0.02...0.5s (tx1) 0.2...5s (tx10)		0.03...0.5s (tx1) 0.3...5s (tx10)	
Selection of multiplier for I Δ n and t	By dip-switches			
Resetting	Configurable automatic or manual by button on front ^②	Automatic by remote contact closing or rear jumper connection Manual by button on front or remote contact closing		
Shunt circuit control	—	—	—	Yes
AUXILIARY SUPPLY				
Auxiliary voltage U _s (0.85 - 1.1 U _s limit)	24-48VAC/DC 110...125VAC/DC 220...240/380...415VAC	— 110...125/220...240/380...415VAC		
Rated frequency	50...60Hz			
Power consumption (maximum)	4VA			
RELAY OUTPUTS				
State	Normally de-energised	Configurable normally de-energised or energised	Configurable normally de-energised or energised	Configurable normally de-energised or energised
Contact arrangement	1 changeover SPDT (trip)	2 changeover SPDT each (configurable: 2 trip or 1 trip and 1 alarm)		
Rated contact capacity IEC I _{th}	5A 250VAC			
Electrical life	3 x 10 ⁵ cycles			
Mechanical life	50 x 10 ⁶ cycles			
INSULATION				
Power frequency withstand voltage	2.5kV for 60s			
INDICATIONS				
Auxiliary voltage available (ON)	Green LED			
Relay tripping (TRIP)	Red LED			
Trip prealarm (ALARM)	—	Red LED	Red LED	Red LED
Mechanical (TRIP MEMORY)	—	—	Flag indicator	Flag indicator
Shunt circuit tripping (TCS)	—	—	—	Red LED
CONNECTIONS				
Type of terminals	Fixed		Removable, plug-in	
Tightening torque maximum	0.5Nm (4.5lb.in)			
Conductor section min...max	0.2...2.5mm ² (24...12AWG)			
AMBIENT CONDITIONS				
Operating temperature	-10...+60°C			
Storage temperature	-20...+80°C			
Relative humidity	≤90%			
HOUSING				
Material	Self-extinguishing polycarbonate			

① Type A, sensitive to residual sinusoidal AC and pulsating DC currents.

② Remote resetting by removing power for more than 1 second.

③ Digital display of fault current measurement and tripping value memory.

17 Earth leakage relays

Technical characteristics

	RM1... ^①	31RM... ^①	31RMT... ^①	31RC... ^①
	Modular with transparent cover, 1 operating threshold	Modular with transparent cover, 1 operating threshold	Modular with transparent cover, 1 operating threshold	Compact, 1 operating threshold
	External (see types given on page 17-3)	External (see types given on page 17-3)	Incorporated Ø28mm/1.1"	Incorporated 35-60-80-110mm/ 1.38-2.36-3.15-4.33" standard diameter
	0.3A or 0.5A	0.025...0.25A (x0.1) 0.25...2.5A (x1) 2.5...25A (x10) 25...250A (external multiplier)	0.025...0.25A (x0.1) 0.25...2.5A (x1) 2.5...25A (x10)	0.025...0.25A (x0.1) 0.25...2.5A (x1) 2.5...25A (x10)
	—	—	—	—
	0.02s or 0.5s	0.02...0.5s (tx1) 0.2...5s (tx10)	0.02...0.5s (tx1) 0.2...5s (tx10)	0.02...0.5s (tx1) 0.2...5s (tx10)
	By dip-switches			
	Configurable A: Automatic or M: Manual by button on front			
	—			
	24-48VAC/DC		—	24-48VAC/DC
	110...125VAC/DC 220...240/380...415VAC			
	50...60Hz			
	3VA			
	Normally de-energised	Normally de-energised	Configurable normally de-energised or energised	Normally de-energised
	1 changeover SPDT (trip)	1 changeover SPDT (trip)	2 changeover SPDT each (both trip)	1 changeover SPDT (trip)
	5A - 250VAC			
	3x10 ⁵ cycles			
	50x10 ⁶ cycles			
	2.5kV for 60s			
	Green LED			
	Red LED			
	—			
	—			
	—			
	Fixed			
	0.5Nm (4.5lb.in)			
	0.2...2.5mm ² (24...12AWG)			
	-10...+60°C			
	-20...+80°C			
	≤90%			
	Self-extinguishing polycarbonate			

^① Type A, sensitive to residual sinusoidal AC and pulsating DC currents.