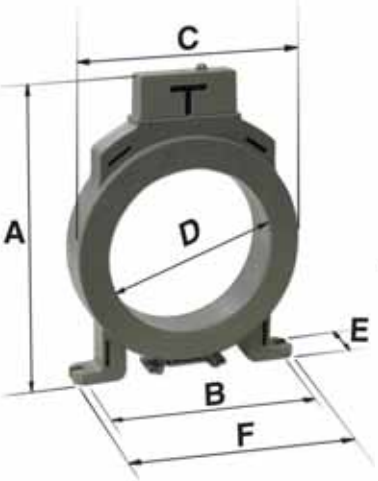
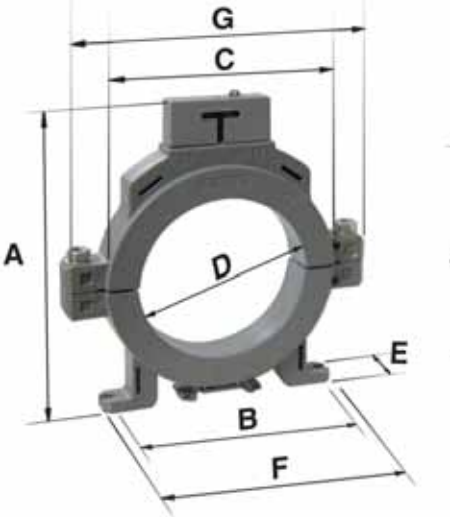
EARTH LEAKAGE RELAYS

DIMENSIONS in mm

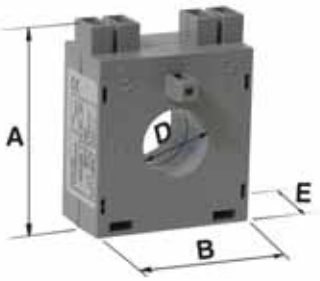
TOR



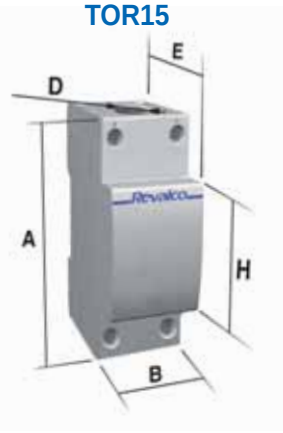
TORA



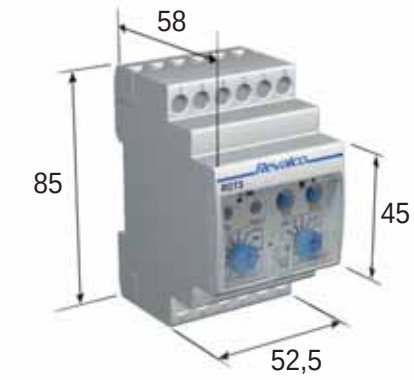
TOR1D



TOR15



	D	A	B	C	E	F	G	H	Weight kg
TOR3	35	118	90	78,5	27	104			0,17
TOR6	60	143	102	94,5	27	117			0,22
TOR8	80	163	110	114,5	27	125			0,29
TOR11	110	198	140	150,5	32	155			0,45
TORA11	110	198	140	150,5	32	155	198		0,75
TOR16	160	248	181	200,5	32	197			0,65
TOR21	210	298	210	250,5	32	227			0,75
TORA21	210	298	210	250,5	32	227	296		1,20
TOR1D	22	65	52		27				0,30
TOR15	15	85	35		58			45	0,20



- **The 52,5 mm dimensions correspond to 3 DIN modules (17.5 mm each)**
- **Weight: 0,26 Kg**

TECHNICAL CHARACTERISTICS

Earth Leakage control and monitoring consist of a Current Relay and associated Summation Toroidal Current Transformer which are used in LV networks with alternating current in TT, IT, and TNS systems. They provide the protection required against indirect contacts, (complementary protection against direct contacts)and against the risk of fire (as the low currents through the earth are not enough for to let the magnetothermic device intervene). The standard CEI 64.8 says that the earth leakage relay is considered as **additional protection** therefore not an unique device for protection against the direct contacts. All cables of a single or three phase system, including the neutral where present, must cross the toroid which is the point of residual current,the device activates when it detects defective insulation which is indicated when the vectorial sum of the current carrying cables results in a differential figure.Referring standards: CEI EN 60947.2/B paragraph B.8.2.

Earth leakage relay intervenes also after a loss of connection with the coroidal current transformer
It is possible to effect the remote reset simply by removing and apply again the auxiliary voltage supply.

EARTH LEAKAGE RELAYS

1RDT3 - A type

The Test and Reset buttons are accessible from the front with sealed front window also

AUXILIARY POWER SUPPLY	230V CA ± 10% - 40 / 60 Hz
BURDEN	1,5 W
TRIP CURRENT ADJUSTMENT (IΔN)	30 - 50 - 100 - 150 - 230 - 300 - 350 mA 0,5 - 1 - 1,5 - 2 - 3 A
TIME DELAY ADJUSTMENT	0 - 0,25 - 0,5 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10 sec
OUTPUT, one change-over contact	NC - C - NO 10A, 250V
TEMPERATURES	operating 0°C ÷ +55 °C / storage: -20°C ÷ 80°C
INSULATION TEST	2 kV a 50 Hz for 1 min (1 kV for the measurement circuit)
PROTECTION CLASS	IP 20 on terminals - IP40 on front
INSULATION CLASS	II
SIGNALLING LED	FAULT (RED led): working relay, over-limits after the time delay ON (GREEN led): device correctly supplied RESET (push): reset of anomaly TEST (push): test for the control of the correct functions
STANDARDS	IEC 364 / 4-5, IEC 755, CEI EN 60947.2/B, CEI 64.8, CEI EN 61008/1
AMMETRIC CIRCUIT	Wires: lenght max 20 m, section min. 1 mm²
DIMENSIONS	3 DIN modules
For the connection diagram see page 97	

RDT30k - A type

The Test and Reset buttons are accessible from the front with sealed front window also

AUXILIARY POWER SUPPLY	230V CA ± 10% - 40 / 60 Hz
BURDEN	1,5 W
TRIP CURRENT ADJUSTMENT (IΔN)	30 - 100 - 300 mA 0,5 - 1 - 1,5 - 2 - 3 - 5 - 10 - 20 - 30 A
TIME DELAY ADJUSTMENT	0 - 0,25 - 0,5 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10 sec
OUTPUT, one change-over contact	NC - C - NO 10A, 250V
TEMPERATURES	operating -10°C ÷ +55 °C / storage: -20°C ÷ 80°C
INSULATION TEST	2 kV a 50 Hz for 1 min (1 kV for the measurement circuit)
PROTECTION CLASS	IP 20 on terminals - IP40 on front
INSULATION CLASS	II
SIGNALLING LED	FAULT (RED led): working relay, over-limits after the time delay ON (GREEN led): device correctly supplied RESET (push): reset of anomaly TEST (push): test for the control of the correct functions
STANDARDS	IEC 364 / 4-5, IEC 755, CEI EN 60947.2/B, CEI 64.8, CEI EN 61008/1
AMMETRIC CIRCUIT	Wires: lenght max 20 m, section min. 1 mm²
DIMENSIONS	3 DIN modules
For the connection diagram see page 97	

1RDT30E - A type

AUXILIARY POWER SUPPLY	230V CA ± 10% - 40 / 60 Hz
BURDEN	1,5 W
TRIP CURRENT ADJUSTMENT (IΔN)	30 - 300 - 500 mA 1 - 3 - 30 A
TIME DELAY ADJUSTMENT	0 - 1 - 2 - 3 - 4 sec
OUTPUT, one change-over contact	NC - C - NO 10A, 250V
TEMPERATURES	operating 0°C ÷ +55 °C / storage: -20°C ÷ 80°C
INSULATION TEST	2 kV a 50 Hz for 1 min (1 kV for the measurement circuit)
PROTECTION CLASS	IP 20 on terminals - IP40 on front
INSULATION CLASS	II
SIGNALLING LED	FAULT (RED led): working relay, over-limits after the time delay ON (GREEN led): device correctly supplied RESET (push): reset of anomaly TEST (push): test for the control of the correct functions
STANDARDS	IEC 364 / 4-5, IEC 755, CEI EN 60947.2/B, CEI 64.8, CEI EN 61008/1
AMMETRIC CIRCUIT	Wires: lenght max 20 m, section min. 1 mm²
DIMENSIONS	3 DIN modules
For the connection diagram see page 97	

1RDT3S - AC type

AUXILIARY POWER SUPPLY	230V CA ± 10% - 40 / 60 Hz
BURDEN	1,5 W
TRIP CURRENT ADJUSTMENT (IΔN)	Three different currents (30mA - 300mA - 3A) selectable by an incorporated minidip
TIME DELAY ADJUSTMENT	Five different times: instantaneous 0,2 sec - 0,5 sec - 3 sec - 5 sec selectable by an incorporated minidip
OUTPUT, one change-over contact	10A, 250 V
SIGNALLING LED	FAULT (RED led): working relay, over-limits after the time delay ON (GREEN led): device correctly supplied RESET (push): reset of anomaly TEST (push): test for the control of the correct functions
TEMPERATURES	operating 0°C ÷ +55 °C / storage: -20°C ÷ 80°C
INSULATION TEST	2,5 kV for 1 minute
PROTECTION CLASS	IP 20
DIMENSIONS	3 DIN modules

For the connection diagram see page 97

TOROIDAL CURRENT TRANSFORMERS

These current transformers are for applications using Earth Leakage Relays. They consist of a high quality magnetic core which detects fault currents, even of very low values.

- The connection toroid-earth leakage relay must be effected with shielded cables in the following cases:
  a) Differential threshold < 100mA
  b) Distances of toroid > 10m
  c) Signal cable installed at less than 30cm from the power cables
- It is advisable and, in critical situations, obligatory:
  a) Make a plait with the connection cables toroid-relay
  b) The section of the cables must be not less than 1mmsquare) and their lenght cannot exceed 20m
  c) The cables cannot be installed in proximity of electromechanical components or power cables that bcan be source a of magnetic fields and perturbation of measurement signal
- In order that the measurement of the toroid is correct, it is necessary:
  a) Put the cables in the center of the toroid
  b) The toroid must be not positioned in proximity of a curve zone of the cables that cross it
  c) Use a toroid with an internal diameter at least double the diameter of the cable or of the plait of cables.
  d) In very critical cases it is necessary to install a ferromagnetic sleeve around the cables in the intern of the toroid
  e) The toroid must be crossed ,in the same sense by all the active cables of the line, neutral included (if present). **The neutral cable must not connected to the earth after the toroid**
  f) In case that the protected line has a metallic protection, it must be connected to the earth, after the toroid
- In case of use of split core toroids, be sure, before to close them that the contact surfaces of the core are perfectly cleaned and that the fixing screws are very well fixed.
- Toroidal ratio 50/0,1 – Number of turns: 500
- Terminal covers included
- **For the connection diagram see page 97**

TOR1D

TOR15

TOR3

TOR6

TOR8

TOR11

TOR16

TOR21

TORA11

TORA21

ADAPTER TOROIDS

- Used to solve the problem of earth leakage relays connection with big or far bars.
- **For the connection diagram see page 97**

TORAD

- 5 / 0,1 A - Class 0,2 - Power 1VA

TORSD3

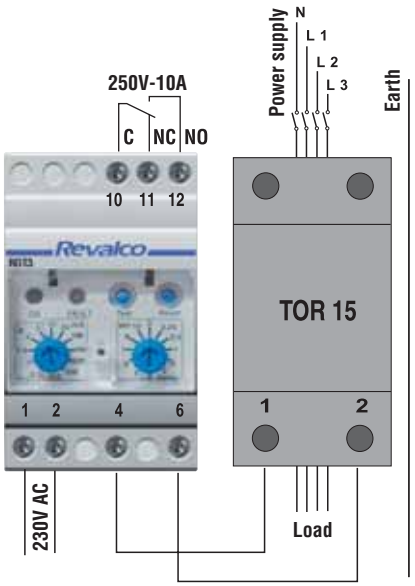
- 5+5+5 / 0,1 A - Class 0,2 - Power 1VA

TORSD4

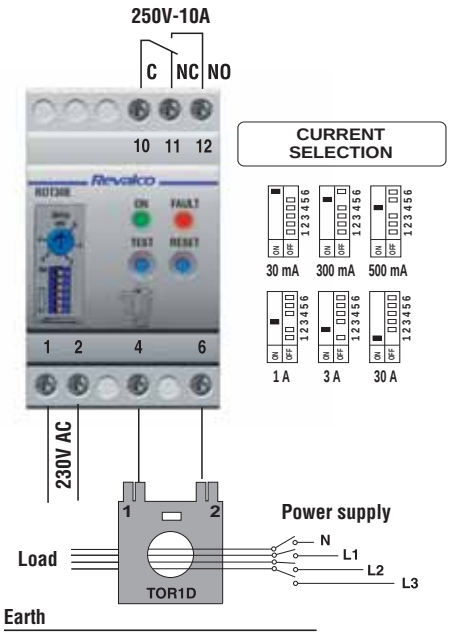
- 5+5+5+5 / 0,1 A - Class 0,2 - Power 1VA

CONNECTION DIAGRAM OF EARTH LEAKAGE RELAYS

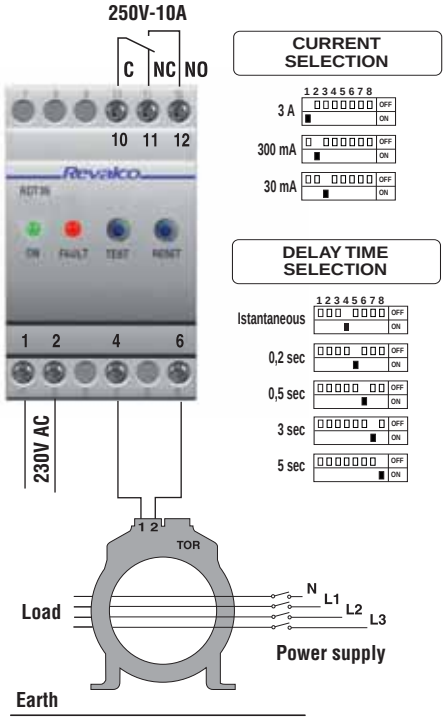
1RDT3 - 1RDT30K



1RDT30E



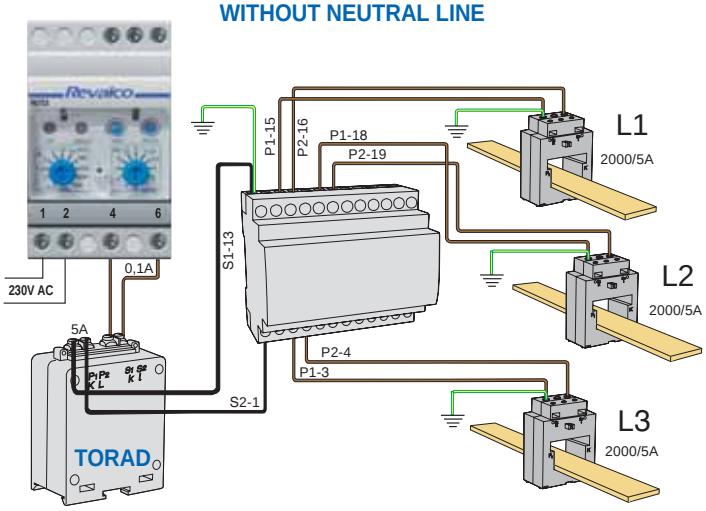
1RDT3S



CONNECTION DIAGRAM OF ADAPTER TOROIDS

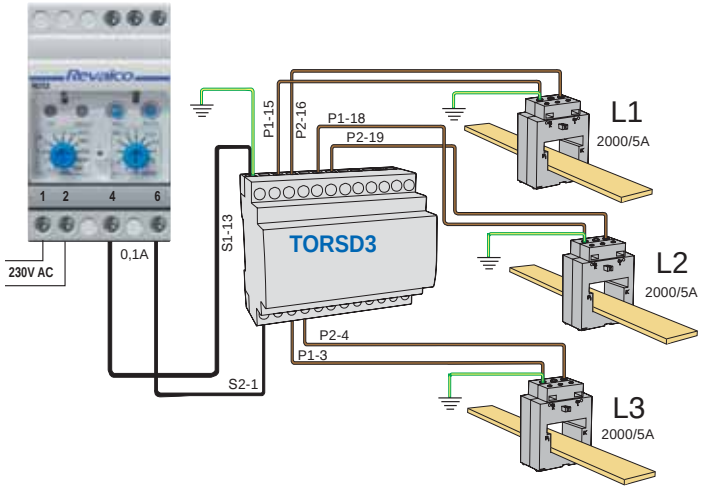
TORAD 5A/0,1A

WITHOUT NEUTRAL LINE



TORSD3 5+5+5A/0,1A

WITHOUT NEUTRAL LINE



TORSD4 5+5+5+5A/0,1A

WITH NEUTRAL LINE