

DIFFERENTIAL RELAY

ELRv20/30 type A relay

ELRv21/31 type B relay



The differential relays ELRv are relays for the limitation of the earth leakage current, of the type A for the ELRv20/30 and the type B for the ELRv21/31. Associated with a measure toroidal and a circuit breaker, they allow to perform on low voltage networks of the type TT, IT, TNS the following functions:

- protection from direct contacts,
- complementary protection from indirect contacts,
- limitation of the earth leakage current,
- protection from fires.

Their reinforced immunity as well as their TRMS measurement technique can guarantee a maximum safety and a continuity of the electrical operation, avoiding ill-timed cuts.

They include in addition a pre-alarm output, allowing the anticipation of insulation defaults without causing a trip.

The ELRv30 and 31 offer an automatic reclosing function allowing to maintain the necessary service continuity in some sensitive or isolated installations.

Option N: digital communications RS485, protocol Modbus/Jbus

Conform with IEC60755

Functions

- LCD display allowing:
 - The permanent display of the instant leak current as well as the value of the tripping current.
 - The visualisation of the status of the alarms.
 - The configuration of the instrument (passcode protected programming).
- Sensitiveness programmable: 30mA to 3A (8 calibers) ($I_{\Delta n}$)
- 2 relay outputs:
 - Relay 1:
 - Main alarm
 - Tripping setpoint programmable (50 to 80% of $I_{\Delta n}$)
 - Safety programmable (positive or negative)
 - 3 time delay modes: general (instant), selective or programmable lapse from 20ms to 10s.
 - Relay 2:
 - End of reclosing cycle contact or pre-alarm
 - Tripping setpoint programmable (30 to 80% of $I_{\Delta n}$)
 - Safety programmable (positive or negative)
 - Hysteresis programmable (from 0 to 20%)
 - Time lapse programmable from 20ms to 10s.
 - Recording function.
 - Test and reset of the alarms by keyboard keys or external control.
 - Test of the connection with the toroidal.
 - Function self-reclosing (ELRv30 and 31) with:
 - Programming of the number of reclosing (20 max.)
 - Programming of the time between each reclosing (from 1 to 9999 sec.)
 - Programming of the cycle reinitialization time (from 1 to 9999 sec.)



Features

Universal power supply: from 20 to 250Vac and 20 to 250Vdc / Power consumption: 3W max or 5VA

Isolation: 2kV-50Hz-1min (between supply and outputs)

Sensitiveness setting ($I_{\Delta n}$) : 0.030 - 0.1 - 0.2 - 0.3 - 0.5 - 1 - 2 - 3A

Setting of the measurement frequency: 50 or 60 Hz or DC (ELRv 21/31 only)

Alarm outputs: 1 break make contact per alarm, 8A/250Vac on resistive load

Setting of the triggering:

Main alarm: 50% - 60% - 70% - 80% de $I_{\Delta n}$

Pre-alarm: 30% - 50% - 60% - 70% - 80% de $I_{\Delta n}$

Setting of the time delay:

Main alarm: General mode (instant) – Selective mode

Or fixed time delay: 0.02 - 0.1 - 0.2 - 0.3 - 0.4 - 0.5 - 0.75 - 1 - 2 - 5 - 10 sec.

Pre-alarm: Lapse: 0.02 - 0.1 - 0.2 - 0.3 - 0.4 - 0.5 - 0.75 - 1 - 2 - 5 - 10 sec.

Setting of the hysteresis: Pre-alarm: 0% - 5% - 10% - 15% - 20% de $I_{\Delta n}$

External control (Reset or test): potential free contact

Operating temperature: -5 to +55°C

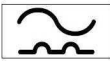



Storage temperature: -20 to +70°C

Dimensions: 22.6x109x136 mm

Connectings: removable terminal block for screwed connections (2.5mm² flexible or rigid)

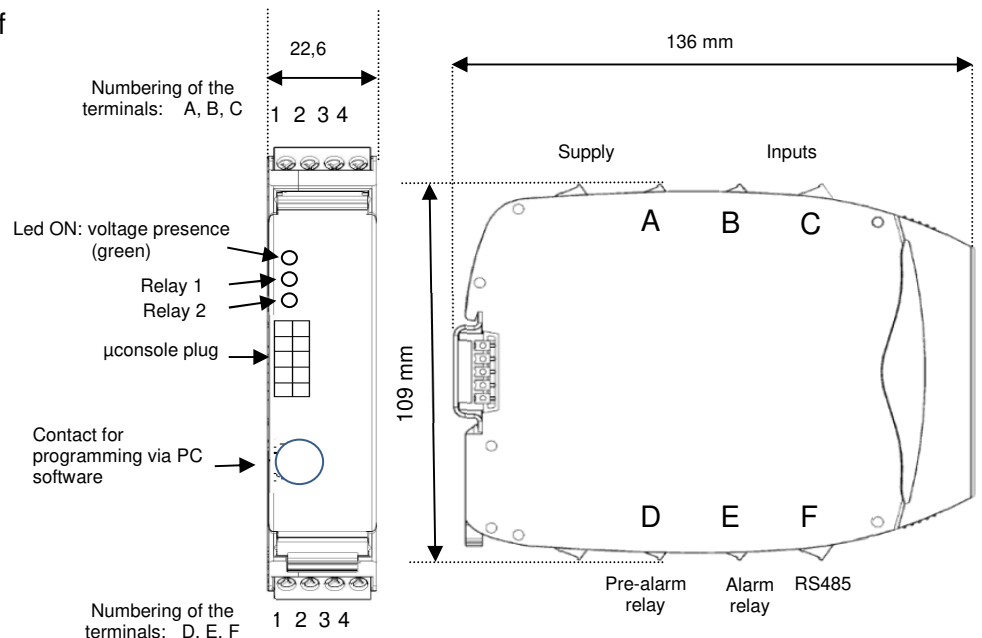
Protection indice: IP20

Standards: IEC 61008-1 / IEC 60755

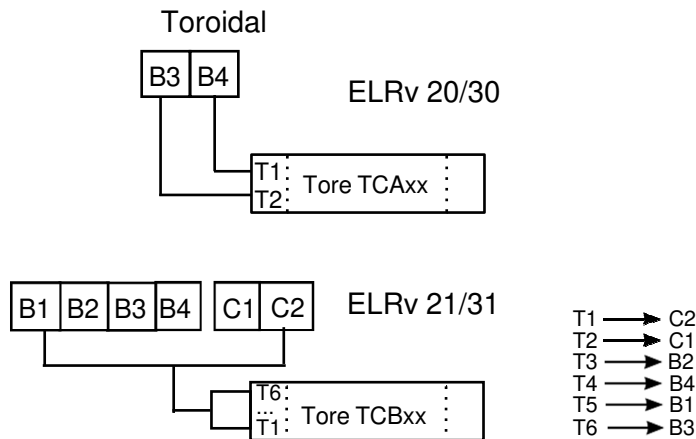
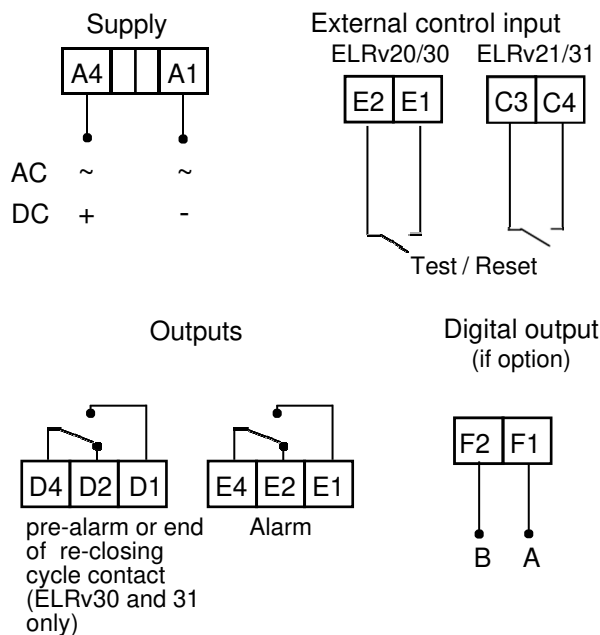
Reference	Type of the differential relay	Specificities	Associated toroidals
ELRv 20	A 	1 alarm relay + 1 pre-alarm relay	Series TCA
ELRv 30	A 	1 alarm relay + 1 pre-alarm relay Function self-retriggering	Series TCA
ELRv 21	B 	1 alarm relay + 1 pre-alarm relay	Series TCB
ELRv 31	B 	1 alarm relay + 1 pre-alarm relay Function self-retriggering	Series TCB

Housing: self-extinguishing case of black UL 94VO

Mounting in cabinet: latching on symmetrical DIN rail.



Connectings

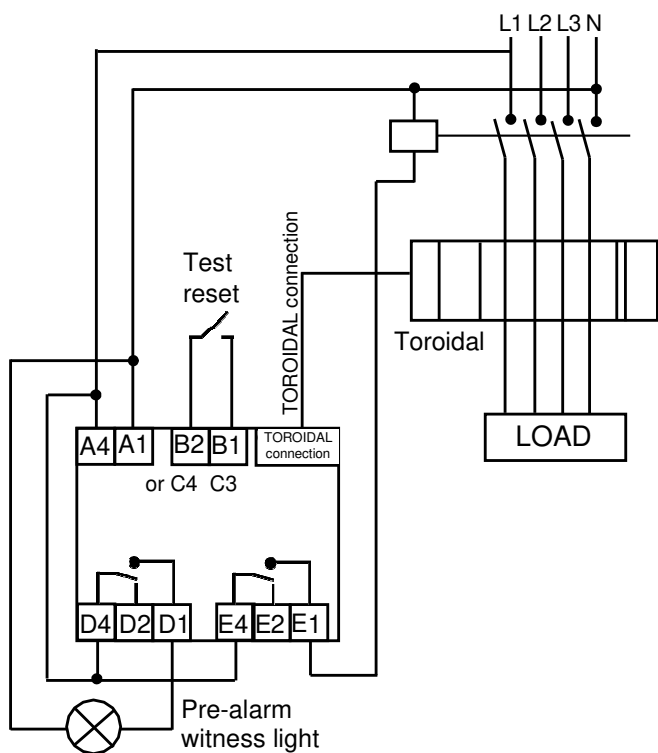


Use preferably a connection cable reference CBBxx.

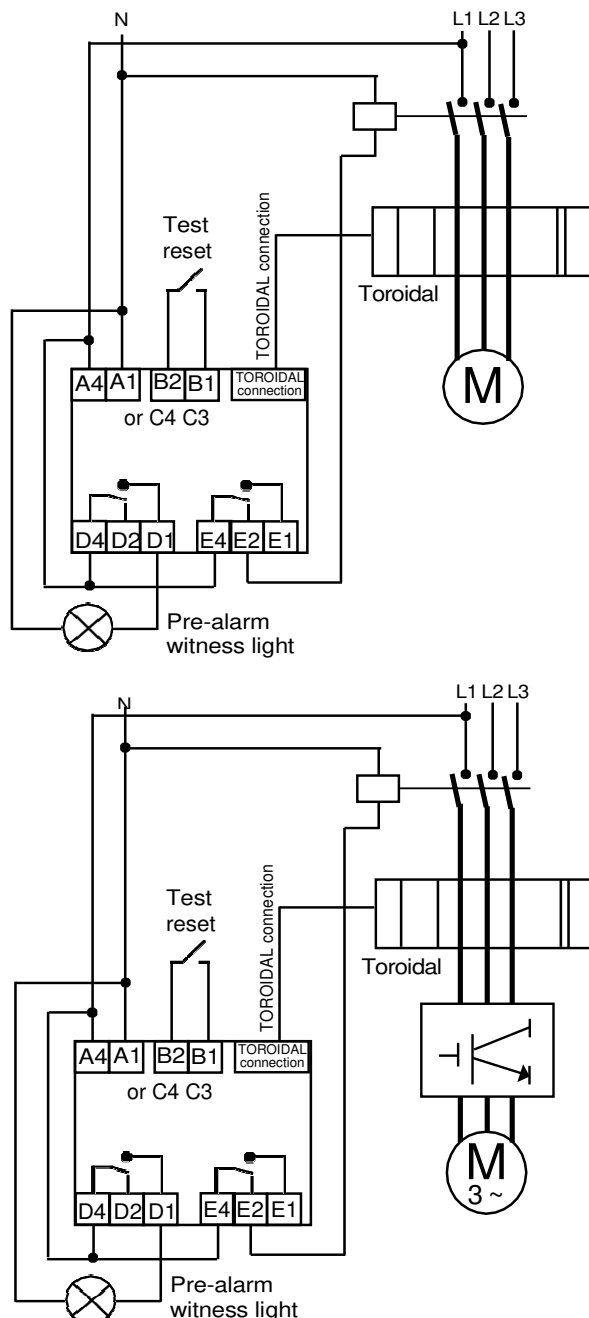
Recommendations for the wiring of the toroidal:
Take care to make the shortest possible connection between the relay and the toroidal. Use preferably twisted cables, or even shielded cables for very disturbed environments with the shielding connected on both sides on the terminals T2/B3 for the ELRv20 or 30 and on the terminals T5/B1 for the ELRv21 or 31.

EXAMPLES OF WIRING DIAGRAMS

For triggering by emission of voltage



For triggering by lack of voltage



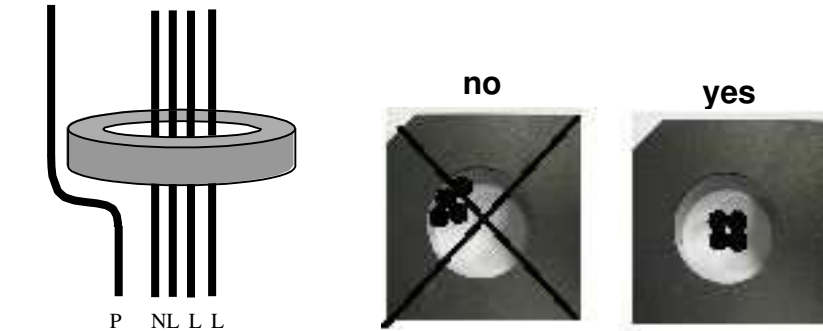
Note:

- The toroidal must be crossed in the same direction by all the active cables of the line, including the neutral (if present).
- All the cables must be at the center of the toroidal.
- Do not let the earth cable go through the toroidal.

Differential toroidals (earth leakage transformers)

They perform the algebraic sum of the currents inside the active leads (phase and neutral), thus allowing the detection of any leak current even in the case of a very low value.

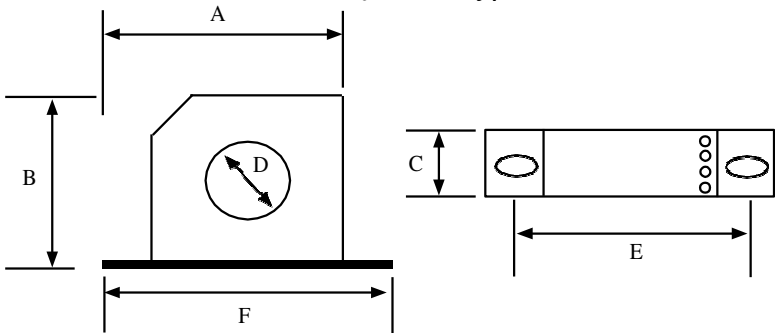
They are foreseen for wall mounting, but can also be mounted on DIN rail grâce thanks to specific provided fastenings.



Recommendations for use:
 The toroidal must be crossed in the same direction by all the active cables of the line, including the neutral (if present). Do not let the earth cable go through the toroidal. Maintain the cables at the center of the toroidal.

Series TCA

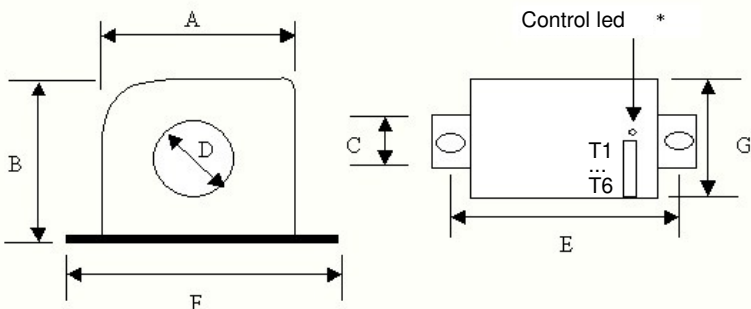
Toroidal for differential relay of the type A: ELRv20 or ELRv30



Reference	A	B	C	D	E	F
TCA35	81	71	26	35	96	111
TCA70	120	110	26	70	134	150
TCA110	170	160	26	110	184	200

Series TCB

Toroidal for differential relay of the type B: ELRv21 or ELRv31



Reference	A	B	C	D	E	F	G
TCB35	95	91	24	35	111	125	49
TCB70	127	110	24	70	144	157	49
TCB110	162	145	24	110	179	192	49

Accessories (for TCBxx only):
 1 meter long connection cable: reference CBB01
 2 meter long connection cable: reference CBB02
 5 meter long connection cable: reference CBB05

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