

# Type: RCR-V30

## Earth Leakage Relay (Variable) - Type A

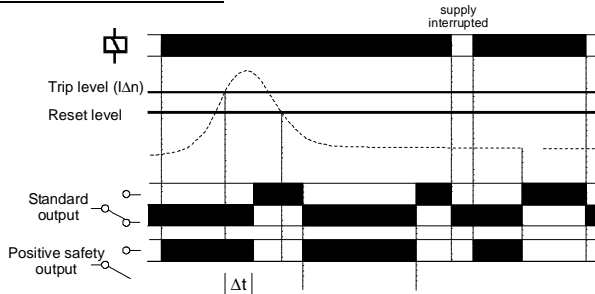
- 44mm (2.5 modules) wide DIN rail housing
- Designed to monitor and detect true RMS earth fault currents (up to 30A) in conjunction with a separate toroid
- LED bargraph provides constant indication of any leakage current
- Microprocessor controlled with internal monitoring (self-checking)
- Adjustable Sensitivity (IDn) - 30mA to 30A
- Adjustable Time Delay (Dt) - 0 (instantaneous)\* to 10 seconds
- Separate "Test" and "Reset" push buttons
- Connection facility for remote "Test" and "Reset" push buttons or N.O. contacts
- Toroid open circuit detection forces unit to trip (Red LED flashes during this condition)
- 2 Relay outputs - Standard Output (S.O.) and Positive Safety Output (P.S.O.)
- LED indication of Supply status and fault condition after unit has tripped



Dims:  
to DIN 43880  
W. 44mm

Terminal Protection to IP20

### FUNCTION DIAGRAM



### INSTALLATION

- BEFORE INSTALLATION, ISOLATE THE SUPPLY. Installation work must be carried out by qualified personnel.
- Connect the unit as shown in the diagram below (N.B. certain features may not be required and therefore do not need to be connected).
- Apply power, the green "supply on" LED will illuminate and the "positive safety output" relay will energise. The relay will de-energise if:
  - the fault current level exceeds the set trip level (IDn) \*\*
  - there is a failure of the connection between the relay and the toroid \*\* (Note the red "tripped" LED will flash during this condition)
  - the supply to the unit is removed
  - the relay fails internally
- \*\* causes the "standard output" relay to energise in response to the fault condition.
- Prior to a fault occurring, the LED bargraph will indicate the % of IDn being detected (the display is scaled between 25, 50, and 75% of the actual trip level). After all 3 LEDs have illuminated and the unit trips due to an excessive fault current, the red "tripped" LED will illuminate. The unit will now remain in a latched condition.

#### Fault simulation (Test mode)

- The unit can be placed into a fault condition by pressing the "Test" button on the front of the unit (or by pressing the remote "Test" button - if fitted). The output relays operate accordingly.
- Press the "Reset" button on the front of the unit (or remotely - if fitted) to reset the unit. The output relays revert back to their "non-tripped" state.
- The unit can also be reset by interrupting the power supply.
- To satisfy regulations, it is recommended that the device be tested periodically to ensure correct operation.

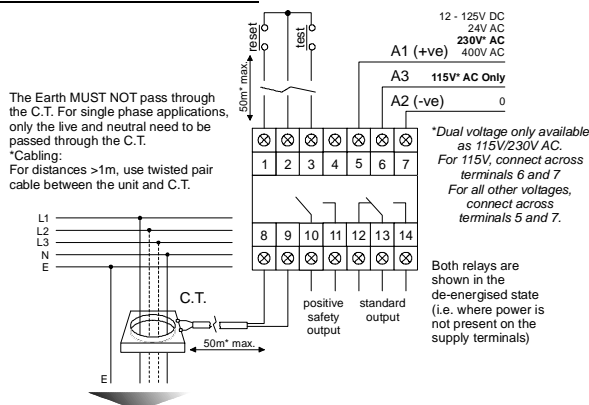
#### Troubleshooting

- If the unit fails to operate correctly check that all wiring and connections are good.

#### Note:

The operating function of this unit is classed as a Type A for which tripping is ensured for residual sinusoidal alternating currents and residual pulsating direct currents, whether applied suddenly or slowly rising. Additionally, this unit is protected against nuisance tripping . This unit will also satisfy the requirements for Type AC devices which only need to detect residual alternating currents.

### CONNECTION DIAGRAM



### TECHNICAL SPECIFICATION

Supply voltage Un (5, 6, 7):	12 - 125V DC (85 - 110% of U)	Please state Supply voltage when ordering.
(see connection diagram)	24, 115/230, 400V AC (85 - 115% of Un)	
All AC supplies are galvanically isolated between the supply and the toroid and remote test/reset connections.		
Frequency range:	50/60/400Hz (AC supplies)	
Isolation:	Over voltage cat. III	
Rated impulse withstand voltage:	800V (24V AC supplies), 2.5kV (115V AC supplies)	
Trip level limits:	1.2 / 50µs IEC 60664	
Power consumption (max.):	4kV (230V, 400V AC supplies)	
Monitored leakage current:	6VA (AC supplies) 5W (DC supplies)	
	0 to 30A (15 - 400Hz) (through external toroid with 1000:1 ratio and connected to terminals 8 and 9)	
Sensitivity IDn (see Accessories)	30, 100, 300, 500mA, 1, 3, 5, 10, 20, 30A (user selectable)	
Reset Value:	80 - 90% of IDn	
Time delay Δt:	≈ 85% of tripped level	
	0*, 60, 150, 250, 500, 800ms, 1, 2.5, 5, 10 sec. (user selectable)	
	*Actual delay for "0" or "Instantaneous" is <25ms when fault current @ 5 x IDn.	

#### Note:

- For IDn setting of 30mA, the time delay is fixed to 0 (instantaneous) and is not adjustable (i.e. any other time delay cannot be selected when 30mA is set).
- The unit is factory set to 30mA trip and instantaneous delay. Adjustment of these settings can be made if necessary to suit the requirements of the installation. A seal is supplied allowing the user to secure the clear window and hence prevent any unnecessary adjustment of the settings.

Reset time:	≈ 2S (from supply interruption)
LED indication:	
Power supply present:	Green
Bargraph:	Green x 3 (25, 50 and 75% of actual trip level)
Tripped:	Red (see "INSTALLATION" to the left)
Memory:	storage of the leakage fault and reset with the "Reset" push button
Ambient temp:	-20 to +55°C (-5 to +40°C in accordance with IEC 60755)
Relative humidity:	+ 95%
Output :	1 x SPNO, 1 x SPDT relays
Output rating:	S.O. (12, 13, 14) P.S.O. (10, 11)
	AC1 (250V) 8A (2000VA) 6A (1500VA)
	AC15 (250V) 2.5A 4A
	DC1 (25V) 8A (200W) 6A (150W)
Electrical life:	≥ 150,000 ops at rated load
Dielectric voltage:	2kV AC (rms) IEC 60947-1
Rated impulse withstand voltage:	4kV (1.2 / 50µs) IEC 60664
Remote "Test" / "Reset" (1, 2, 3)	Requires N.O. contacts. (i.e. push buttons)
Minimum trigger time:	> 80ms (Actual trigger time = 80ms + Δt setting for remote "test")
Housing:	Grey flame retardant Lexan UL94 VO
Weight:	≈ 190g (AC power supplies) ≈ 110g (DC power supply)
Mounting option:	On to 35mm symmetric DIN rail to BS5584:1978 (EN50 002, DIN 46277-3)
Terminal conductor size:	≤ 2.5mm² stranded, ≤ 4mm² solid
Approvals:	Conforms to: IEC60755, 60947, 62020, 61543, IEC 61000-4-2, -3, -4, -5, -6, -12 and -16. CISPR 22. CE and  Compliant.

( ) Numbers in brackets shown above refer to terminal numbers on the relay housing.

#### Options

- For other supply voltages, alternative trip levels or time delays, please consult the sales office.

#### Accessories - Toroids

Toroid Type:	Internal diameter:	IDn (min.) A
CTB035	35mm Ø	0.03
CTB070	70mm Ø	0.03
CTB120	120mm Ø	0.1
CTB210	210mm Ø	0.3

### MOUNTING DETAILS

