Type: ELRM44V-30AR

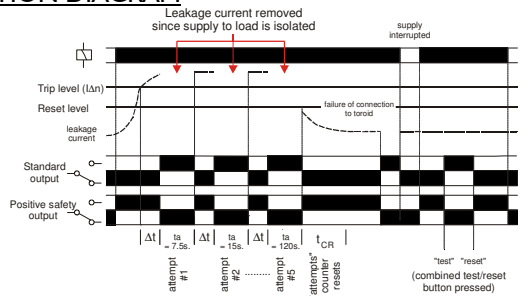
Earth Leakage Relay (Variable) - Type A with Auto Reclosing Facility

- ❑ **Designed to monitor and detect true RMS earth fault currents (up to 30A) in conjunction with a separate toroid**
- ❑ **Automatically recloses (max. of 6 attempts) to check if fault has cleared**
- ❑ **Remains in "tripped" condition if max. number of attempts is exceeded (manual reset required)**
- ❑ **LED bargraph provides constant indication of any leakage current**
- ❑ **Microprocessor controlled with internal monitoring (self-checking)**
- ❑ **Adjustable Sensitivity (IΔn) - 30mA to 30A and Time Delay (Δt) - 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, fault condition after unit has tripped and pre-warning of reset attempt**

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:
  - a, the fault current level exceeds the set trip level (IΔn) **
  - b, failure of the connection between the relay and the toroid occurs ** (Red **"tripped"** LED will flash during this condition)
  - c, the supply to the unit is removed
  - d, 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 IΔn being detected (the display is scaled between 25, 50, and 75% of the actual trip level). After all 3 LED's have illuminated and the unit trips due to an excessive fault current, the red **"tripped"** LED will illuminate.
- After tripping, the 1st attempt period (#1) will commence after which the unit will reclose automatically re-connecting the load. If the fault still exists, then after time delay Δt, the unit will trip again and the 2nd attempt period (#2) commences (2 x the duration of the first). After the second attempt period a reclosing attempt is made again. If after the 6th attempt, the fault is still present, the unit will remain in a **"tripped"** condition. Manual resetting is then required.
- If after any reclosure attempt, the fault current is no longer present the unit will remain in the "no fault" condition and if maintained for greater than 15 minutes, the attempts counter will then reset to zero.

NOTE: The red **"tripped"** LED will flash rapidly for approx. 2 seconds before for end of the delay period (ta). This is to pre-warn the user of an attempt to re-close.

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. Note that the Test mode has no effect on the auto-reclosing feature i.e. it will not commence when the test mode is initiated.
- 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. Note that pressing the **"Reset"** button will clear and reset the counter to zero.
- 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.

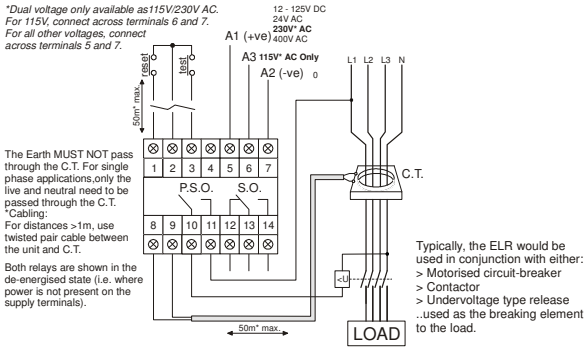
Troubleshooting

- 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.

This unit should be installed in conjunction with the latest wiring regulations and practices (IEE, etc).

CONNECTION DIAGRAM



TECHNICAL SPECIFICATION

Supply voltage Un (5, **6**, 7):	12 - 125V DC (85 - 110% of U)
(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.	Please state Supply voltage when ordering.
Frequency range:	50/60/400Hz (AC supplies)
Isolation:	Over voltage cat. III
Rated impulse withstand voltage: (1.2 / 50µS) IEC 60664	800V (24V AC supplies), 2.5kV (115V AC supplies) 4kV (230V, 400V AC supplies)
Power consumption (max.):	6VA (AC supplies) 5W (DC supplies)
Monitored leakage current:	0 to 30A (15 - 400Hz) (through external toroid with 1000:1 ratio and connected to terminals 8 and 9)
Sensitivity IΔn (see Accessories)	30, 100, 300, 500mA, 1, 3, 5, 10, 20, 30A (user selectable)
Trip level limits:	80 - 90% of IΔn
Reset Value:	≈ 85% of tripped level
Time delay Δt:	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 IΔn.*	

Note:
1. For IΔn 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).
2. 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)
Auto-reclosing attempts:	6 max. (factory set)
Delay period between two auto-reclosing attempts (ta):	7.5, 15, 30, 60, 120 and 240 seconds. (factory set)
Delay period (fault free) before counter for auto-reclosing attempts resets to zero (t_{CR}):	15 minutes. (factory set)
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.

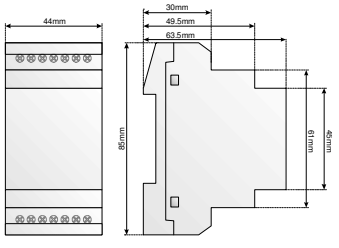
Options

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

Accessories – Toroids

Toroid Type:	Internal diameter:	IΔn (min.) A	Toroid Type:	Internal diameter:	IΔn (min.) A
BZCT035	35mm Ø	0.03	BZCT120	120mm Ø	0.1
BZCT050	50mm Ø	0.03	BZCT160	160mm Ø	0.1
BZCT070	70mm Ø	0.03	BZCT210	210mm Ø	0.3

MOUNTING DETAILS



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