

Type: ELRM44F-0030, 0100 & 0300

Earth Leakage Relay (Fixed) - Type A

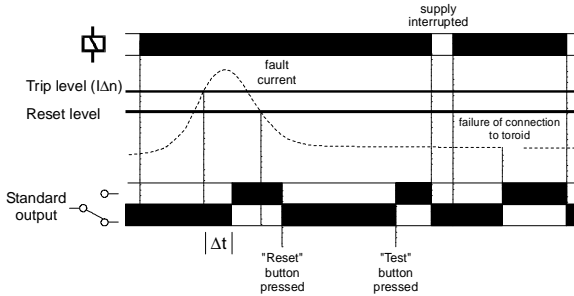
- 44mm (2.5 modules) wide DIN rail housing
- Designed to monitor and detect true RMS earth fault currents in conjunction with a separate toroid
- Microprocessor controlled with internal monitoring (self-checking)
- Fixed Sensitivity (I_{Δn}) - 30, 100 or 300mA*
- Fixed Time Delay (Δt) - 0 (instantaneous)
- 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)
- SPDT relay output 8A
- LED indication of Supply 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.
 - Apply power, the green "supply on" LED will illuminate. The output relay will energise and the red "tripped" LED illuminate if:
 - a, the fault current level exceeds the fixed trip level (I_{Δn}), or
 - b, there is a failure of the connection between the relay and the toroid (Note the red "tripped" LED will flash during this condition)
 - The relay 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 relay operates accordingly.
 - Press the "Reset" button on the front of the unit (or remotely - if fitted) to reset the unit. The output relay reverts back to the "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

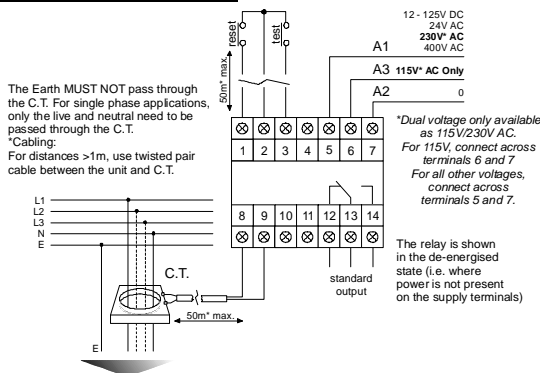
- If the unit fails to operate correctly check that all wiring and connections are good.

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 \overline{N} . 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 U _n (see connection diagram)	12 - 125V DC (85 - 110% of U) 24, 115/230, 400V AC (85 - 115% of U _n)	Please state Supply voltage when ordering.
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) (1.2 / 50μs) IEC 60664	
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 I _{Δn} (see Accessories):	30, 100 or 300 mA (**to be specified when ordering)	
Trip level limits:	80 - 90% of I _{Δn}	
Reset Value:	= 85% of tripped level	
Time delay Δt:	instantaneous (Actual delay is <25mS when fault current @ 5 x I _{Δn})	
Reset time:	= 2S (from supply interruption)	
LED indication:		
Power supply present:	Green	
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	
Relative humidity:	-5 to +40°C (in accordance with IEC 60755) +95%	
Output :	SPDT relay (12, 13, 14)	
Output rating:	AC1 250V 8A (2000VA) AC15 250V 2.5A DC1 25V 8A (200W).	
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" and "Reset" (1, 2, 3)	Requires N.O. contacts. (i.e. push buttons)	
Minimum trigger time:	>80ms	
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 B55584:1978 (EN50 002, DIN 46277-3)	
Terminal conductor size:	≤ 2.5mm ² stranded, ≤ 4mm ² 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.

Ordering*

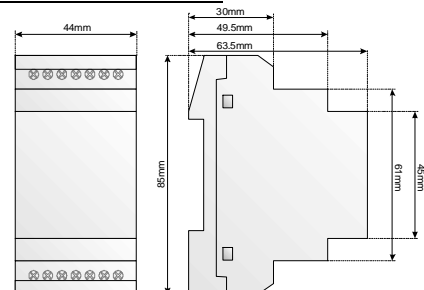
Please state full part number and voltage when ordering. The suffix, which should follow ELRM44F, is 0030 (30mA), 0100 (100mA) or 0300 (300mA).

Example: ELRM44F-0030 24V AC

Accessories – Toroids

Toroid Type:	Internal diameter:	I _{Δn} (min.) A
BZCT035	35mm Ø	0.03
BZCT070	70mm Ø	0.03
BZCT120	120mm Ø	0.1
BZCT210	210mm Ø	0.3

MOUNTING DETAILS



Broyce Control Ltd., Pool Street, Wolverhampton, West Midlands WV2 4HN. England

ELRM44F-2-A

Telephone: +44 (0) 1902 773746 Facsimile: +44 (0) 1902 420639 Email: sales@broycecontrol.com Web: http://www.broycecontrol.com

The information provided in this literature is believed to be accurate (subject to change without prior notice); however, use of such information shall be entirely at the user's own risk.

Type: ELRM44V-30

Earth Leakage Relay (Variable) - Type A

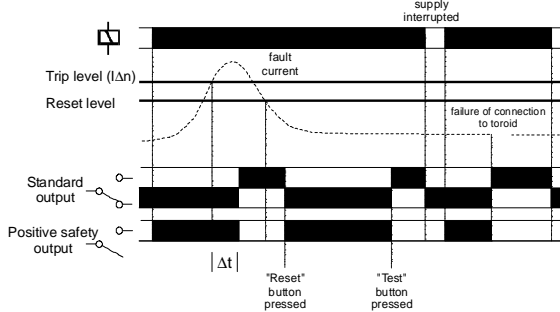
- 44mm (2.5 modules) wide DIN rail housing
- Designed to monitor and detect true RMS earth fault currents (up to 30A) in conjunction with a separate toroid
- LED bargraph provides constant indication of any leakage current
- Microprocessor controlled with internal monitoring (self-checking)
- Adjustable Sensitivity (I_{Δn}) - 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

Dim: to DIN 43880 W. 44mm



Terminal Protection to IP20

FUNCTION DIAGRAM



TECHNICAL SPECIFICATION

Supply voltage U_n (5, 6, 7): 12 - 125V DC (85 - 110% of U)
(see connection diagram) 24, 115/230, 400V AC (85 - 115% of U_n)
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: 800V (24V AC supplies), 2.5kV (115V AC supplies)
(1.2 / 50μs) IEC 60664 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 I_{Δn} (see Accessories) 30, 100, 300, 500mA, 1, 3, 5, 10, 20, 30A (user selectable)
Trip level limits: 80 - 90% of I_{Δn}
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 I_{Δn}.

Note:

- For I_{Δn} 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:	= 25 (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:	≤ 2.5mm ² stranded, ≤ 4mm ² 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:	I _{Δn} (min.) A
BZCT035	35mm Ø	0.03
BZCT070	70mm Ø	0.03
BZCT120	120mm Ø	0.1
BZCT210	210mm Ø	0.3

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 (I_{Δn})**
 - 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 I_{Δn} 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. 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.

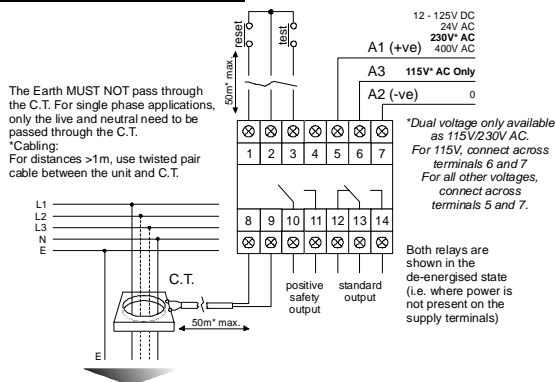
Troubleshooting

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

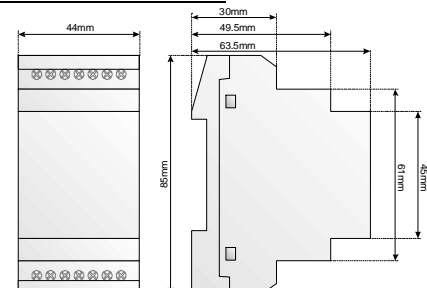
Note:

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



MOUNTING DETAILS



Broyce Control Ltd., Pool Street, Wolverhampton, West Midlands WV2 4HN. England

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