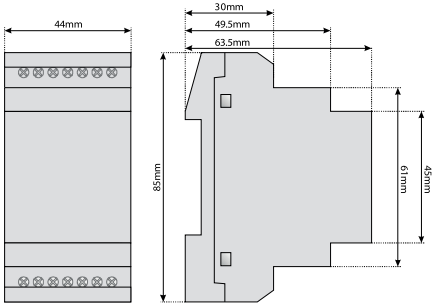
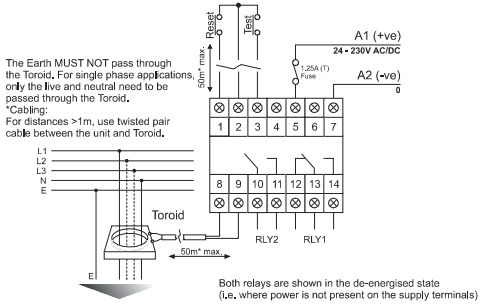
6 Dimensions



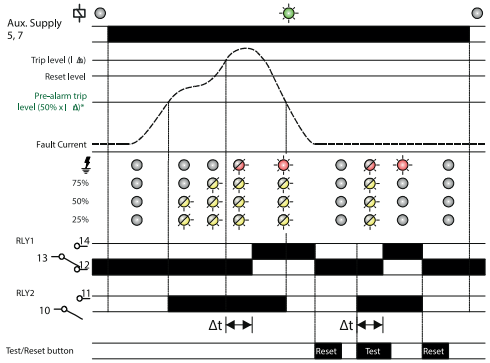
7 Connection diagram



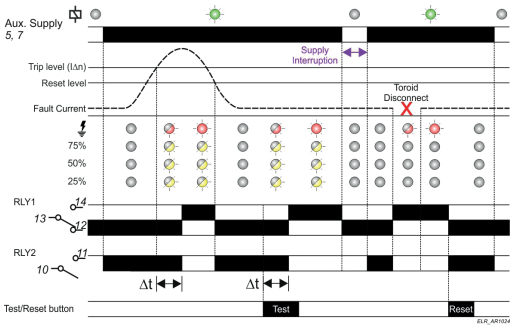
8 Function diagrams

The following operational modes are either enabled using the app or by adding external links

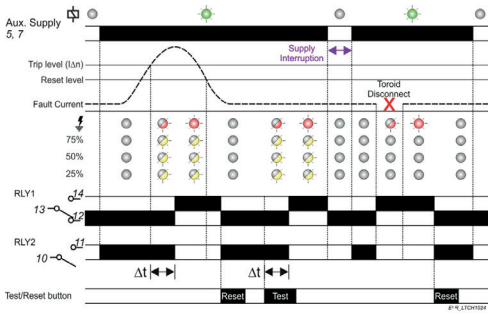
Pre-Alarm mode (configurable via app)



Auto-reset mode (enabled via app)



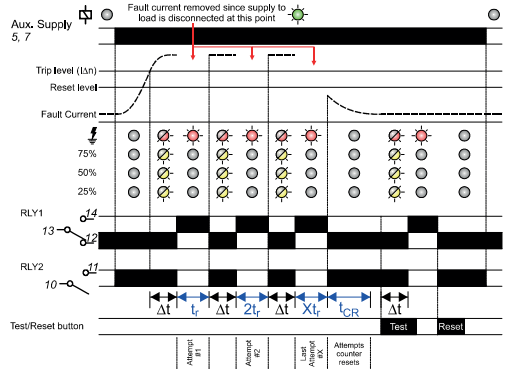
Latching mode (factory default)



LED legend

Off On Flashing

Auto-reclosure mode (enabled via app)



Note: Relays are shown operating in their factory default states i.e.
RLY1 = Standard Output and
RLY2 = Positive Safety Output.

Pre-Alarm mode - default states are RLY1 and RLY2 = Standard Output

CORPORATE HQ CONTACT: SOCOMEC SAS, 1-4 RUE DE WESTHOUSE, 67235 BENFELD, FRANCE.
Print: 60 g/m2 - 210 x 297mm > 74 x 105mm - R/V - B&W - The bar code must be visible once the document is folded.

QUICK START GUIDE

EN

552151C

socomec
Innovative Power Solutions

Earth Leakage Relay – Type A (with NFC Technology)

RESYS N40

Socomec Resource Center
To download, brochures, catalogues and technical manuals

- Programmable user settings/adjustments
- Built-in NFC (Near Field Communication) allows user to access and change settings via compatible Smartphone/Device with installed app as well as retrieve historical data
- True R.M.S. measurements
- Option to select alternative toroid ratio, tripping method (latch or auto-reclosure modes), Output relay logic (pre-alarm, energise or de-energise on trip) and filter cut-off points
- Connection facility for remote “Test” and “Reset” push buttons or N.O. contacts
- Toroid open and short-circuit detection forces unit to trip (Red LED flashes during this condition)
- 2 Relay outputs – Relay 1 (SPDT) and Relay 2 (SPNO) - User configurable
- Wide auxiliary operating supply voltage - 24 – 230V AC/DC
- Compliant with IEC 60947-2 / Annex M
- UL Listed

1 Installation

Installation work must be carried out by qualified personnel.

- BEFORE INSTALLATION, ISOLATE THE SUPPLY.
- Connect the unit as shown in the diagram on the next page (N.B. certain features may not be required and therefore do not need to be connected).
- Ensure the Auxiliary supply voltage to be connected to terminals 5 and 7 matches the rating of the product.
- A suitably rated fuse should be installed in series with connection to terminal 5 (A1) in order to protect the unit. See Technical specification for further information.
- Refer to separate data sheet for installation advice regarding the externally connected toroid.

2 Overview

The RESYS N40 is a fully featured, Earth Leakage Relay that can either be easily configured using the built-in pre-defined “Profiles” or tailored specifically to suit the application. The app allows the user to define how the unit should operate (see Function diagrams below) as well as configure and set parameters such as the toroid ratio, relay logic (i.e. energise or de-energise on trip) and define how the Auto-Reclosure mode should operate. Additionally, the option to set a filter cut-off point can also be defined therefore allowing the unit to ignore signals above a certain frequency.

Utilising NFC technology allows the unit to be used in a “Passive” mode whereby settings can be made in the app and written to the unit without the need for the unit to be powered. This feature is useful where a panel needs to be shut down and power removed (for safety reasons) before any work or alterations need to be made.

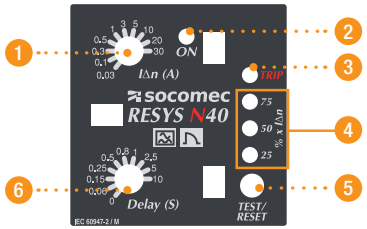
The user also has the ability to read back the configuration of a unit using the app in order to establish/check the settings. Additionally, it is possible to measure (and display) the actual leakage current present in the system.

An option to recall previous tripping information (accessed via the Logs option in the app) provides the user with historical data allowing the user to establish a pattern in the tripping occurrence’s and hence make any necessary adjustments.

3 App

To utilise the full features, the app must be downloaded and installed on to the device that will be used to communicate with the unit.
Please contact SOCOMEC for details on accessing the app.
Instructions on using the app to set the additional features can be found in the Help menu within the app itself.
Note: The unit will need to be power cycled if a new profile is uploaded to the unit.

4 Setting



1. IΔn Trip level selector (in amps)
2. Power on LED indication (Green)
3. "Tripped" LED indication (Red)
4. Bargraph LED indication (Yellow)
5. Combined "Test/Reset" button
6. Δt Time delay selector (in seconds)

The unit should be set according to the requirements of the application and the features required.

Applying Power (Factory default operation)

- Apply power and the green "supply on" LED 2 will illuminate.
- With RLY1 and RLY2 in their factory default state and no fault current present RLY1 will remain de-energised and RLY2 will energise.
- Prior to the unit tripping, the LED bargraph 4 will indicate the % of fault current being detected (the display is scaled between 25, 50, and 75% of the actual trip level).
- If the fault current exceeds the trip threshold and unit trips, RLY1 will energise and RLY2 will de-energise. The red "tripped" LED 3 will illuminate.
- After the fault has cleared and unit reset, both relays will return to their default state.

Fault simulation (Test mode)

- The unit can be placed into a fault condition by pressing the "Test/Reset" button 5 on the front of the unit (or by pressing the remote "Test" button - if fitted). The output relays operate accordingly. Note, if the time delay (Δt) is set, the "Test" button must be held for this duration before tripping occurs.
- Press the same "Test/Reset" button on the front of the unit (or remote "Reset" button - if fitted) to reset the unit. The output relays revert back to their "nontripped" 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. Also check that the externally connected toroid meets the requirements of the product.

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.

LED indication		
Power Supply	Green x1	LED is usually permanently lit but will flash if no valid profile has been selected or there was a communication error with the smartphone
Tripped	Red x 1	LED flashes during a time out (i.e. before tripping) or if the external toroid is disconnected. LED will also flash prior to unit reclosing if "auto-reclosure" mode enabled.
Bargraph (25, 50, 75%)	Yellow x3	
Test and Reset		
	Front push button	**Remote N.O. push button(s)**
"Test" method (assuming unit is in the non-tripped state)	Press once to trip the unit	Press "Test" button to trip the unit (connected to terminals 2 and 3)
"Reset" method (assuming unit is in the tripped state and fault current cleared)	Press once to reset the unit	Press "Reset" button to reset the unit (connected to terminals 1 and 2)
Minimum trigger time	>Δt	>80ms + Δt setting (only applicable to remote "Test")
Auto-reset		
To enable	Via app	
Auto-reclosure		
To enable and adjust parameters	Via app only	
Reclosure attempts	Selectable between 1 and 10 (factory default = 6)	
Time between reclosure attempts (tr)	tr after first attempt which doubles after each attempt i.e. 2tr, 4 tr, 8 tr, etc. Options are: 1, 2.5, 5, 7.5 and 10s (factory default = 7.5s)	
Timeout	Selectable between 1 and 20mins (factory default = 15mins)	
Relay operational modes		
To change modes	Via app only	
	RLY1	**RLY2**
Key (assuming non-tripped state)	S.O. (factory default)	P.S.O. (factory default)
S.O. = Standard Output	S.O.	Pre-alarm*
(relay normally de-energised)	P.S.O.	P.S.O.
P.S.O = Positive Safety Output	S.O.	S.O.
(relay normally energised)	* Relay energises when Pre-alarm threshold exceeded	
Pre-Alarm threshold		
Adjustment range	10 … 70% of IΔn (factory default = 50%) Threshold can be changed via app	

5 Technical specifications

Auxiliary Power Supply (5, 7)	
Voltage range (Us) 1.25A (T) rated fuse should be installed in line with terminal 5 (A1)	24 – 230V AC/DC
Frequency range (AC supply)	50/60Hz
Supply variation Auxiliary supply is galvanically isolated from the Toroid and Remote Test/Reset connections	85 – 115% of Us
Overvoltage category	III (IEC 60664)
Rated impulse withstand voltage	4kV (1.2/50μS) IEC 60664
Power consumption (max.)	AC: 6VA, DC: 5W
Monitored input (via external Toroid connected to terminals 8 and 9)	
Unit classification:	Type A
Measurement principle:	True R.M.S.
Input DSP filter cut-off	150, 300 or 450Hz (factory default = 150Hz)
External Toroid ratio:	Selectable between 600:1 and 1000:1 in 100:1 steps (factory default = 600:1)
Monitored leakage current range:	7.5mA – 30A
User adjustments	
Trip level settings (IΔn)	30mA, 100mA, 300mA, 500mA, 1A, 3A, 5A, 10A, 20A, 30A
Actual trip level	85% of IΔn (+/- 5%)
Rated residual non-operating current (IΔno)	<80% of IΔn
Reset level	≈85% tripped level
Time delay (Non-operate) settings (Δt):	0(1), 60ms, 150ms, 250ms, 500ms, 800ms, 1s, 2.5s, 5s, 10
Note: - For IΔn of 30mA the Time delay is fixed to 0 (instantaneous) and is not adjustable (i.e. any other delay cannot be set). - The unit is factory set to 30mA (and instantaneous delay). Adjustment of these settings can be made if necessary to suit the requirements of the installation. To prevent tampering of the settings, the clear window can be secured in place using a 2mm or 2.5mm wide cable tie (not supplied).	
Reset time	<1s (from supply interruption)
Temperature rating	
Operating	-20 to +60°C
Storage	-30 to +70°C
Relative humidity	+95% max.
Housing	
Material	Grey flame retardant Lexan UL94 V0
Weight	120g
Mounting option	On to 35mm symmetric DIN rail to BS EN 60715
Standards	
Product	IEC 60947-2 / Annex M, IEC 60755, IEC 62020 UL Listed (UL508) E191127
EMC	IEC 61543, IEC 61000-4 Series, CISPR 22, CE and RoHS Compliant.

(1) actual delay when set to 0 (instantaneous) is <25ms @ 5 x IΔn

Output			
		RLY1	**RLY2**
Terminals		12, 13, 14	10, 11
Contact arrangement		1 x SPDT	1 x SPNO
	AC1 (250V)	8A (2000VA)	8A (2000VA)
	AC15 (250V)	2.5A	2.5A
	DC1 (25V)	8A (200W)	8A (200W)
Dielectric voltage:		2kV AC (rms) IEC 60947-1	
Rated impulse withstand voltage:		4kV (1.2/50μS) IEC 60664	
Terminal conductor size			
Cable type	Solid (single conductor)	Stranded (single conductor)	Solid (2 conductors)
Nominal cross section	0.2 – 4mm² 30 – 12AWG	0.2 – 2.5mm² 30 – 14AWG	0.2 – 1.5mm² 30 – 16AWG
Stripping length		6mm +/- 1mm	
Accessories			
Auxiliary power supply 24 - 230VAC/DC		Ref. 4941 3130	
Toroid ΔIC - Ø 15 mm		Ref. 4950 6015	
Toroid ΔIC - Ø 30 mm		Ref. 4950 6030	
Toroid ΔIC - Ø 50 mm		Ref. 4950 6050	
Toroid ΔIC - Ø 80 mm		Ref. 4950 6080	
Toroid ΔIC - Ø 120 mm		Ref. 4950 6120	
Toroid ΔIC - Ø 200 mm		Ref. 4950 6200	
Toroid ΔIC - Ø 300 mm		Ref. 4950 6300	