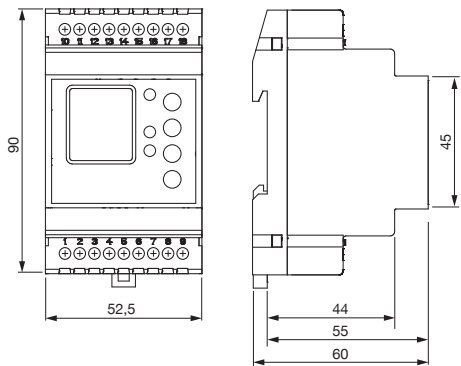
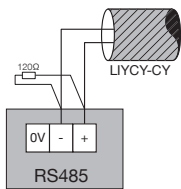


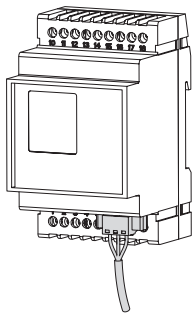
Dimensions (mm)



RS485 connection (optional)



Add a 120 Ω resistor only when the device is the last node on the communication bus.



Technical characteristics

Control circuit	
Toroidal transformer	External, Δ B40 CTB
Tripping type	Type B
Tripping set-point (IΔ)	0,03...10A
Tripping time (t)	0,02...10s
Resetting	Manual by pushbutton on front or remote
Auxiliary supply	
Auxiliary voltage	90...250 VAC / 120...250 VDC
Rated frequency	50/60Hz
Max power consumption	4VA
Output relay	
Number of outputs	2
State	Configurable normally de-energised or energised
Rated operating voltage	250 VAC
Rated current	5A
Mechanical life	10 · 10 ⁶ cycles
Digital inputs	
Number of inputs	2 (TEST and RESET)
Input type	Free contact
Display	
Type	LCD
RS485 serial interface (optional)	
Protocol	Modbus-RTU
Baud-rate	Programmable 4800 – 115200 bps
Connections	
Type of terminal	Screw (fixed)
Number of terminals	18
Conductor cross section	0,127 - 2,082 mm ²
Tightening torque	0.5 - 0.6 Nm
Length of cable to strip	7mm
Ambient operating conditions	
Operating temperature	-10...60°C
Storage temperature	-20...80°C
Relative humidity	5...95%
Housing	
Version	3 module DIN
Degree of protection	IP20 terminals IP40 on front
Weight	200g
Certifications and compliance	
Reference standards	2014/35/UE, 2014/30/UE, 2015/863/UE EN 61326-1:2013-01 EN 61326-2-1:2013-01 EN 61326-2-2:2013-01 EN 61326-2-3:2013-01 EN 61326-2-4:2013-01 EN 61326-2-5:2013-01 EN 60947-2:2017-10 (Annex M) EN 61543/A2:2006-02 CEI EN 61543/A11 CEI EN 61543/A12

QUICK START GUIDE

EN

socomec
Innovative Power Solutions



Earth leakage relay - Type B
RESYS B40 0,03-10A
RESYS B40 0,03-10A RS485



WARNING!

- Carefully read the manual before the installation or use.
- This device is to be installed by qualified personnel, complying to current standards, to avoid damages.
- Before any maintenance operation on the device, remove supply inputs.
- The manufacturer cannot be held responsible for electrical safety in case of improper use of the equipment.
- Products illustrated herein are subject to alteration and changes without prior notice.

Description

- Type B Earth leakage relay
- Measuring in true effective value (TRMS)
- Configurable harmonic filter up to the 21st order
- Modular DIN-rail housing, 3 modules
- External residual current transformer delta B40 CTB series
- Visualization instant leakage values, AC component value and DC component value
- Backlighted LCD display (green, yellow, red)
- Green power LED indicator (ON)
- Yellow prealarm LED indicator (ALARM)
- TEST and RESET by front button or remote contact
- 2 output relays
- Fail safe function for each relays (settable)
- Log tripped residual current
- RS-485 communication Modbus RTU protocol (optional)

Front keyboard

RESET/ESC key – To reset the relay after tripping, used to exit from settings menu.

TEST/ENTER key – Causes tripping of the relays, to confirm a choice.

SETUP keys – Used to enter into settings menu.

▲ and **▼** keys – Used to switch between visualization modes, to select among possible choices and to modify settings (increment/decrement).

LCD display instant leakage current, AC and DC component, TRMS values, MAX, THD, LOG and settings.

LED ALARM

TRIP LED

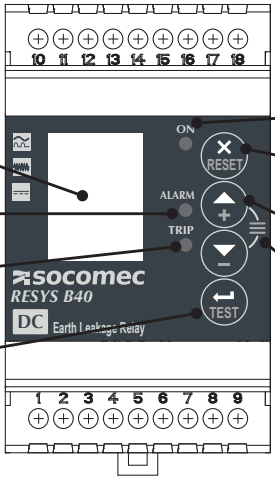
TEST / ENTER pushbutton

LED ON: presence of auxiliary supply

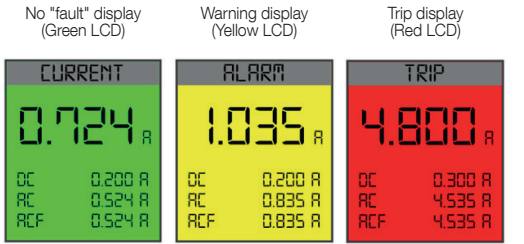
RESET / ESC pushbutton

▲ and ▼ keys used to switch between visualization, to select choices.

SETUP press both buttons (▲ and ▼ keys) at the same time to enter the menu settings.



Display indications



Cause of the trip	Display message
Test	Red display / TRIP LED
Current leakage	Red display / TRIP LED

Others display messages	
Alarm	Yellow display / ALARM LED
Current leakage over scale	OVR / Red display
Poor toroidal connection	OPEN / Red display

Parameters table

Below are listed all the programming parameters. For each parameter are indicated the possible setting range, the factory default, as well as a description of the function of the parameter.

Press ▲ and ▼ keys to select the required parameter. The selected parameter is highlighted with ►. Press TEST key to activated the selected parameter.

Menu

TRIP	Unit of measure	Default	Range
Reset	-	MAN	AUTO-MAN RECLOSE
Threshold mA	mA	30	30...10000
Time	ms	20	20...10000
Hysteresis	%	90	50...90
Failsafe	-	NO	YES-NO
Filter AC	-	NO	NO 3rd harm. RCM 21st harm. RCM 60479-2 RCM 62423 RCM
Recovery num.	-	3	1...10
Recovery time	s	10	5...600
Recovery reset	s	60	10...600

Reset - If set to AUTO, the reset of TRIP will be automatic. If set to MAN, manual reset through the RESET key on the front. If set to RECLOSE, activates the reclosing sequence according to the associated menu items.

Threshold mA - Select the tripping fault current to earth.

Time - Select the tripping delay time.

Hysteresis - Tripping fault current threshold hysteresis.

Failsafe - If set to YES, positive safety activated on TRIP relay, in this condition the relay is normally energised; therefore switches from normally open to normally closed.

Filter AC:
NO - If set to NO, the harmonic blocking filter is disabled.
3a arm. - Activate the third harmonic filter. **21a arm.** - Activate the twenty-first harmonic filter.
IEC 60479-2 - Attenuates harmonic components in installations, according to EN 60479-2 standard. **IEC 62423.**

Note: the following menus are used, only if Reset in RECLOSE mode.

Recovery num. - Possibility of setting n automatic resets.

Recovery time - After fault, the time between one reclosing attempt and the next.

Recovery reset - After successful reset, it defines the time, without trip, after which the number of attempts is reset to one.

ALARM	Unit of measure	Default	Range
Reset	-	AUTO	AUTO-MAN
Threshold mA	mA	30	30...10000
Time	ms	20	20...10000
Hysteresis	%	90	50...90
Failsafe	-	NO	YES-NO
Source	-	TOT	TOT-DC-AC

Reset - If set to AUTO, the reset of ALARM will be automatic. If set to MAN, manual reset through the RESET key on the front.

Alarm threshold - Select the ALARM threshold which of the current value.

Time - Select the alarm delay time.

Hysteresis - Tripping fault current threshold hysteresis.

Failsafe - If set to YES, positive safety activated on ALARM relay, in this condition the relay is normally energised; therefore switches from normally open to normally closed.

Source - Measure that generates the alarm:

TOT = RMS value - $\sqrt{(\text{AC component}^2 + \text{DC component}^2)}$

DC = DC component

AC = AC component

MEASURE	Unit of measure	Default	Range
Frequency	-	50Hz	50-60Hz
AVG level	-	Medium	NO Low Medium High
Coupling	-	NO	YES-NO

AVG level - Selection of average reading calculation method. Allows showing measurements with slow variations.

Coupling - For better reading accuracy of the DC components, it's recommended to open the monitored lines and start the above procedure.

RS485	Unit of measure	Default	Range
Node	-	01	01-247
Baudrate	bps	38400	4800-115200
Stop bits	-	1	1-2
Data format	-	8 bit - n	8 bit, no parity 8 bit, odd 8 bit, even
Response time	ms	10	5-100

Node - Serial address (node number) for the communication protocol.

Baudrate - Serial communication speed.

Stop bits - Number of stop bits.

Data format - Data format and parity.

Response time - Defines the delay time in the Modbus response.

UTILITY	Unit of measure	Default	Range
Language	-	ENG	ENG ITA SWE
TRIP memory	-	NO	YES-NO
LCD standby	min	NO	NO-15min

TRIP memory - If set YES, the TRIP condition reappears when turned on, if the device was turned off without TRIP reset.

DATE and TIME

The RESYS B40 manages the time and date, that is used for the storage of events.

COMMAND	Description
Parameters to default	All setup parameters are resetted to factory default value
Reset MAX & LOG	Clears the event list and max values
Reset MAX	Clears the max values
Reset LOG	Clears the event list

The commands menu allows executing some occasional operations like resetting, log events clearing. Once the required command has been selected, press **TEST** to execute it. To cancel the command execution press **RESET** key.

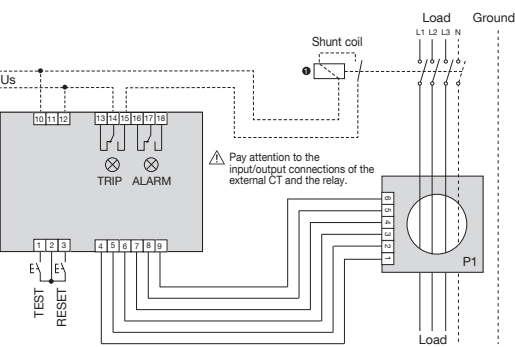
PASSWORD menu

The password is used to enable or lock to setting menu and command menu (RESET). For new devices (factory default), the password management is disabled and the access is free. If instead the password has been enabled and defined (0-9999), then to get access, it's necessary to enter the password first, specifying the number code.

PASSWORD	Unit of measure	Default	Range
Value	-	0	0-9999

If set to 0, password management is disabled.

Terminals connection



N°	Description
1	External TEST
2	Digital input (COMMON)
3	External RESET
4...9	Inputs toroidal current transformer
10	Auxiliary supply (neutral or phase)
11	Not used
12	Auxiliary supply (neutral or phase)
13	Output relay TRIP (NC)
14	Output relay TRIP (COMMON)
15	Output relay TRIP (NO)
16	Output relay ALARM (NC)
17	Output relay ALARM (COMMON)
18	Output relay ALARM (NO)

Toroidal current transformer type according to current

Current	Toroidal trasformer
30mA	Δ CTB35, Δ CTB60
>= 100mA	Δ CTB 80, Δ CTB 110
>= 500mA	Δ CTB 160, Δ CTB 210, Δ CTB 300

Wiring connection example with:

Designation	Article	Aux. supply
RESYS B40 0,03-10A	49313601	90...250 VAC / 120...250 VDC
RESYS B40 0,03-10A RS485	49313602	90...250 VAC / 120...250 VDC

Designation	Article	Useful section
Δ B40 CTB 35	19CCJ035	Ø 35 mm
Δ B40 CTB 60	19CCJ060	Ø 60 mm
Δ B40 CTB 80	19CCJ080	Ø 80 mm
Δ B40 CTB 110	19CCJ110	Ø 110 mm
Δ B40 CTB 160	19CCJ160	Ø 160 mm
Δ B40 CTB 210	19CCJ210	Ø 210 mm
Δ B40 CTB 300	19CCJ300	Ø 300 mm