Earth Leakage Relays



Operating Instruction

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DIN 35mm

Salient features

- **Leakage current monitoring in 1Ø and 3Ø systems**
- **RMS value measurement (AC)**
- **CBCT detection**
- **User selectable power ON delay, Trip delay and Recovery delay**
- **Adjustable hysteresis**
- **Two separate relays with NO or NC operation selectable**
- **Test and Reset via Front / Remote**

Ordering information

Product code	Supply voltage	Certification
900ELR-2-230V-CE	230V AC ±(15%)	CE
900ELR-2-110V-CE	110V AC ±(15%)	CE

All safety related modifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.
If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment. If there is physical damage to the unit then do not use it.
Read complete instructions prior to installation and operation of the unit.

Warning guidelines

1. To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement
2. Wiring shall be done strictly according to the terminal layout with shortest connections. Confirm that all connections are correct

Caution

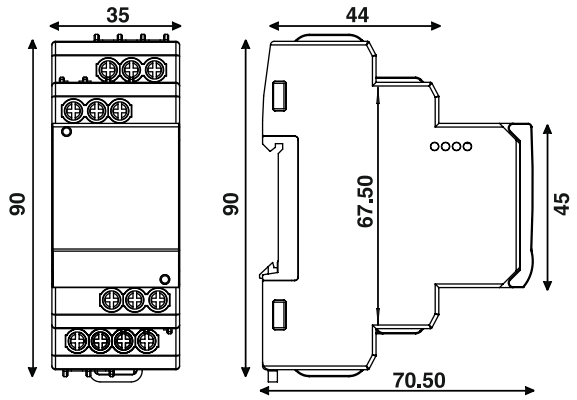
- To ensure the safe operation of unit, check the wiring and connections

Note for connection

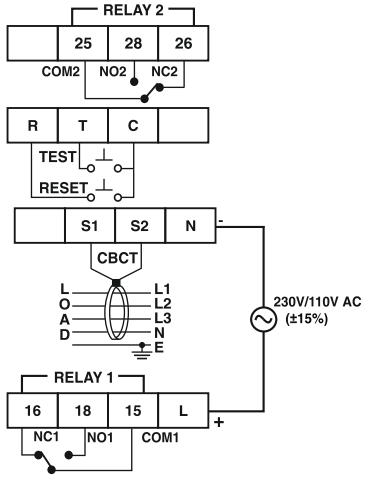
- For single phase applications, only the live and neutral needs to be passed through the CBCT
- The earth must not pass through the CBCT
- The distance between relay and CBCT should be kept as short as possible
- Use screen, shielded cable or twisted pair cable between the unit and CBCT for long distance (greater than 1m)

Technical specifications	
Display	3 Digits, Liquid crystal display with backlight
Display current range	4mA - 30A
Network connection	1Ø-2 wire, 3Ø-3 wire, 3Ø-4 wire
Auxiliary supply	230V AC (±15%) (for: 900ELR-2-230V-CE) 110V AC (±15%) (for: 900ELR-2-110V-CE)
Frequency range	50/60 Hz
VA rating	3VA max
Trip settings	Leakage current range: 10mA - 30A
Instantaneous trip for current	ON/OFF (5 times of set current)
Time setting	Power ON delay: 0.5 - 99.9sec Trip time delay: 0 - 99.9sec (NA for 33mA RNG) Recovery time: 0 - 99.9sec Response time: < <30ms (if trip current > 5 x set value & Instantaneous trip is ON) < <5[illegible] (if trip current = 1 x set value)
Hysteresis	5 to 40% {for eg., If set HYS is 10% & SV is 100mA; unit will allow untrip at 90mA}
Resolution	0.1mA, 1mA, 0.01A, 0.1A (depends on trip setting)
CBCT detection	Yes, when CBCT absent or short
Accuracy	Current: ±5% of setting Time parameters: ±5% of setting ±100ms
Output specifications	No. of relay contacts: Relay 1: 1C/O (SPDT) Relay 2: 1C/O (SPDT)
Relay rating	5A @250V AC (NO) 3A @250V AC (NC)
LED indication	LED1 (Red): Relay 1 LED2 (Red): Relay 2
Environmental specifications	- Indoor use - Altitude of up to 2000 meters - Pollution degree II - Impulse withstand voltage (Uimp): 4kV
Degree of protection	IP20: Terminals IP30: Housing IP50: Faceplate
Temperature	Operating: 0 °C to 50 °C Storage: -20 °C to 70 °C
Humidity	Up to 95% RH, non-condensing
Mechanical specifications	No. of push buttons: 3 Size: 35mm width Mounting: 35mm din rail mount Wire size (max): 4 sq.mm Screw tightening torque: 0.5 N-M
Weight	217gms
CE certification	IEC60947-2

Dimensions (All dimensions in mm)



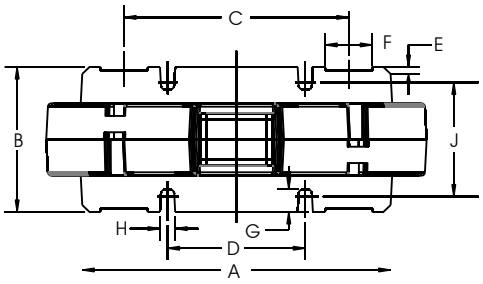
Terminal connections



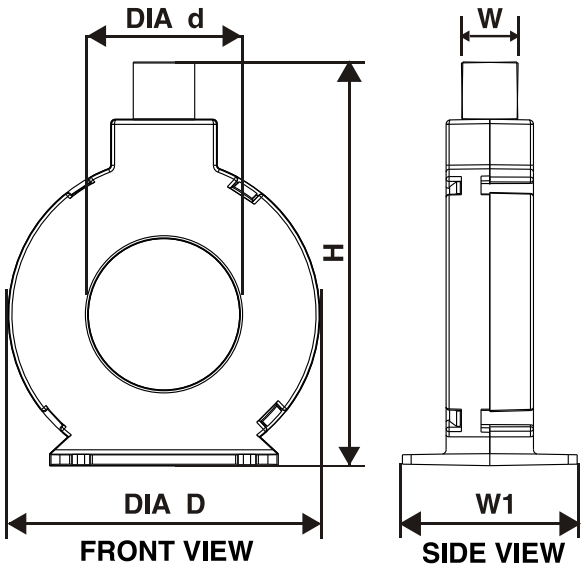
LED indication chart		
Conditions	**'R1' LED**	**'R2' LED**
No fault	OFF	OFF
Trip (if RLY2 programmed for RLY1)	ON	ON
Pre-Alarm (if RLY2 programmed for PRE)	OFF	ON
CBCT error	Blinking	Blinking

Core balanced current transformer

TOP VIEW



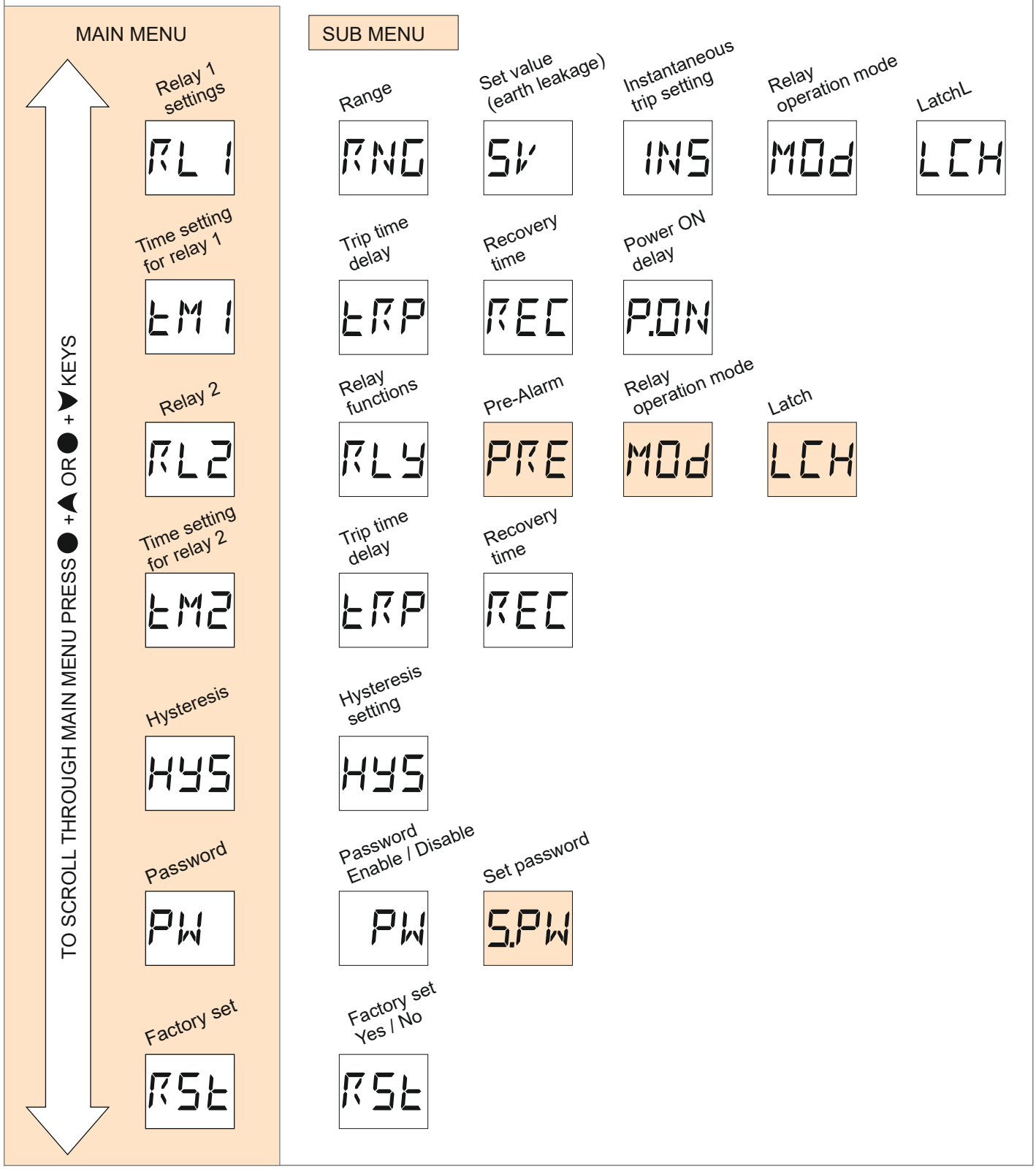
CBCT TYPE	Dimensions (mm)								
	A	B	C	D	E	F	G	H	J
CBCT 35	51.7	40	NA	38	1	13	6.25	4	31.5
CBCT 70	85.1	40	62	38	1	13	6.25	4	31.5
CBCT 120	120.1	40	70	38	1	13	6.25	4	31.5
CBCT 210	199.15	55	NA	120	NA	NA	11	6.6	39.6
CBCT 310	299	65	NA	200	NA	NA	16	6.6	39.6
Tolerence	**Linear tolerence:** ±0.1mm								



CBCT TYPE	Dimensions (mm)				
	D	d	H	W	W1
35-1	71.30	35	97	15	40
70-1	107.50	70	133	15.50	40
120-1	158	120	184.50	15.50	40
210-1	268	210	270	25	55
310-1	377	310	379	25.50	65
STD. TOL.	**Linear tolerence:** ±0.1mm				

CT type ZPC (zero phase current)

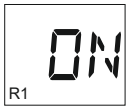
Press ▲ + ▼ for 3sec. to enter or exit configuration menu.

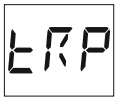
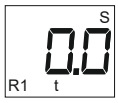
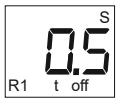
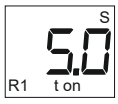


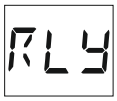
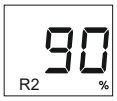
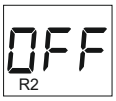
Note 1: Appearance of shaded menus depends on selection of parent parameter

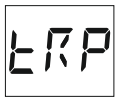
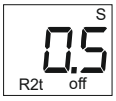
Note 2: The product will display over range (OVR), if applied leakage current is greater than twice the set current value (SV) or if exceeds the maximum set current value (SV), whichever is less

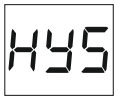
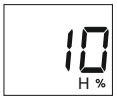
SUB MENU

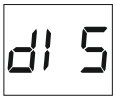
Relay 1 (Rl1) settings		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Trip current range		33.0mA / 550mA / 5.50A / 30.0A	Depending upon this selection, the set trip value will be prompted. If this setting is changed the default trip value is loaded.
	Set trip value for earth leakage		SV can be programmed between 10.0mA to 30A irrespective of the selected range. Default SV for different ranges are: 33.0mA: 30.0mA 550mA: 100mA 5.50A: 1.00A 30.0A: 10.0A	If SV exceeds max limit of specified range then next range will automatically be made applicable. for eg. If SV is set 40mA, range will get changed from 33mA to 550mA automatically.
	Instantaneous trip selection		OFF / ON (5 times of set current)	If INS = ON and leakage current ≥5 times the set value, the relay trips instantaneously irrespective of trip time delay
	Relay operation mode		ON / OFF (In ON mode, contact will be in changed over state in normal condition)	In Healthy condition, ON : NO OFF: NC
	Latch		ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

Time setting for relay 1 (TM1)		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Trip time delay		0.0 - 99.9 Sec.	(Not applicable for 33mA range)
	Recovery time delay		0.0 - 99.9 Sec.	
	Power ON delay		0.5 - 99.9 Sec.	Applicable for Relay 1 & Relay 2

Relay 2 (RL2)		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Relay 2 functions		RL1 / PRE	If RL1 is selected, all the settings done for RL1 will be automatically set for RL2 & no other parameter of RL2 will be prompted.
	Pre-Alarm		60 to 100% for 33.0mA range & 50 to 100% for all other ranges	Will be prompted only when RL2 = PRE
	Relay operation mode		ON / OFF	In healthy condition, ON : NO OFF: NC
	Latch		ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

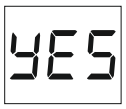
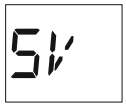
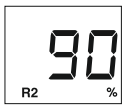
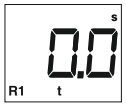
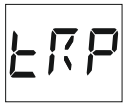
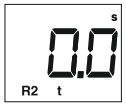
Time setting for relay 2 (TM2)		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Trip time delay		0.0 - 99.9 Sec.	(Not applicable for 33mA range)
	Recovery time delay		0.0 - 99.9 Sec.	

Hysteresis (HYS)		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Hysteresis		5 to 40%	

Password (PW)		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Password		ENB / DIS	Enable / Disable password protection option
	Set password		0-999	Will be prompted only when password option is enabled
	Main menu password		**NOTE:** PW option will be asked when the user enter the config. menu if PW option is enabled in the config menu and the user has to enter the password which he has set in the S.PW (set password) option.	

Factory set (RST)		Press ▲ to enter sub menu from main menu		
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	Reset (factory set)		YES / NO	

Press ▲ key for 3 sec. to enter or exit Trip Value Setting menu :

Press ▲ or ▼ to scroll through main menu		Press ● + ▲ or ● + ▼ to change parameter value & then press ▲ to set value		
Display (for 1sec)	**Description**	**Default**	**Range**	**Condition**
	LOCK		YES / NO	This option will prompted first when the user enters the trip setting menu. User has to set NO after which he can access the trip setting menu.
	Set trip value for earth leakage		SV can be programmed between 10.0mA to 30A irrespective of the selected range. Default SV for different ranges are : 33.0mA: 30.0mA 550mA: 100mA 5.50A : 1.00A 30.0A : 10.0A	If SV exceeds max limit of specified range then next range will automatically be made applicable. For eg.If SV is set 40mA, range will get changed from 33mA to 550mA automatically.
	Pre-Alarm		60 to 100% for 33.0mA range & 50 to 100% for all other ranges	Applicable only if RLY2 is programmed as PRE-Alarm
	Trip time delay for earth leakage		0.0 - 99.9 Sec.	(Not applicable for 33mA range)
	Trip time delay for Pre Alarm.		0.0 - 99.9 Sec.	Applicable only if RLY2 is programmed as PRE (Not applicable for 33mA range)
	LOCK		YES / NO, (In this option if YES is selected by the user, then whenever the user enters the trip value setting, initially LOCK option will be prompted. The user will have to set NO after which he can access the trip setting menu. If the user wants to disable LOCK option, he can set NO when LOCK option is prompted after TRP option.)	

TEST & RESET FUNCTION

● LED ON ○ LED OFF

Key	Description	Display (for 1sec.)	LED's	Condition
For TEST	Press TST key for >2 Sec.		○ R1 ○ R2	Applicable only when unit is in healthy condition
Test passed			● R1 ● R2	If test is passed, OK will be displayed till reset button is pressed
Test failed			○ R1 ○ R2	----
RST	Press RST key for >2 Sec.	Actual value	○ R1 ○ R2	If current is in mA then "mA" will be ON.

CBCT Detection	If CBCT error is there, display will show CT.E and all LED's will be blinking
TRIP Indication	Trip Indication on press of ▲ key: Trip value will be displayed till the key is pressed
RESET	Press ● key for 3sec. to reset manually

Master password: 753

WARRANTY / LIMITATIONS OF LIABILITY

Selec warrants the products to be free from defects in the materials and workmanship for a period of one year (or other period specified, if any) from the date of sale by Selec.

The warranty does not apply to defects resulting from any action of the buyer, including but not limited to improper handling, operating the product outside the specification limits or unauthorized disassembling / altering of the product. The warranty shall be VOID if the product shows evidence of having been tampered or being damaged due to usage in corrosive environment; or current, heat, moisture or vibration; improper specification; wrong usage in an application; misuse or other operating conditions outside of Selec's control.

Selec shall not be responsible for special, indirect or consequential damages, loss of profits or commercial loss in any way connected with the products, whether such claim is based on contract, warranty, negligence or strict liability.

In no event shall the responsibility of Selec for any act exceed the individual price of the product on which liability is asserted.

In no event shall Selec be responsible for warranty or other claims regarding the products unless Selec's analysis confirms that the products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification or repair.

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