




DIN 35mm

Features :

- 1Ø - 2 Wire, 3Ø - 3 Wire & 3Ø - 4 Wire Input
- Leakage Current Monitoring
- True RMS Measurement
- CBCT Connection Monitoring
- Power ON Delay, Trip Time Delay and Recovery Time Delay
- Adjustable Switching Hysteresis
- Two Separate Alarm Relays with NO or NC Operation Selectable
- Test and Reset Function via Front / Remote
- DIN Rail Mount

Certification : 

Display Specifications

Type	Digital
Display	Liquid Crystal Display with Backlight
No. of LED	2
No. of Push Button	3

LED Indication Chart

Condition	'R1' LED	'R2' LED
Nominal Condition	OFF	OFF
Fault (If programmed for Relay1)	ON	ON
Pre-Alarm	OFF	ON
Fault (If programmed for both Relay)	ON	ON
CBCT Error	Blinking	Blinking

Input Specifications

Functions	
Measurements	Earth Leakage Current Monitoring (via external CBCT)
Time Settings	Power ON delay, Trip time delay, Recovery timer delay
Alarm Indications	Pre - warning alarm, Trip, CBCT error
Latching	Selectable
Reset	Auto / Manual (Selectable)
Electrical Connection	1Ø - 2 wire, 3Ø - 3 wire, 3Ø - 4 wire
Trip Settings	
Leakage Current	30mA - 30A
Pre Alarm	50 - 100% of Leakage Current Setting
Display Current Range	15mA - 30A
Trip Time Settings	
Power ON Delay	0.5 - 99.9sec
Trip Time Delay	0 - 99.9sec
Recovery Time Delay	0 - 99.9sec
Response Time	< 30ms (If trip current 5 x set value) < 50ms (If trip current 1 x set value)
Hysteresis	
Hysteresis	5 to 40%
Resolution	
Current	0.1mA, 1mA, 0.01A, 0.1A (Depends on trip Setting)

Accuracy

Current	±5% of Setting
Time (Recovery Time Delay, Trip Time Delay, Power ON Delay)	±5% of Setting ±100ms

Output Specifications

No. of Relays	2
Type of Output (Relay1)	1 C/O (SPDT)
Type of Output (Relay2)	1 C/O (SPDT)
Relay Rating	NO / 5A@250V AC NC / 3A@250V AC

Auxiliary Supply Specifications

Supply Voltage	230V AC
Frequency	50 - 60Hz
Power Consumption	3VA max

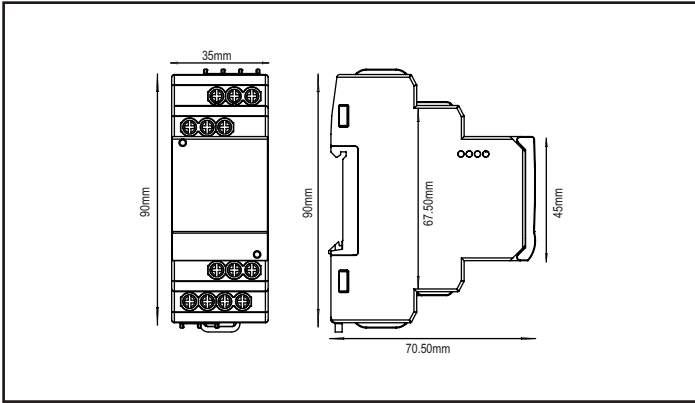
Environmental Specifications

Temperature	Operating Temperature : 0° to +50° Storage Temperature : -20° to +70°
Humidity (non-condensing)	95% RH
Pollution Degree	
For PCB	2
For Product	3
Degree of Protection Devices	IP20

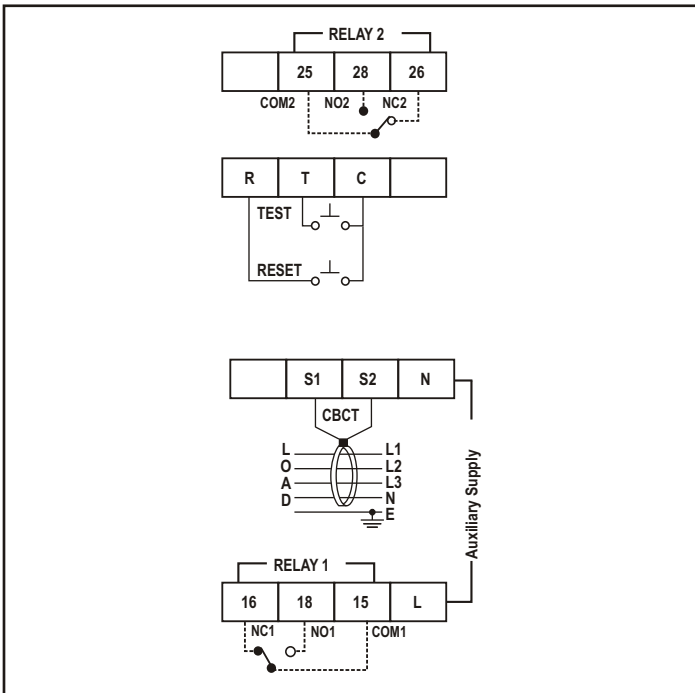
Mechanical Specifications

Mounting	DIN Rail
Weight	217gms
Screw Tightening Torque	0.5 NM

Dimensions



Terminal Connection



Compliance

Applicable EMI / EMC Standards		
Product Standard : IEC 60947-2		
Category	Reference Standards	Testing Level
Conducted Emissions	IEC 61000-6-3	Class-A
Conducted RF Immunity	IEC 61000-4-6	Class-A
Electrical Fast Transient	IEC 61000-4-4	Class-B
Electrostatic Discharge	IEC 61000-4-2	Class-B
Radiated Emission	CISPR-22	Class-A
Radiated Susceptibility	IEC 61000-4-3	Class-A
Surge	IEC 61000-4-5	Class-B
High Voltage Test	IEC 61010-1	Clause 6.8
Resistance To Heat Test	IEC 61010-1	Clause 10.5
Single Fault Test	IEC 61010-1	Clause 4.4
Temperature Rise Test	IEC 61010-1	Clause 10

Ordering Information

Product Code	Supply Voltage	Certification
900ELR-2-230V-CE	230V AC	CE

Accessories

Product Code	Inner Diameter	Turns Ratio
CBCT-35-1	35mm	1000:1
CBCT-70-1	70mm	1000:1
CBCT-120-1	120mm	1000:1
CBCT-210-1	210mm	1000:1
CBCT-310-1	310mm	1000:1



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

SPECIFICATIONS

DISPLAY

3 Digits, Liquid Crystal Display with backlight

DISPLAY CURRENT RANGE : 15mA - 33A

NETWORK CONNECTION

1Ø-2 wire, 3Ø-3 wire, 3Ø-4 wire

AUXILIARY SUPPLY

230V AC (±15%)

FREQUENCY RANGE

50 - 60Hz

VA RATING

3VA max

TRIP SETTINGS

Leakage Current Range: 30mA - 30A

INSTANTANEOUS TRIP FOR CURRENT

ON / OFF (5 times of set current)

TIME SETTINGS

Power ON Delay : 0.5 - 99.9sec

Trip Time : 0 - 99.9sec (NA for 33mA RNG)

Recovery Time : 0 - 99.9sec

Response Time :

< 30ms (if trip current \geq 5 x set value & Instantaneous trip is ON)

< 50ms (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 : Relay1 : 1C/O (SPDT)

Relay2 : 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) : 4sq.mm

Screw tightening torque : 0.5N.m

WEIGHT

217gms

CE CERTIFICATION : IEC60947-2

SAFETY PRECAUTIONS

All safety related codifications, 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.

WIRING GUIDELINES

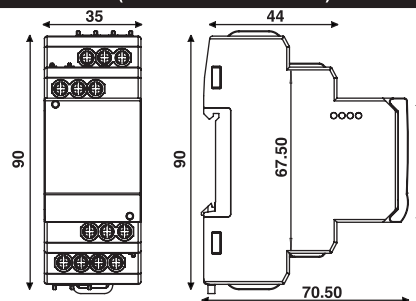
WARNING

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

1. To ensure the safe operation of unit, check the wiring and connections.
2. It is recommended to test the unit periodically to satisfy the regulations.

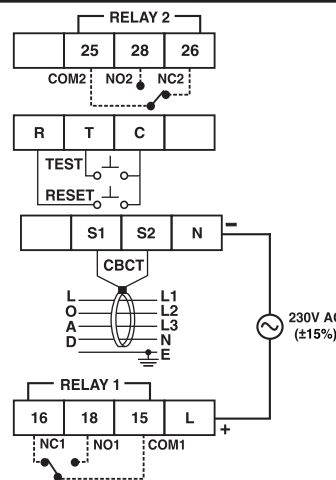
DIMENSIONS (All dimensions in mm)



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

TERMINAL CONNECTIONS

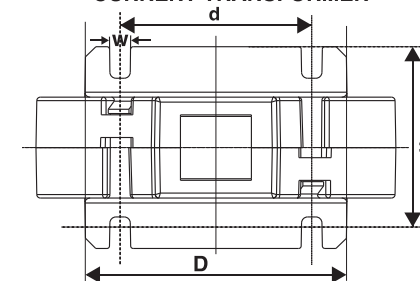


NOTE FOR CONNECTION

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).

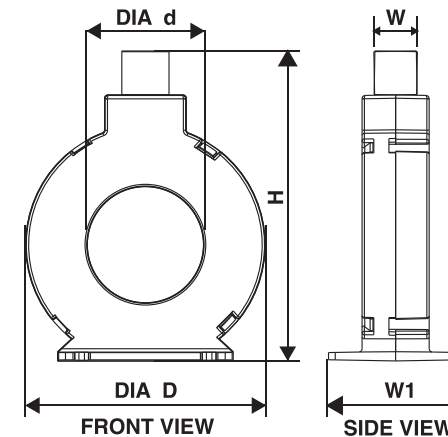
ACCESSORY

CORE BALANCED CURRENT TRANSFORMER



TOP VIEW

CBCT TYPE	Dimensions (mm)			
	D	d	h	w
35-1	52.50	38	40	4
70-1	87	38	40	4
120-1	122	38	40	4
210-1	199.80	120	55	6.60
310-1	300	200	66	6.60
TOLERANCE	Linear Tolerance : ±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
TOLERANCE	Linear Tolerance : ±0.1mm				

CT TYPE ZPC (Zero Phase Current)

CONFIGURATION MENU

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

MAIN MENU

TO SCROLL THROUGH MAIN MENU PRESS ● + ▲ OR ● + ▼ KEYS

- Relay 1 settings
RL1
- Time Setting for Relay 1
TM1
- Relay 2
RL2
- Time Setting for Relay 2
TM2
- Hysteresis
HYS
- Password
PW
- Factory set
RSt

SUB MENU

- Range
RNG
- Trip time delay
TRP
- Relay Functions
RLY
- Trip time delay
TRP
- Hysteresis Setting
HYS
- Password Enable / Disable
PW
- Factory set Yes / No
RSt
- Set Value (Earth leakage)
SV
- Recovery time
REC
- Pre-Alarm
PRE
- Set password
SPW
- Instantaneous trip Setting
INS
- Power ON delay
PON
- Relay operation mode
MOD
- Relay operation mode
MOD
- Latch
LCH
- Latch
LCH

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

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 VALUE	RANGE	CONDITION
RNG	Trip Current Range	550 ^{mA}	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. 'OVR' will be displayed; if input current is greater than selected Range.
SV	Set trip value for earth leakage	100 ^{mA} <small>R1</small>	SV can be programmed between 30.0mA 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.
INS	Instantaneous trip selection	ON <small>R1</small>	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
MOD	Relay operation mode	ON <small>R1</small>	ON / OFF (In ON mode, contact will be in changed over state in normal condition)	In Healthy condition, ON : NO OFF : NC
LCH	Latch	OFF <small>R1</small>	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 VALUE	RANGE	CONDITION
TRP	Trip Time Delay	0.0 ^s <small>R1 t</small>	0.0 - 99.9 Sec.	(NA for 33mA range)
REC	Recovery Time Delay	0.5 ^s <small>R1 t off</small>	0.0 - 99.9 Sec.	
P.ON	Power ON Delay	5.0 ^s <small>R1 ton</small>	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 VALUE	RANGE	CONDITION
RLY	Relay 2 Functions	PRE _{R2}	RL1 / PRE	If RL1 is selected, all the settings done for RL1 will be automatically set for RL2 and no other parameter of RL2 will be prompted.
PRE	Pre-Alarm	90 _{R2} %	50 to 100% for 33.0mA range & 60 to 100% for all other ranges	Will be prompted only when RL2 = PRE
MOD	Relay operation mode	OFF _{R2}	ON / OFF	In Healthy condition, ON : NO OFF : NC
LCH	Latch	OFF _{R2}	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 VALUE	RANGE	CONDITION
TRP	Trip time delay	00 _{R2 t}	0.0 - 99.9 Sec.	(NA for 33mA range)
REC	Recovery time delay	05 _{R2 t off}	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 VALUE	RANGE	CONDITION
HYS	Hysteresis	10 _{H %}	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 VALUE	RANGE	CONDITION
PW	Password	di 5	ENB / DIS	Enable / Disable password protection option
S.PW	Set password	0	0-999	Will be prompted only when Password option is enabled
PW	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 VALUE	RANGE	CONDITION
RST	Reset (Factory set)	NO	YES / NO	

TRIP VALUE SETTING 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 VALUE	RANGE	CONDITION
LCK	LOCK	YES	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.
SV	Set trip value for earth leakage	100 _{R1} mA	SV can be programmed between 30.0mA 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	Pre-Alarm	90 _{R2} %	50 to 100% for 33.0mA range & 60 to 100% for all other ranges	This option will be prompted only when PRE is selected for Relay2 in the config. menu.
TRP	Trip time delay for Earth Leakage	00 _{R1 t}	0.0 - 99.9 Sec.	(NA for 33mA range)

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
	Trip time delay for Pre Alarm.		0.0 - 99.9 Sec.	This option will not be prompted if RL1 is selected for RL2 in config. menu. (NA 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.		<input type="radio"/> R1 <input type="radio"/> R2	Applicable only when unit is in healthy condition.
Test passed			<input checked="" type="radio"/> R1 <input checked="" type="radio"/> R2	If test is passed, OK will be displayed till reset button is pressed.
Test Failed			<input type="radio"/> R1 <input type="radio"/> R2	----
RST	Press RST key for >2 Sec.	Actual Value	<input type="radio"/> R1 <input type="radio"/> R2	If current is in mA then "mA" will be indicated.

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.

ORDER CODE INFORMATION

PRODUCT	SUPPLY	CERTIFICATION	
		CE	
900ELR-2-230V-CE	230VAC (±15%)	▪	—

(Specifications subject to change as development is a continuous process.)

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