



## 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 :** 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 - 60Hz

## VA RATING

3VA max

## TRIP SETTINGS

Leakage Current Range: 10mA - 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 ≥ 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

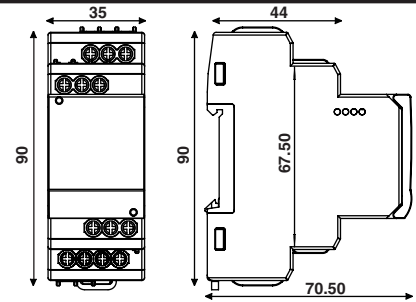
## WARNING

- To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement.
- 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.
- It is recommended to test the unit periodically to satisfy the regulations.

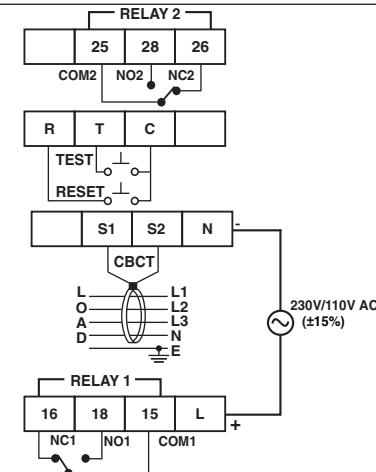
## DIMENSIONS ( All dimensions in mm )



## LED INDICATION CHART

| Conditions                                | 'R1' LED | 'R2' LED |
|-------------------------------------------|----------|----------|
| No fault                                  | OFF      | OFF      |
| Trip<br>(if RLY2 Programmed for RLY1)     | ON       | ON       |
| Pre-Alarm<br>(if RLY2 Programmed for PRE) | OFF      | ON       |
| CBCT error                                | BLINKING | BLINKING |

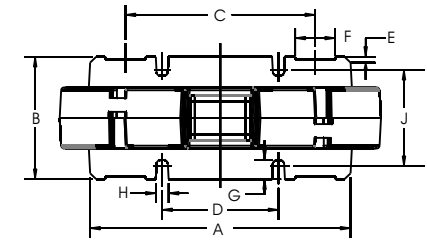
## TERMINAL CONNECTIONS



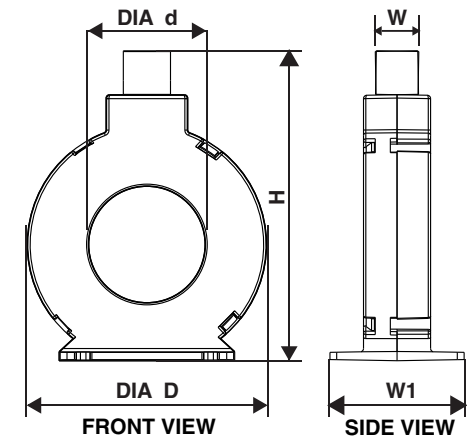
## NOTE FOR CONNECTION

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)           |    |    |     |    |    |      |     |      |
|-----------|---------------------------|----|----|-----|----|----|------|-----|------|
|           | 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 |
| Tolerance | Linear Tolerance : ±0.1mm |    |    |     |    |    |      |     |      |

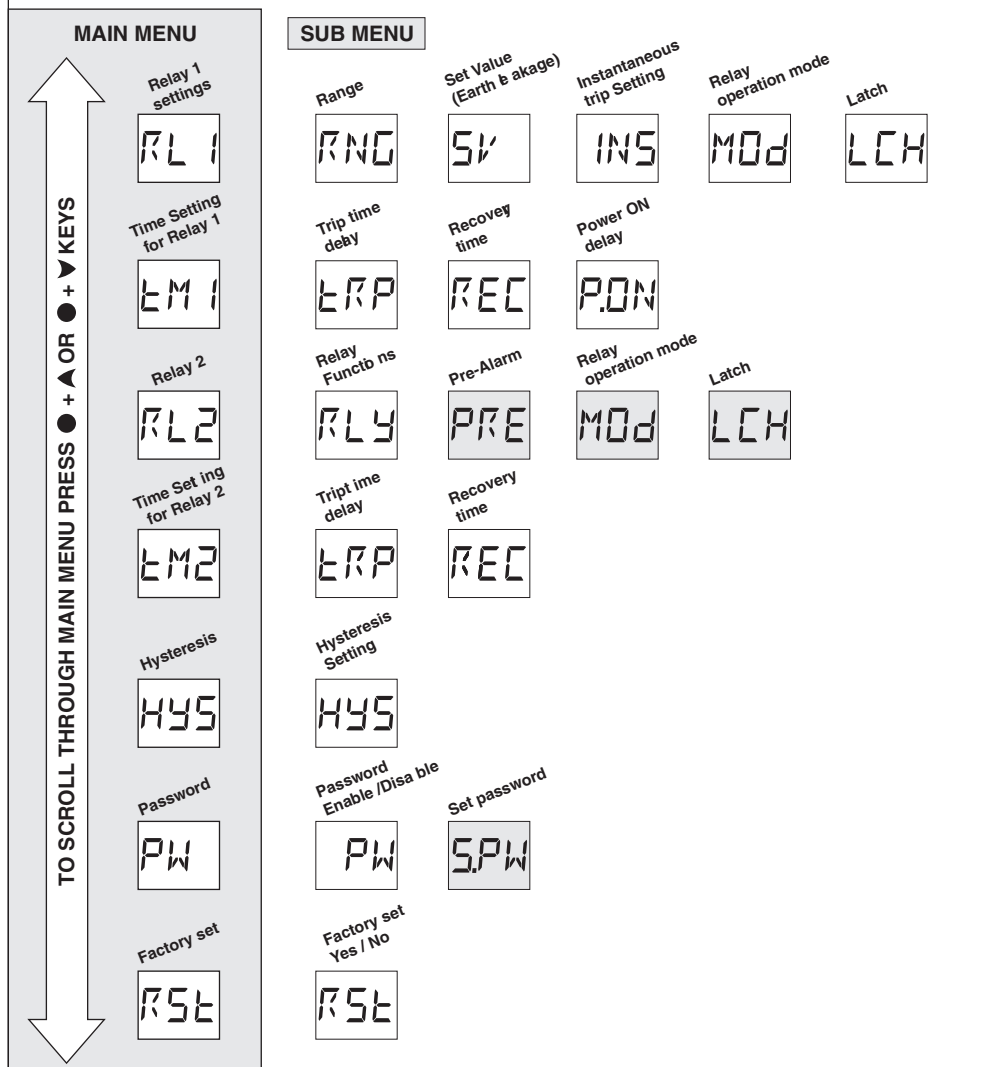


| CBCT TYPE | Dimensions (mm)           |     |        |       |    |
|-----------|---------------------------|-----|--------|-------|----|
|           | D                         | d   | H      | W     | W1 |
| 35-1      | 71.30                     | 35  | 97     | 15    | 40 |
| 70-1      | 107.50                    | 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.



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

**Note 2 :** The product will display overrange(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 ▲ or ▼ to scroll through sub menu                                    |                                  | Press ▲ to enter sub menu from main 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 <sup>mA</sup>                        | 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.                                                     |
| SV                                                                         | Set trip value for earth leakage | 100 <sup>mA</sup> <sub>R1</sub>          | SV can be programmed between 10.0mA to 30A irrespective of the selected range. Default SV for different ranges are :<br>33.0mA : 30.0mA<br>550mA : 100mA<br>5.50A : 1.00A<br>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 <sub>R1</sub>                         | 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 <sub>R1</sub>                         | ON / OFF (In ON mode, contact will be in changed over state in normal condition )                                                                                                          | In Healthy condition, ON : NO<br>OFF : NC                                                                                                                                            |
| LCH                                                                        | Latch                            | OFF <sub>R1</sub>                        | ON / OFF                                                                                                                                                                                   | If Latch is ON, user has to reset the unit manually when fault is removed                                                                                                            |

| Time Setting for Relay 1 (TM1)                                             |                     |                                          |                 |                                  |
|----------------------------------------------------------------------------|---------------------|------------------------------------------|-----------------|----------------------------------|
| Press ▲ or ▼ to scroll through sub menu                                    |                     | Press ▲ to enter sub menu from main 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 <sup>s</sup> <sub>R1 t</sub>         | 0.0 - 99.9 Sec. | (Not Applicable for 33mA range)  |
| REC                                                                        | Recovery Time Delay | 0.5 <sup>s</sup> <sub>R1 t off</sub>     | 0.0 - 99.9 Sec. |                                  |
| P.ON                                                                       | Power ON Delay      | 5.0 <sup>s</sup> <sub>R1 ton</sub>       | 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<br>(For 1sec)                                  | DESCRIPTION          | DEFAULT<br>VALUE                                                           | RANGE                                                         | CONDITION                                                                                                                           |
|                                                        | Relay 2 Functions    |                                                                            | 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-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<br>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<br>(For 1sec)                                                   | DESCRIPTION         | DEFAULT<br>VALUE                                                           | 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<br>(For 1sec)                                     | DESCRIPTION | DEFAULT<br>VALUE                                                           | 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<br>(For 1sec)                                  | DESCRIPTION        | DEFAULT<br>VALUE                                                           | 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 |                                                                            | <b>NOTE :</b> 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<br>(For 1sec)                                      | DESCRIPTION         | DEFAULT<br>VALUE                                                           | RANGE    | CONDITION |
|                                                            | Reset (Factory set) |                                                                            | 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<br>(For 1sec)                    | DESCRIPTION                       | DEFAULT<br>VALUE                                                           | 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 :<br>33.0mA : 30.0mA<br>550mA : 100mA<br>5.50A : 1.00A<br>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)                                                                                                                                                      |

| DISPLAY<br>(For 1sec)                                                             | DESCRIPTION                       | DEFAULT<br>VALUE                                                                  | RANGE                                                                                                                                                                                                                                                                                                                                                        | CONDITION                                                                             |
|-----------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  | Trip time delay<br>for Pre Alarm. |  | 0.0 - 99.9 Sec.                                                                                                                                                                                                                                                                                                                                              | Applicable only if RLY2 is<br>programmed as PRE<br>(Not Applicable for 33mA<br>range) |
|  | LOCK                              |  | YES / NO,<br>(In this option if YES is selected by the user, then whenever the user<br>enters the Trip Value Setting, initially LOCK option will be prompted.<br>The user will have to set NO after which he can access the trip setting<br>menu. If the user wants to disable LOCK option, he can set NO when<br>LOCK option is prompted after TRP option.) |                                                                                       |

#### TEST & RESET FUNCTION

● LED ON ○ LED OFF

| KEY         | DESCRIPTION                  | DISPLAY<br>(For 1sec.)                                                            | LED's     | CONDITION                                                                |
|-------------|------------------------------|-----------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------|
| For TEST    | Press TST key<br>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<br>is pressed. |
| Test Failed |                              |  | ○ R1 ○ R2 | ----                                                                     |
| RST         | Press RST key<br>for >2 Sec. | Actual Value                                                                      | ○ R1 ○ 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            | cULus<br>LISTED |
| 900ELR-2-230V-CE | 230VAC<br>(±15%) | ▪             | —               |
| 900ELR-2-110V-CE | 110VAC<br>(±15%) | ▪             | —               |

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

#### Selec Controls Pvt. Ltd.

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