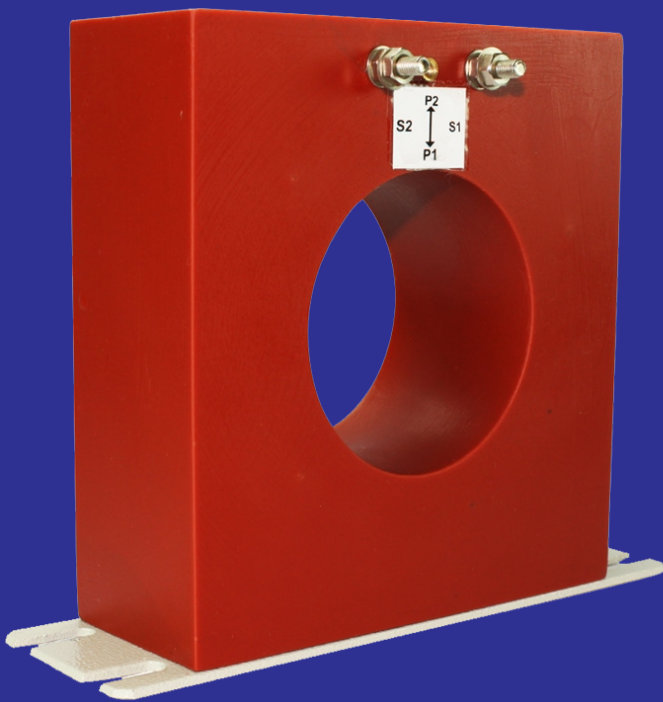


# STATIC EARTH FAULT RELAY

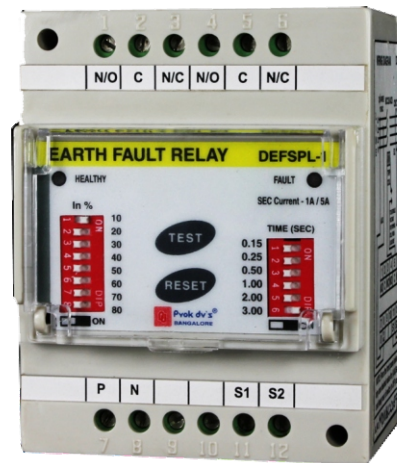


# STATIC EARTH FAULT RELAY

Prok dv's®

An ISO 9001 : 2008 Company

DEFINITE TIME / INSTANTANEOUS STATIC EARTH FAULT  
RELAY (EFR) → EFSPL - SERIES IEEE DEVICES CODE-50N



## Features

- Static Device
- Compact, Reliable with Aesthetic Value
- Rugged, Robust and Tropicalised design
- Consistent repeat accuracy
- Wide Current Operating range
- LED Indication for Healthy & Fault Status
- Manual Reset & Low Burden on CT Secondary

## Applications

- Earth Fault Protection for Generators / Alternators
- Earth Fault Protection for Transformers & Feeders

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## Specifications

<b>SPECIFICATIONS</b>	<b>DEFINITE TIME / INSTANTANEOUS STATIC EARTH FAULT RELAY(EFR)</b>
Auxiliary Voltage	110V/230V/415V/550V,AC 50Hz 48/110/220 VDC.
Frequency	50Hz
Neutral or Summation CT Rated Current-In	1A or 5A (Factory Set)
Burden on CT	<0.2VA
Sensitivity Settings Plug Setting Range(PS)	PS Range : (10%-80%) of In. in steps OF 10%
Definite Time Settings in Sec	0.15 to 3.0 Sec (6 Steps) Steps : 0.15, 0.25, 0.50, 1.00, 2.00 and 3 Sec.
IDMT Curves	NOT APPLICABLE
Time Setting Multiplier (TMS)	NOT APPLICABLE
High Set Enable/Disable Option	NOT APPLICABLE
High Set	NOT APPLICABLE
Time for High Set Operation	NOT APPLICABLE
CBCT / ZCT / ZCT / ZCT / ZCT size for EFR	<b>Circular:</b> 40mm,65mm,100mm,150mm,200mm,250mm & 300mm <b>with Secondary 1A only</b>
Contact Capacity (A)	8A@250V AC 8A@30V DC
Contact type	NC-C-NO One change over (optional - Two change over)
Operating Temperature (°C)	-5°C --- +55°C
Standard	IEC - 60255
Relay Setting Mode	Setting through DIP switch. • PS • Definite time
Display/Indication	LED for indicating the status • Green LED-Healthy • Red LED-Trip
Relay Test Facility	Available through push button
Mounting Type	Flush Din/Surface
Dimensions in mm	Flush : 96 x 96 x 70 Din : 75 x 95 x 75 (W x H x D)
Panel cut out in mm (Flush type)	90 x 90 + 0.1 mm

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**DEFINITE TIME / INSTANTANEOUS STATIC EARTH FAULT RELAY (EFR) →EFSPL -SERIES IEEE DEVICES CODE-50N**

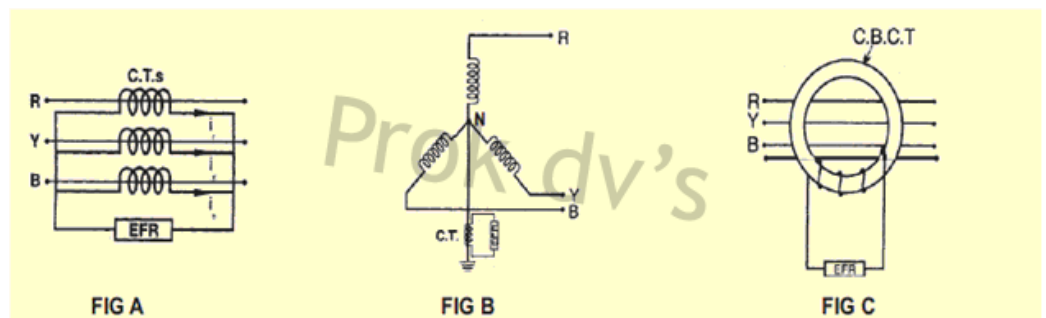
**Description**

Prok dv's make Definite Time / Instantaneous Static Earth Fault Relay (EFR) is a current sensing device which is tropicalised, professionally designed and tested for protection of Generators, Transformers and Feeders. Prok dv's make Static Definite Time & Instantaneous Earth Fault Relay (EFR) can be employed with various earth fault protective schemes, which are explained in brief with figures. The magnitude of the earth fault current depends on the fault impedance and invariably the fault impedance for earth fault is higher than that for phase faults, hence the earth fault current is low compared to the phase fault currents. The fault impedance depends on the system parameter and also on type of earthing. The neutral may be solidly grounded, grounded through resistance or reactance.

Figure A Shows how an earth fault relay (EFR) can be energized by a residual current, in this method the secondary 3 CT currents, by summation technique  $I_r$ ,  $I_y$  &  $I_b$  of three different phases are connected in parallel. The vectorial sum of three current i.e.,  $(I_r + I_y + I_b)$  is zero under normal condition. During the occurrence of earth fault the residual current is non-zero and when it exceeds the pick-up value (externally selectable by Dip switch on front fascia), the Earth Fault Relay (EFR) trips. Theoretically during balanced load conditions the Earth Fault Relay (EFR) carries no current hence its current, setting may be any value greater than zero, but in practice such ideal system do not exist.

Figure B Shows schemes for Definite Time / Instantaneous Static Earth Fault Relay (EFR) used for protection of Transformer and Generator. On occurrence of earth fault, zero sequence current flows through the neutral, in-turn actuating the Earth Fault Relay (EFR).

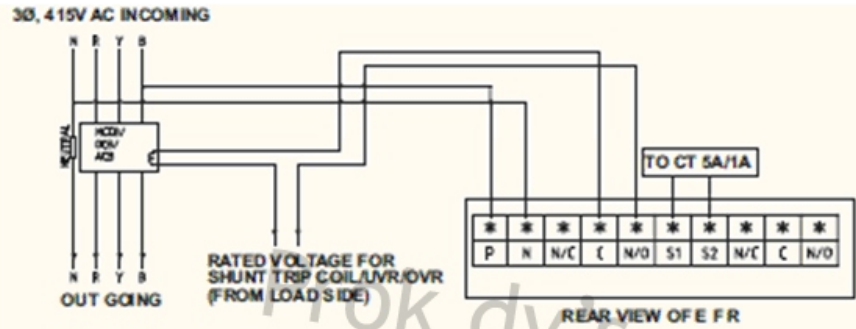
Figure C shows a scheme with Definite time / Instantaneous Static Earth Fault Relay (EFR) which utilized a special type of C.T., called core balance current transformer (CBCT / ZCT) which is toroidal in nature, under normal condition of 3 phase to phase faults the current in the toroidal secondary is zero. During earth fault the reflected zero sequence unbalance current flows in the (CBCT / ZCT) secondary energizing the earth fault relay (EFR).



# STATIC EARTH FAULT RELAY

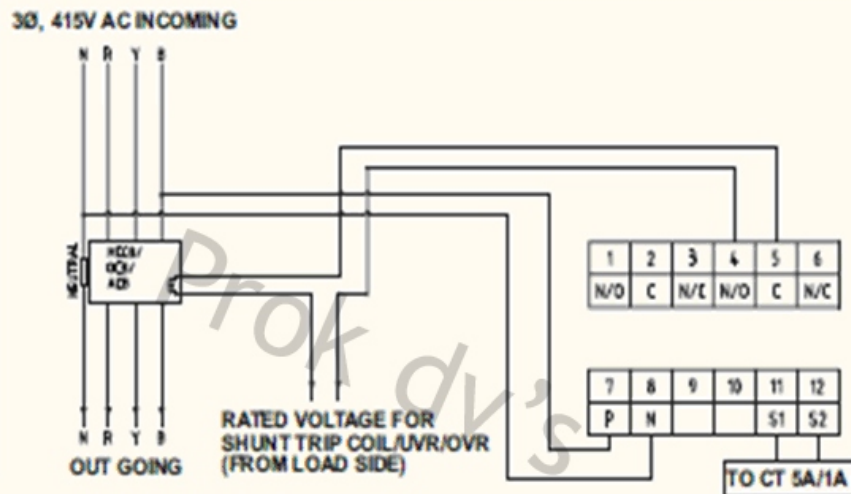
**DEFINITE TIME / INSTANTANEOUS STATIC EARTH FAULT RELAY (EFR) →EFSPL -SERIES IEEE DEVICES CODE-50N**

## WIRING DIAGRAM FOR FLUSH MOUNTING STATIC EARTH FAULT RELAY (EFR)



**NOTE:** FOR SHUNT RELEASE CONNECT C & N/O CONTACTS  
FOR UV RELEASE OR CONTACTOR COIL CONNECT C & N/C CONTACTS  
ARE SHOWING IN HEALTHY CONDITION

## WIRING DIAGRAM FOR DIN MOUNTING STATIC EARTH FAULT RELAY (EFR)

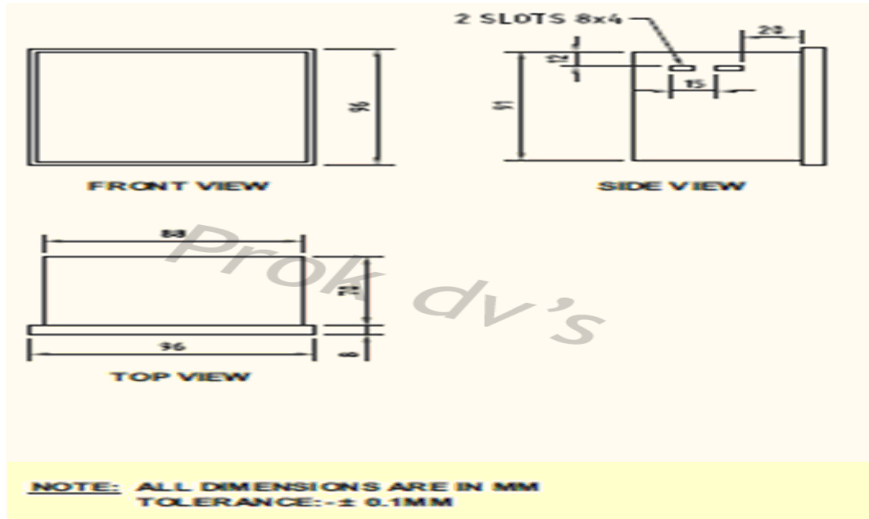


**NOTE:** FOR SHUNT RELEASE CONNECT C & N/O CONTACTS  
FOR UV RELEASE OR CONTACTOR COIL CONNECT C & N/C CONTACTS  
ARE SHOWING IN HEALTHY CONDITION

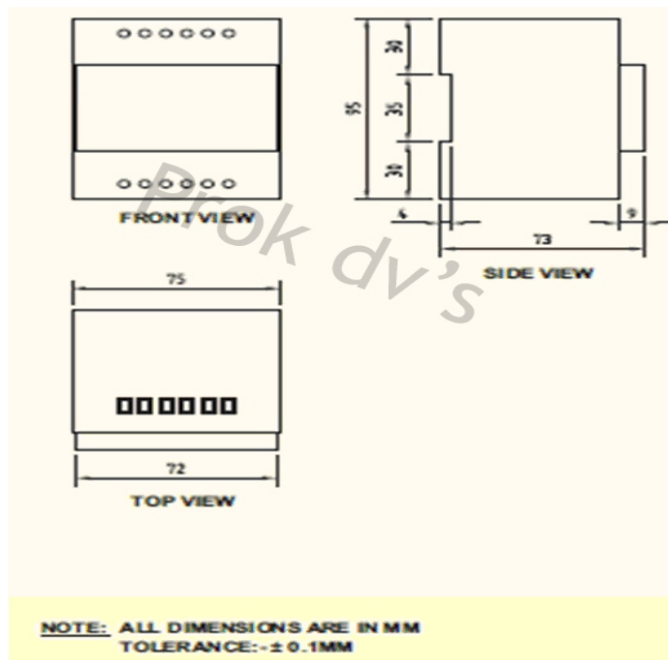
# STATIC EARTH FAULT RELAY

**DEFINITE TIME / INSTANTANEOUS STATIC EARTH FAULT RELAY (EFR) →EFSPL -SERIES IEEE DEVICES CODE-50N**

MECHANICAL DIMENSION OF FLUSH MOUNTING STATIC EARTH FAULT RELAY (EFR)



MECHANICAL DIMENSION OF DIN MOUNTING STATIC EARTH FAULT RELAY (EFR)

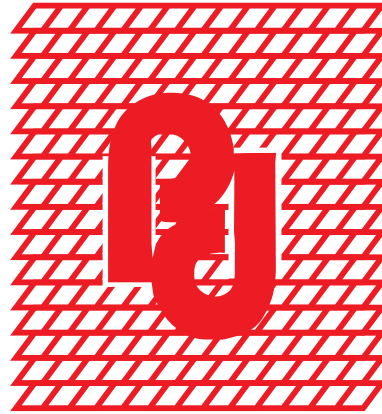


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ISO 9001-2008

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