INSTALLATION INSTRUCTION FOR F3 EFR2

INTRODUCTION

It's the company's pleasure to enlist you as one of our esteemed user customer. Thank you for selecting & purchasing 'MINILEC' make EARTH FAULT RELAY F3 EFR2.
The following installation instruction would guide you in installation F3 EFR2 and making best use of it.
F3 EFR2 operates on current sensing principle and is used in electrical circuits & systems where EARTH FAULT protection is required. F3 EFR2 relay is more accurate, easy to set, compact and easy to install at panel facia .This relay offers (1CO/2CO) relay contact of 5Amps at 240VAC rating.

MOUNTING

Your F3 EFR2 is flush fitting panel mounted type.(See fig.2 — for panel mounting & panel cutout dimensions)

CAUTION

Ensure that your F3 EFR2 is-

- Not installed near any heat sources like Burner, Sunlight ,electric arc etc.
- Not subjected to abnormal vibration.
- Not subjected to direct rains, stormy wind & dust.
- Installed as near to the starter as possible.

ELECTRICAL CONNECTION OF F3 EFR2

See fig 3 & 4 for electrical connection details of F3 EFR2.

FUNCTION

The unit is provided with settable EARTH FAULT current trip setting, Trip time delay & with provision of relay energizing on fault condition logic. Select external CT to be installed in the system after considering EARTH FAULT current levels expected in systems circuit. External CT should have secondary current rating of 5A or 1A. Rated current input of 5A or 1A can be selected through CT I/P (C & 5A) or (C & 1A) indicated on back terminal (see fig.3 & 4)
When the power is applied to the unit relay remains in de - energized condition. The relay energized immediately , when input current exceeds Earth fault set level for selected trip time delay.
The unit operates in manul reset mode hence for resetting, it is necessary to press RESET push button provided on front side of unit. F3 EFR2 also be resetted by using external no type remote reset push button.

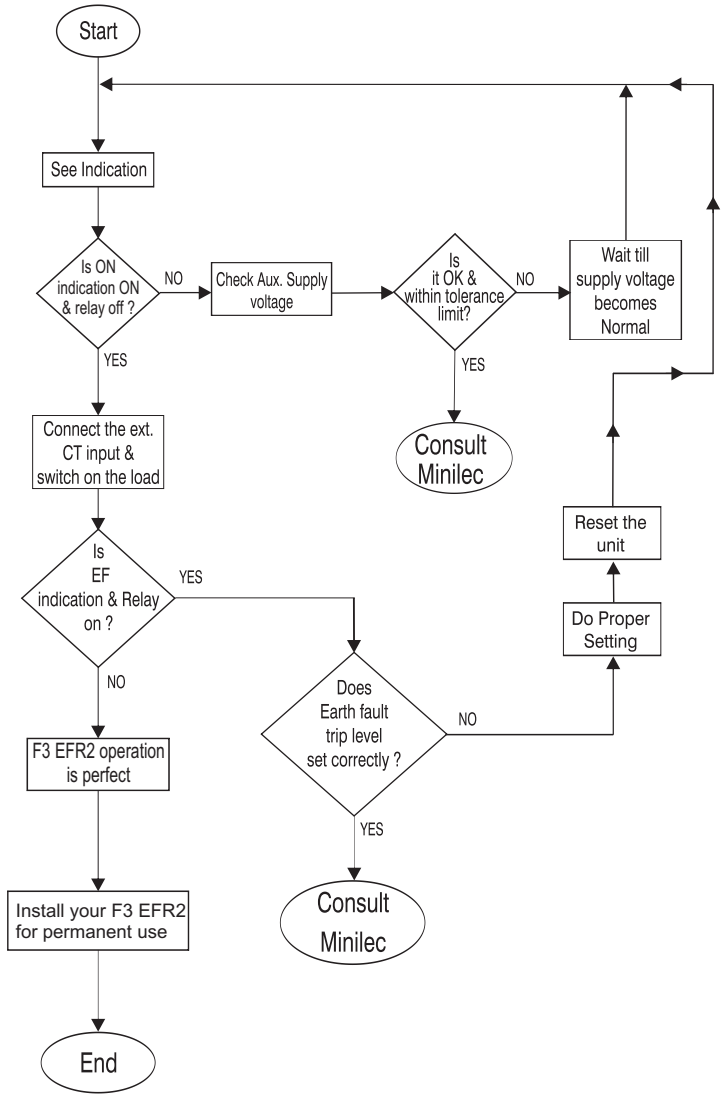
TRIP TIME DELAY SELECTION

On occurrence of earth fault condition,F3 EFR2 will trip as per the trip sec selected on front plate.

TECHNICAL SPECIFICATION OF F3 EFR2

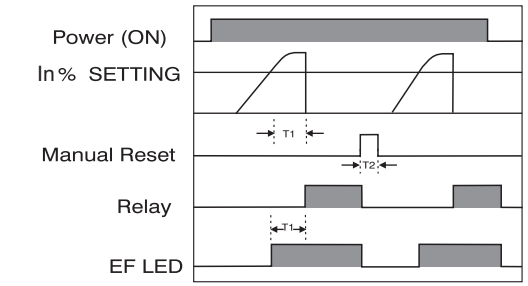
1. Auxiliary supply	: 24 / 30VDC ±10% 110-240VAC/DC ±20% 380 / 415 / 440VAC ±20%,50Hz
2. Rated current input	: 5A / 1A (CBCT secondary I/P, selection via terminals)
3. Frequency	: 50 / 60Hz, ±3%
4. Power consumption	: 3VA max.
5. Output relay contact	: 2CO / (1CO)
6. Out put contact rating	: 5A,240VAC (resistive)
7. Life expectancy	: $0.5x10^8$ operations at 100% rating
8. EF trip setting	: 5% to 80% of rated current input (variable)
9. Set accuracy	: For Current Input (In) - ±5% of full scale For trip delay - ±10% [+25ms] of set value
10. Trip time delay	: 0.025 sec. to 10 sec
11. Test	: Manual test - PB on front
12. Reset	: Manual Reset - PB on front Remote Reset - External through back terminal
13. Indication	: ON (green) - Power ON EF (red) - Earth Fault Trip
14. Current sensor	: Neutral CT / CBCT / summation CT with secondary current rating of 1A or 5A
15. Operating conditions	: Temperature - -5°C to 60°C Humidity - upto 95% R/H.
16. Enclosure	: F3 ENCLOSURE (ABS)
17. Dimension (mm)	: Overall - 96 X 96 X 80mm Cut out - 92 X 92 mm
18. Weight (approx)	: 300gms

TESTING PROCEDURE



OPERATIONAL DIAGRAM

FIG. 1



T1 : Trip Delay

T2 : Unit is resetted by pressing MANUAL / REMOTE reset push button switch.

SETTING OF EARTH FAULT RELAY

Typical Earthfault Relay Setting for electrical low voltage system of 415 V AC, 3 phase, 50Hz, maximum demand of 150 KW at lagging power factor of 0.85 are shown below.

Power = $\sqrt{3}$ x V x I x cos Ø

$$\text{Load current} = \frac{150 \times 1000}{1.732 \times 415 \times 0.85}$$

Load current = 245.50 Amps

Current Transformer Selected = 300/5A, 15VA, Class 5P10

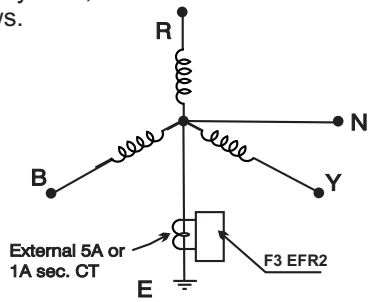
Minilic make F3 EFR2 is provided with Earthfault current setting between 10% - 100%

Hence Earthfault at 10% setting = 10% x 300A = 30 Amps

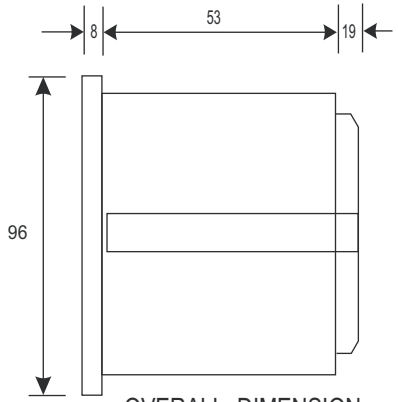
Similarly Earthfault at 30% setting = 30% x 300A = 90 Amps

These are typical earthfault current calculations and settings shown as an example. Individual user can make the earthfault settings as per their requirement.

For Generator and Transformer application, with 3Ph-4W system, connection of CT can be made as follows.

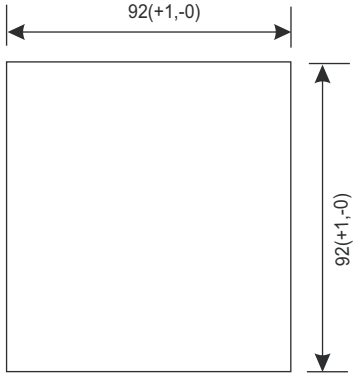


MOUNTING DIMENSION

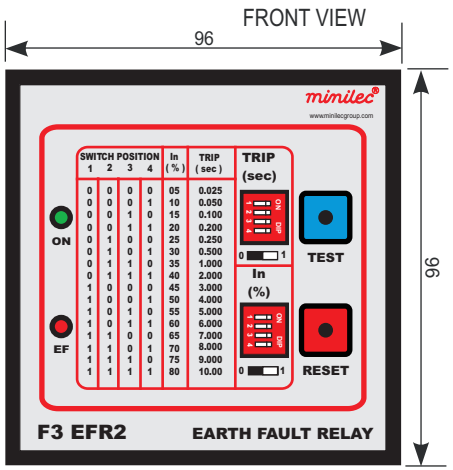


OVERALL DIMENSION

PANEL CUTOUT

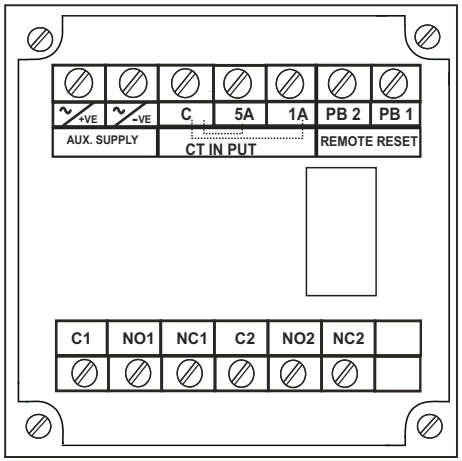


FRONT VIEW



ALL DIMENSIONSARE IN mm (FIG .2)

TERMINAL DETAILS



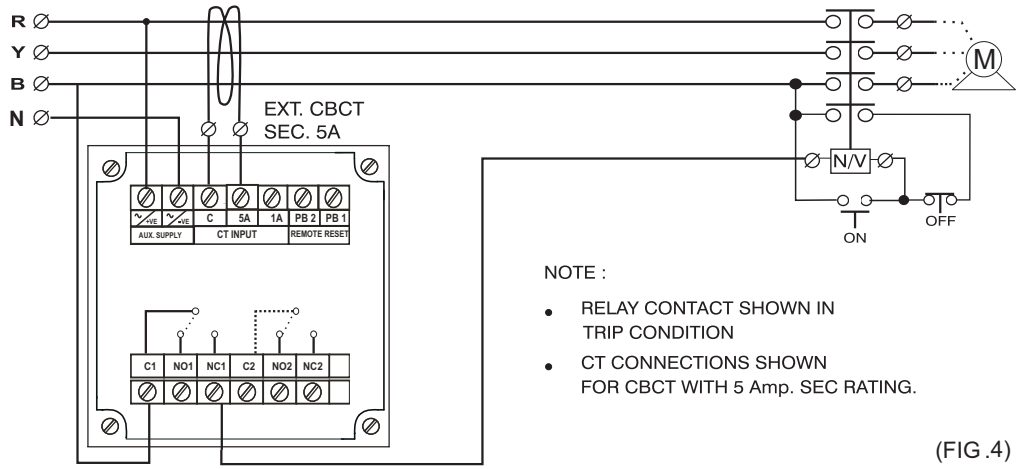
TERMINAL DETAILS (FIG .3)

- ~/+VE ,~/-VE : AUX SUPPLY
- C1 - NO1 - NC1 : OUTPUT RELAY CONTACT.
- C2 - NO2 - NC2 : OUTPUT RELAY CONTACT.(2CO)
- C -5A : CT INPUT 5A SECONDARY
- C -1A : CT INPUT 1A SECONDARY
- PB 1, PB 2 : REMOTE RESET

INDICATION

- ON (GREEN) : POWER ON.
- EF (RED) : EARTH FAULT TRIP.

ELECTRICAL CONNECTIONS IN POWER AND CONTROL WIRING (CBCT TYPE)



NOTE :

- RELAY CONTACT SHOWN IN TRIP CONDITION
- CT CONNECTIONS SHOWN FOR CBCT WITH 5 Amp. SEC RATING.

(FIG .4)

INSTALLATION INSTRUCTION MANUAL FOR EARTH FAULT RELAY

WARRANTY
AGAINST
ALL MANUFACTURING DEFECTS
FOR 18 MONTHS
FROM DATE OF SUPPLY
OR 12 MONTHS FROM
INSTALLATION
WHICHEVER IS EARLIER

Manufactured by :

minilec®
www.minilecgroup.com

1073/1-2-3 AT POST : PIRANGOOT,
TAL. : MULSHI, DIST. : PUNE, (INDIA)
PIN : 412 111

VERSION- 01
(30 / 12 / 2014)