

INSTALLATION INSTRUCTION

F3 VSR4 & F3 VSR5

minilec®



F3 VSR4

F3 VSR5



	F3 VSR5	F3 VSR4
SYSTEM SUPPLY	380 / 415 / 440 VAC (3Ø - 3W) / 230 VAC (3Ø - 4W) ELECTABLE	415VAC(+20% -30%)/110VAC(+20% -30%)(3Ø-3W, 3Ø-4W SELECTABLE)
AUX. SUPPLY	90 - 270 VAC / DC	90 270 V AC/ DC
FREQUENCY	50 Hz / (60Hz) ± 3%	: 50 Hz / (60Hz) ± 3%
POWER CONSUMPTION	8 VA max.	8 VA max.
OUTPUT RELAY CONTACT	2 CO	2 CO
OUTPUT CONTACT RATING	5 Amp, 240 VAC [RE I TIVE]	5 Amp, 240 VAC [RESISTIVE]
MONITORING	PH-PH VOLTAGE OR PH-N VOLTAGE (SOFTWARE ELECTABLE)	PH- PH VOLTAGES OR PH - N VOLTAGES (SOFTWARE SELECTABLE)
POWER ON DELAY	3.5 ± 1.5 EC.	: 3.5 ± 1.5 SEC.
SETTING	BY MEAN OF KEYBOARD [4 KEY]	MEANS OF KEYBOARD [4 KEYS]
TEST FACILITY	SIMULTANEOUSPRES OF E C & UP KEY	SIMULTANEOUS PRESS OF ESC & UP KEYS.
REVERSE PHASING TRIP DELAY	INSTANTANEOUS (LESS THAN 1SEC)	INSTANTANEOUS (LESS THAN 1SEC)
SETTING ACCURACY	±2% OF SET PARAMETER	±2% OF SET PARAMETER
TIME ACCURACY	±1 EC	: ± 5 % OF SETTING (±1SEC FOR 1 TO 10 SEC RANGE)
DISPLAY	LCD [16 X 2 CHAR. TYPE WITH BACKLIGHT]	: LCD [16 X 2 CHAR. TYPE WITH BACKLIGHT]
DISPLAY VOLTAGE REVOLUTION	1 VOLT	1 VOLT
DISPLAY ACCURACY	±(1% + 5 VOLT) OF ACTUAL VOLTAGE	±(1% + 5 VOLT) OF ACTUAL VOLTAGE
RESETTING	AUTO / MANUAL [IMULTANEOU PRESS OF UP & DOWN KEY]	AUTO / MANUAL [IMULTANEOU PRESS OF UP & DOWN KEY]
RESET GAP FOR AUTO RESET FACILITY		
A) UV RESET GAP	3% ± 1% OF TRIP SETTING	3% ± 1% OF TRIP SETTING
B) OV RESET GAP	3% ± 1% OF TRIP SETTING	3% ± 1% OF TRIP SETTING
C) UNBALANCE RESET GAP	20% ± 5% OF TRIP SETTING	20% ± 5% OF TRIP SETTING
LED INDICATION		
POWER ON (GREEN)	POWER ON	POWER ON
OV (RED)	OVER VOLTAGE	OVER VOLTAGE
UC (RED)	UNDER VOLTAGE	UNDER VOLTAGE
UB / P (RED)	UNBALANCE / INGLE PHAS ING / REVERSE PHASING	UNBALANCE / INGLE PHAS ING / REVERSE PHASING
FAULT LOG	FOR LA T 5 EVENT	
ENCLOSURE	96 X 96 TYPE ENCLOSURE	96 X 96 TYPE ENCLOSURE
DIMENSION		
OVERALL (MM)	96 X 96 X 80 mm [H X W X D]	96 X 96 X 80 mm [H X W X D]
CUTOUR (MM)	92 X 92 [+1 / -0] mm	92 X 92 [+1 / -0] mm
MOUNTING	FLU SH MOUNTING	FLU SH MOUNTING
OPERATING CONDITION		
TEMPRATURE	0° TO 66° C	0° TO 60° C
HUMIDITY	UP TO 95% Rh	UP TO 95% Rh
WEIGHT (Gms)	800 (Approx.)	800 (Approx.)
OPTIONAL FEATURES	R 485 WITH MODBU RTU	RS232 PORT FOR PC INTERFACE WITH MINILEC PC SIDE SOFTWARE. (WINDOWS BASED)

NOTE : In case of 3 phase - 4 wire system, for Neutral fail protection, tap Aux. supply (Phase & Neutral) from system supply sensing terminals (R or Y or B & N) & do not connect separate Aux. supply (AC/DC).

NOTE :In case of 3 phase - 4 wire system, for Neutral fail protection, tap Aux. supply (Phase & Neutral) from system supply sensing terminals (R or Y or B & N) & do not connet separate Aux. Supply (AC/DC). In case of 110V model if separate aux. supply not available then tap aux. supply from any two phases & not from phase & neutral.

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

www.minilecgroup.com

INSTALLATION INSTRUCTION FOR F3 VSR4 / 5

(Micro controller Based Voltage Scanner, 3 Ph 3W/4W)

INTRODUCTION:

Thank you for selecting & purchasing Minilec make Voltage Scanner F3 VSR4 / 5 [3 Phase – 3 Wire/ 4 Wire].

The following installation instruction would guide you in installing F3 VSR4 / 5 & making the best use of it.

F3 VSR4 / 5 has a micro controller based design for monitoring Phase – Phase or Phase-Neutral voltages with a digital LCD display to indicate system supply voltage.

Now you have the power & convenience to monitor & view the 3 Phase supply and disconnect the load if it becomes abnormal.

FEATURES F3 VSR4 / 5 :

1. LCD Display.
2. Touch Key-pad for parameters settings.
3. Password protection for an unauthorized access.
4. Wide range Aux. Supply.
5. Digital readout of system supply voltages.
6. Under Voltage, Over Voltage, Voltage Unbalance protection with variable trip setting.
7. Single phasing (SP) and Reverse phasing (RP) protections.
8. Individual Trip time delay setting.
9. Individual protection bypass for UV, OV, UB, RP trip fault.
10. Auto / Manual reset operation facility.
11. In – built TEST/RESET facility for easy field testing.
12. RS 232 Serial communication (optional).
13. RS 485 port with MODBUS RTU Protocol (Only for F3 VSR5)

MOUNTING:

F3 VSR4 / 5 is flush mounting type device that can be mounted on front panel door.

(See fig. 2 for mounting, cutout & overall dimensions).

CAUTION: ⚠

For proper functioning & reliability ensure that F3 VSR4 / 5 is

1. Not installed near any heat sources like burner, sunlight, electric arc etc.
2. Not subjected to abnormal vibrations.
3. Not subjected to direct rains, stormy wind & dust.

FUNCTIONING:

F3 VSR4 has facility for selection of phase to phase or phase to neutral system supply for monitoring.

It monitors system supply voltage and displays it on LCD screen with 1 sec updation time.

Normally, unit will be operating in run mode and supply voltages will be kept displayed on LCD display.

It gives protection against Under Voltage, Over Voltage, Voltage Unbalance & Single Phasing with individual trip time delay setting. Setting of these parameters can be done using keyboard on front plate, by an authorized user.

Reverse phase sequence protection is provided throughout the program with an instantaneous trip delay.

Under Voltage, Over Voltage, Voltage Unbalance, Reverse phasing can be bypassed or made active in setting mode.

Manual TEST (simultaneous press - ESC & UP keys) and RESET (simultaneous press - UP & DOWN keys)

operations can simulated through front keypad.

Refer timing diagram of functional working & for electrical connections of the unit.

Voltage unbalance is calculated as :

Max. Deviation of voltage
w.r. To average voltage

$$\%UNBALANCE = \frac{\text{Max. Deviation of voltage w.r. To average voltage}}{\text{Average voltage}} \times 100$$

PROGRAMMABLE PARAMETERS

F3 VSR5

1.SFOR30-S3WSSSYSTEMSUPPLY MODEL

PARAMETER	FOR 3 PH - 3 WIRE ELECTION		
	PROGRAMMABLE SPECIFICATION	RESOLUTION	FACT. SET
NOMINAL VOLTAGE	380 / 415 / 440 VAC	N.A.	415VAC [PH-PH]
OVER VOLTAGE	1 TO 105 V ABOVE NOMINAL VOLTAGE	1 V	50 V
UNDER VOLTAGE	1 TO 220 V BELOW NOMINAL VOLTAGE	1 V	60 V
UNBALANCE	1 TO 20% OF AVG. MONITORING	1 %	10 %
INDIVIDUAL TRIP DELAY FOR OV, UV, UB,	1 TO 59 EC OR	1 EC	3 EC
	1 TO 5 MINUTE	1 MIN	
OV, UV, UB, RP PROTECTION BYPA	YES / NO	N.A.	NO
RE ET	AUTO / MANUAL	N.A.	MANUAL
PA WORD	00 TO 99 (TWO DIGIT)	1	03
MODBU RTU	YES / NO	N.A.	YES
• DEVICE ID	1 TO 32	1	01
• FUNC CODE	1 TO 15	1	03
• PARITY	NONE / ODD / EVEN	N.A.	NONE
• BAUD RATE	2400 / 4800 / 9600 / 19200	N.A.	9600
FACTORY ET	YES / NO	N.A.	NO

2.SFOR30-S4WSSSYSTEMSUPPLY MODEL

PARAMETER	FOR 3 PH - 4 WIRE ELECTION		
	PROGRAMMABLE SPECIFICATION	RESOLUTION	FACT. ET
NOMINAL VOLTAGE	220 / 230 / 240 / 250 VAC	10	230VAC [PH-N]
OVER VOLTAGE	1 TO 70 V ABOVE NOMINAL VOLTAGE	1 V	20 V
UNDER VOLTAGE	1 TO 220 V BELOW NOMINAL VOLTAGE	1 V	40 V
UNBALANCE	1 TO 20% OF AVG. MONITORING	1 %	10 %
INDIVIDUAL TRIP DELAY FOR OV, UV, UB,	1 TO 59 EC OR	1 EC	3 EC
	1 TO 5 MINUTE	1 MIN	
OV, UV, UB, RP PROTECTION BYPA	YES / NO	N.A.	NO
RE ET	AUTO / MANUAL	N.A.	MANUAL
PA WORD	00 TO 99 (TWO DIGIT)	1	03
MODBU RTU	YES / NO	N.A.	YES
• DEVICE ID	1 TO 32	1	01
• FUNC CODE	1 TO 15	1	03
• PARITY	NONE / ODD / EVEN	N.A.	NONE
• BAUD RATE	2400 / 4800 / 9600 / 19200	N.A.	9600
FACTORY ET	YES / NO	N.A.	NO

F3 VSR4

PROGRAMMABLE PARAMETERS

1) FOR 380 / 415 / 440VAC SYSTEM SUPPLY MODEL

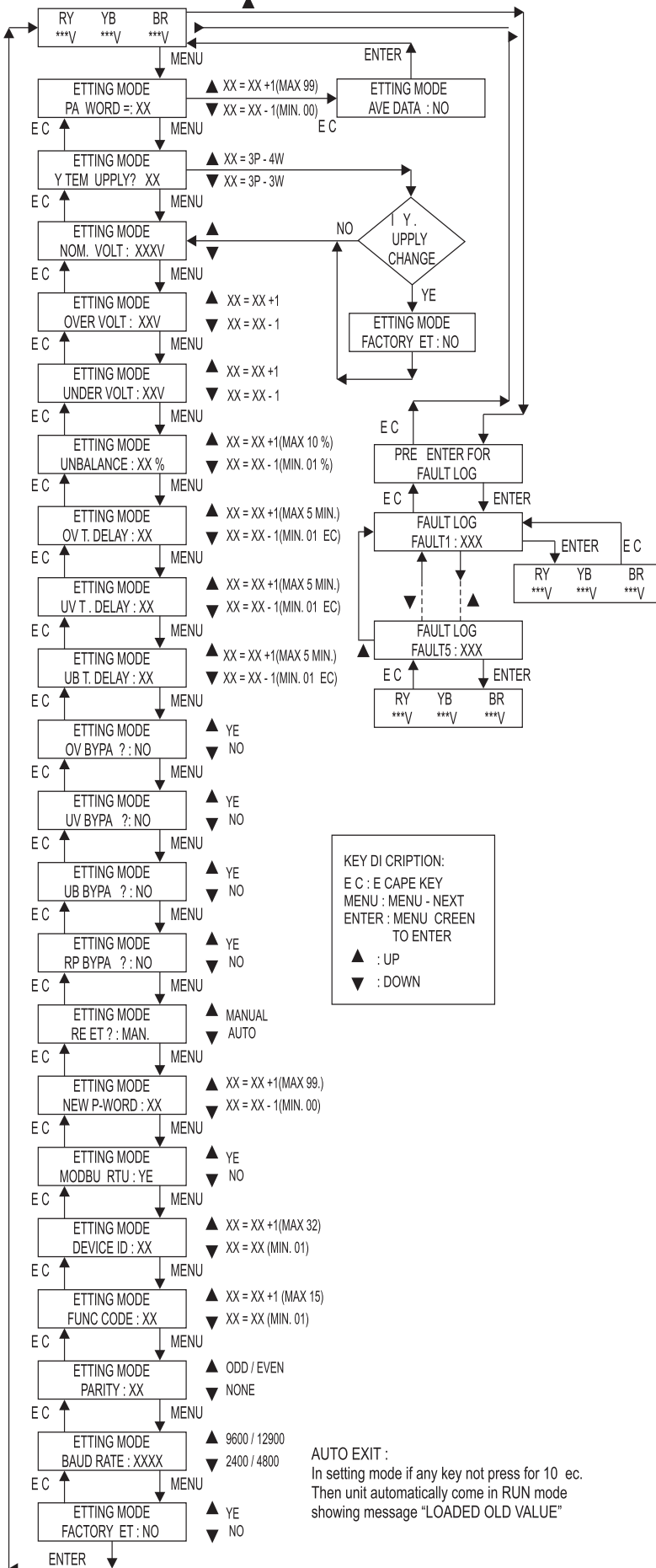
PARAMETER	FOR 3 PH - 3 WIRE SELECTION			FOR 3 PH - 4 WIRE SELECTION		
	PROGRAMMABLE SPECIFICATIONS	RESOLUTION	FACT. SET	PROGRAMMABLE SPECIFICATIONS	RESOLUTION	FACT. SET
NOMINAL VOLTAGE	380/415/440 VAC	N.A.	415VAC [PH-PH]	220/230/240/250VAC	10V	230VAC [PH-N]
UNDER VOLTAGE	1 TO 80 V BELOW NOMINAL VOLTAGE	1 V	60 V	1 TO 50 V BELOW NOMINAL VOLTAGE	1 V	40 V
OVER VOLTAGE	1 TO 80 V ABOVE NOMINAL VOLTAGE	1 V	50 V	1 TO 25 V ABOVE NOMINAL VOLTAGE	1 V	20 V
UNBALANCE	1 TO 20% OF AVG. MONITORING	1 %	10 %	1 TO 20% OF AVG. MONITORING	1 %	10 %
				1 TO 59 SEC. OR	1 SEC	3 SEC
INDIVIDUAL TRIP DELAY FOR UV, OV, UB,	1 TO 5 MINUTE	1 MIN	1 TO 5 MINUTE	1 MIN		
UV, OV, UB, RP PROTECTION BYPASS	YES/ NO	N.A.	NO.	YES/ NO	N.A.	NO.
RESET	AUTO / MANUAL	N.A.	MANUAL	AUTO / MANUAL	N.A.	MANUAL
PASSWORD	00 TO 99 (TWO DIGITS)	1	03	00 TO 99 (TWO DIGITS)	1	03
FACTORY SET	YES/ NO	N.A.	NO	YES/ NO	N.A.	NO

2) FOR 110 VAC SYSTEM SUPPLY MODEL

PARAMETER	FOR 3 PH - 3 WIRE SELECTION			FOR 3 PH - 4 WIRE SELECTION		
	PROGRAMMABLE SPECIFICATIONS	RESOLUTION	FACT. SET	PROGRAMMABLE SPECIFICATIONS	RESOLUTION	FACT. SET
NOMINAL VOLTAGE	110 VAC	N.A.	110 VAC [PH - PH]	63VAC	NA	63 VAC [PH-N]
UNDER VOLTAGE	1 TO 15 V BELOW NOMINAL VOLTAGE	1 V	15 V	1 TO 15 V BELOW NOMINAL VOLTAGE	1 V	15 V
OVER VOLTAGE	1 TO 35 V ABOVE NOMINAL VOLTAGE	1 V	20 V	1 TO 25 V ABOVE NOMINAL VOLTAGE	1 V	20 V
UNBALANCE	1 TO 20% OF AVG. MONITORING	1 %	10 %	1 TO 20% OF AVG. MONITORING	1 %	10 %
				1 TO 59 SEC. OR	1 SEC	3 SEC
INDIVIDUAL TRIP DELAY FOR UV, OV, UB,	1 TO 5 MINUTE	1 MIN	1 TO 5 MINUTE	1 MIN		
UV, OV, UB, RP PROTECTION BYPASS	YES/ NO	N.A.	NO.	YES/ NO	N.A.	NO.
RESET	AUTO / MANUAL	N.A.	MANUAL	AUTO / MANUAL	N.A.	MANUAL
PASSWORD	00 TO 99 (TWO DIGITS)	1	03	00 TO 99 (TWO DIGITS)	1	03
FACTORY SET	YES/ NO	N.A.	NO	YES/ NO	N.A.	NO

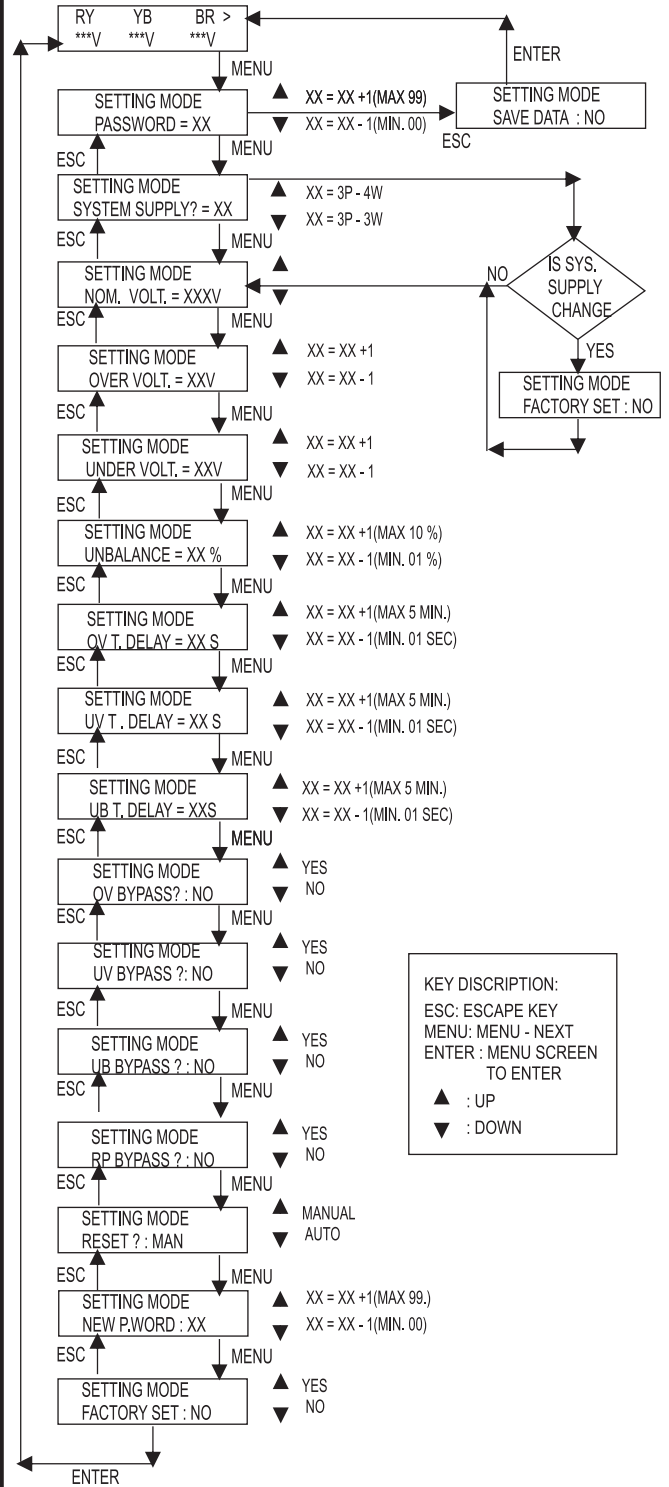
DETAILS OF SETTING MODE

F3 VSR5



DETAILS OF SETTING MODE

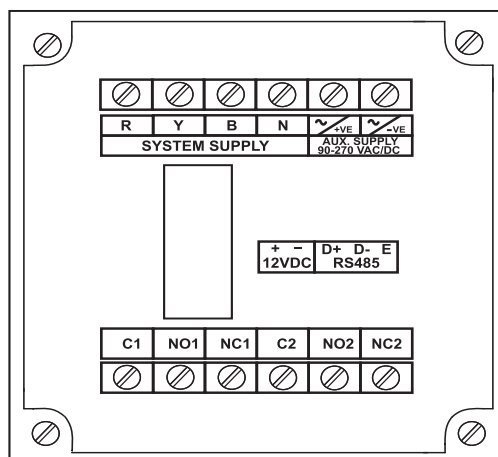
F3 VSR4



AUTO EXIT : In setting mode if any key not press for 10 Sec. Then unit automatically come in RUN mode showing message L LOADED OLD VALUE

ELECTRICAL CONNECTIONS:

F3 VSR5



TERMINAL DETAILS:

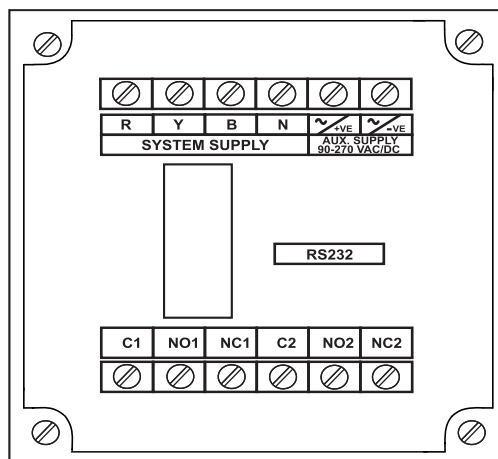
- R,Y,B :PHASE VOLTAGE SENSING POINTS
- N :NEUTRAL (FOR 3Ph - 4W)
- C1-NO1-NC1 :OUTPUT RELAY CONTACT
- C2-NO2-NC2 :OUTPUT RELAY CONTACT

INDICATIONS:

- P.ON(GREEN): POWER ON
- UB/SP (RED) : UNBALANCE/ SINGLE PHASING/ REVERSE PHASING
- UV (RED) : UNDER VOLTAGE
- OV (RED) : OVER VOLTAGE

ELECTRICAL CONNECTIONS:

F3 VSR4



TERMINAL DETAILS:

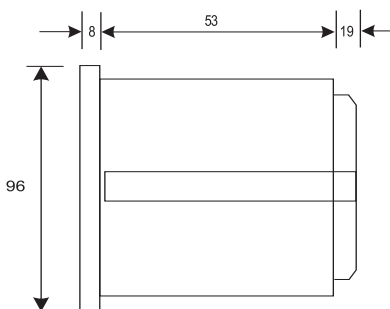
- R,Y,B :PHASE VOLTAGE SENSING POINTS
- N :NEUTRAL (FOR 3Ph - 4W)
- C1-NO1-NC1 :OUTPUT RELAY CONTACT
- C2-NO2-NC2 :OUTPUT RELAY CONTACT

INDICATIONS:

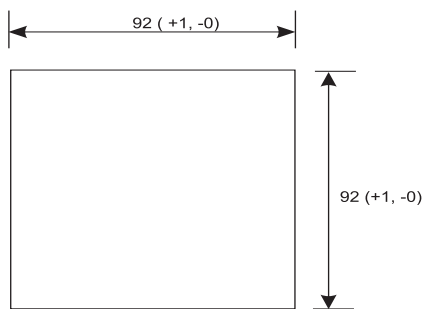
- P.ON(GREEN): POWER ON
- UB/SP (RED) : UNBALANCE/ SINGLE PHASING/ REVERSE PHASING
- UV (RED) : UNDER VOLTAGE
- OV (RED) : OVER VOLTAGE

MOUNTING DIMENSION:

ALL DIMENSION ARE IN mm

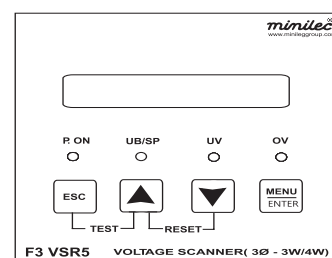


OVERALL DIMENSION



PANEL CUTOUT

F3 VSR4 / 5

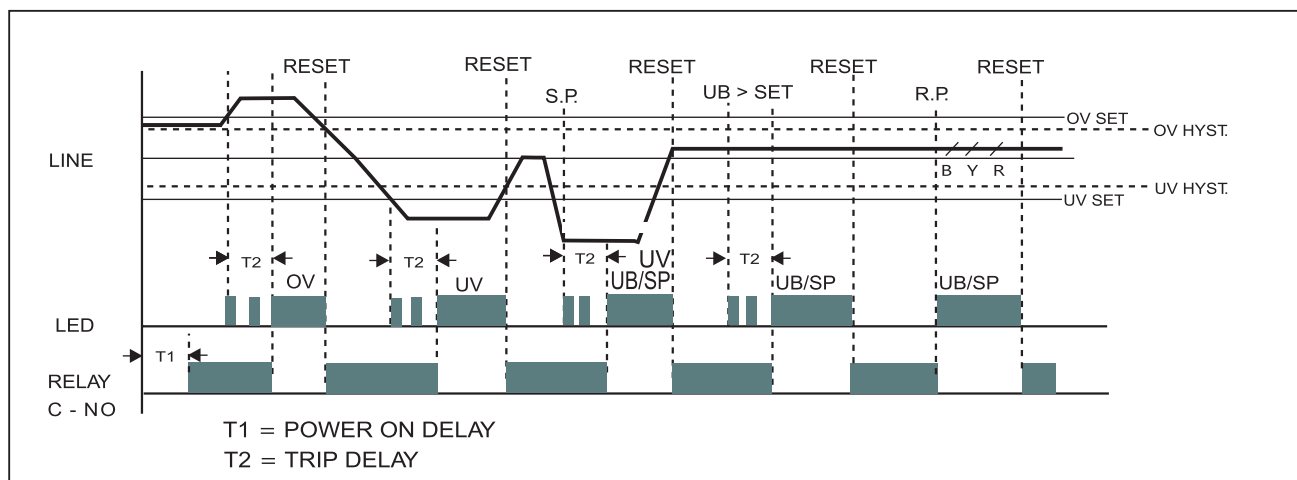


FRONT VIEW

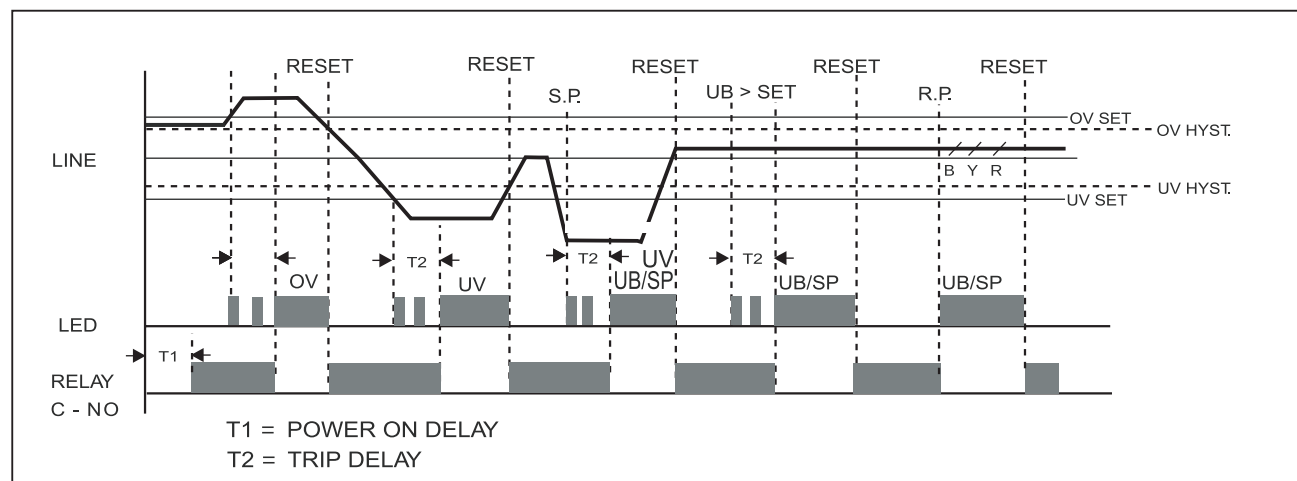
OPERATIONAL & TIMING DIAGRAM:
(FIG.3)

RELAY OPERATION SHOWN BELOW IS IN FAIL SAFE MODE -

F3 VSR5



F3 VSR4

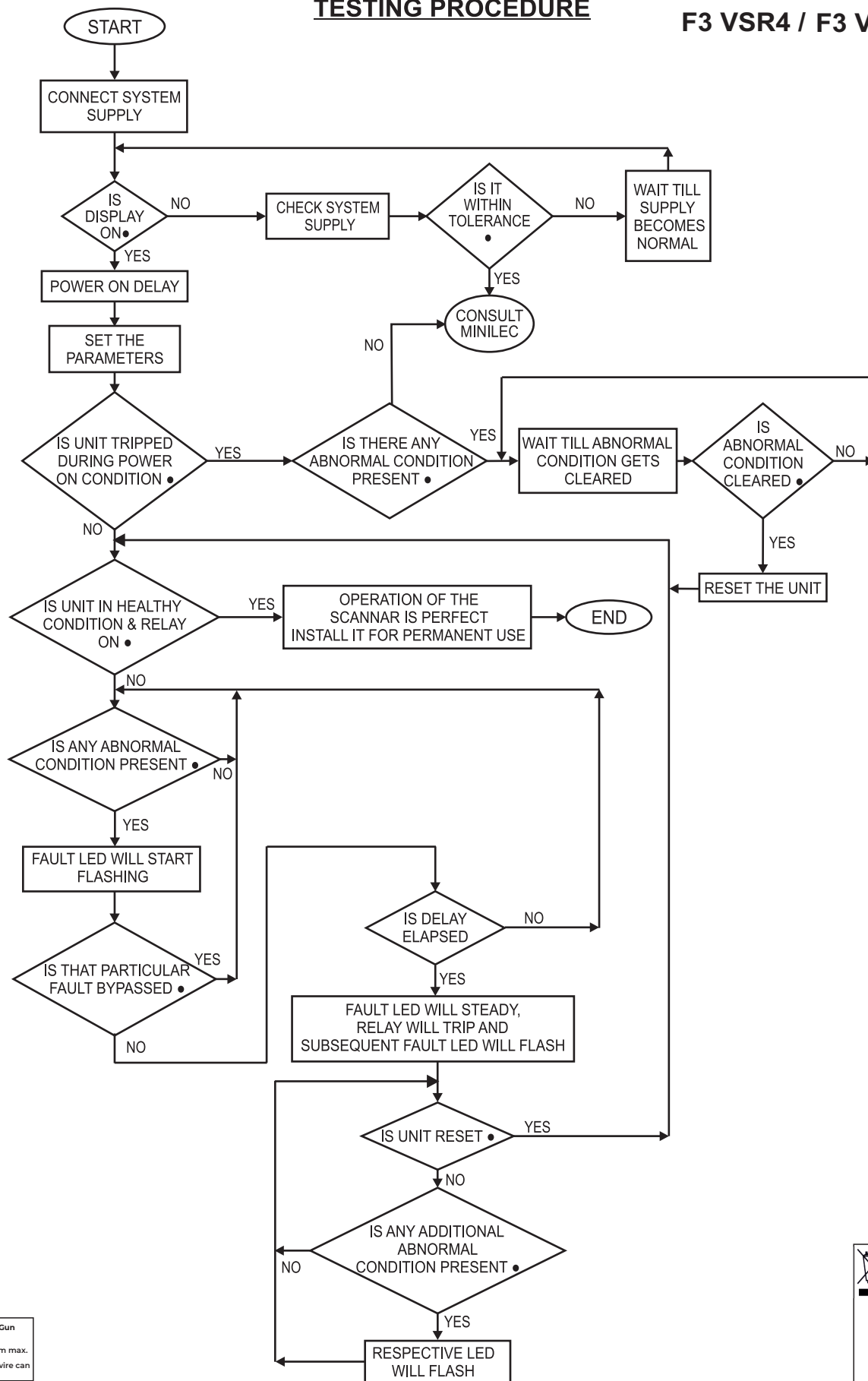


COMPLIANCE TO STANDARDS


	TEST	IES STD
1.	EFT Test of Auxiliary Supply	61000-4-4
2.	Surge Test of Auxiliary Supply	61000-4-5
3.	Voltage Interruption, Variation & Dip Test	61000-4-11
4.	ESD Test (Contact Discharge)	61000-4-2
	ESD Teast (Air Discharge)	61000-4-2
5.	H.V. Test (Dielectric Test)	60255-5
6.	Insulation Resistance Test	60255-5
7.	Dry Heat Test	60068-2-2
8.	Damp Heat test (Steady State)	60068-2-30
9.	Damp Heat test (cyclic test)	60068-2-78

TESTING PROCEDURE

F3 VSR4 / F3 VSR5



Instructions for Screw Gun torque adjustment -
 • Torque should be 1 Nm max.
 • Max 2.5 sq. mm size wire can be used.

 WEEE (Waste Electrical & Electronic Equipment) Regulations: After end of equipment life, recycle or disposal needs to be done as per guidelines or handover it to Ewaste processing authorized agencies. For more details contact us.

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

www.minilecgroup.com

Minilec (India) Pvt. Ltd.

Factory & Head Office: S. No. 1073/1-2-3, At Post: Pirangoot, Pune 412 111, India