



NEPTUNE

1 PHASE METER

OPERATIONAL MANUAL

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FEATURES

- State of Art Microcontroller Based Design
- Site Selectable CT ratio (Primary & Secondary) from front keypad
- Site Selectable PT ratio (Primary & Secondary) from front keypad
- True RMS measurement
- Password Protection
- Load Hour
- Auto Ranging
- Universal Aux. Supply
- Auto / Manual Scroll
- Super bright LED display for crystal clear long distance day light viewing
- Built in Transducer
- Compact Size

PARAMETERS

- Volts : L-L (Phase - Phase) / L-N (Phase - Neutral)

- Amps
- Power Factor
- KW
- KVA
- Frequency
- Load Hour Timer

MEASUREMENT PAGES



Page 1 : Displays Volts



Page 2 : Displays Amps



Page 3 : Displays Hz



Page 4 : Displays Power Factor



Page 5 : Displays Active Power



Page 6 : Displays Apparent Power

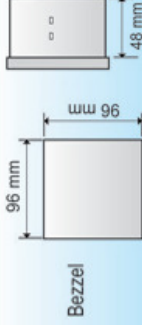


Page 7 : Load Hour Higher Page

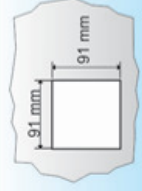


Page 8 : Load Hour Lower Page

MECHANICAL DIMENTION



Bezel



Panel Cutout



PROGRAMMING

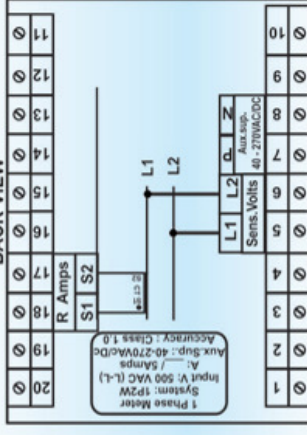
- 1) Press & keys together to enter Program Mode.
- 2) The Meter Shows Password Entry Page {PAS} Press Key the Displays Shows 0000. Enter the Password using Key, the Digit will shift rightwards Automatically every 5 seconds. After entering press key, if the password is correct, the unit will enter the program mode.
- 3) Now the meter shows CT primary {CTP}
- Use key to enter this menu or Press key to go to the next menu. After entering menu the Digits (which is flashing) can be edited by using key. The display Automatically shifts from one digit to another after short period.
- After entering CT primary press Key to save & exit from this menu. Now this display shows CTP.
- Using Key the other menus such as CT secondary {CIS}, PT primary {PIP}, PT secondary {PtS} and New password {nPAS} can be selected. After selecting particular menu press key to enter inside the menu & edit by repeating the above steps.
- 4) After setting the desired parameters leave the meter for 8 Sec. to come out out of the program mode.
- 5) During normal meter operation press the key for few seconds to change from Auto / Manual scrolling mode.

SPECIFICATIONS

- Input : 1 phase 2 wire
- Volts : Range 40 - 500V AC (L-L / L-N)
- Amps : 0.10 - 6.0 Amps
- Freq : Through Voltage sensing input
- Burden : 0.2 VA max. per input for Voltage & Current Signals
3 VA max. on Aux. Supply
- Display : 1 Line x 4 Digit
{0.56 Inches 7 Segment LED Display}
- Accuracy : Class 1.0 for Volt / Ammeter / KW / KVA
For Hz : 0.1 % of full scale
For PF : +/- 2 electrical degrees
- Resolution : 0.1V for Voltage
0.01 for Frequency
0.001 for PF
(Auto Ranging for other parameters)
- Computation : True RMS
- Frequency : 45 Hz - 55 Hz.
- Ambient : 0 - 50°C
- Humidity : < 95 % Non-condensing
- Weight : 280gms
- Dimensions : 96 X 96 X 48 mm (L x W x D)
- Panel Cutout : (90 °) mm X (90 °) mm
- Mounting : Flush Mounting with side clamps.

ELECTRICAL WIRING / CONNECTION DIAGRAM

BACK VIEW



TEST CERTIFICATE

Type : VIF METER

Accuracy : Class 1.0 for V/A / KW / KVA, 0.1% of FS for Hz

Accuracy TEST :

VOLTAGE		CURRENT		KW		KVA	
10%	100%	10%	100%	10%	100%	10%	100%
+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 1.0%
OK	OK	OK	OK	OK	OK	OK	OK
FREQUENCY							
10%	100%						
+/- 0.1%							
OK	OK						

POWER FACTOR							
10%	100%	10%	100%	10%	100%	10%	100%
+/- 2°	+/- 2°	OK	OK	OK	OK	OK	OK
OK	OK						

Note:

A) For Digital Readouts the error is computed in counts.

- Class 1.0 = $\pm 1\%$ of Full Scale + 1 count
- Class 0.5 = $\pm 0.5\%$ of Full Scale + 1 count

Tested By: Mr.RAVI

Date :

B.C. :



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3 PHASE METER

OPERATIONAL MANUAL



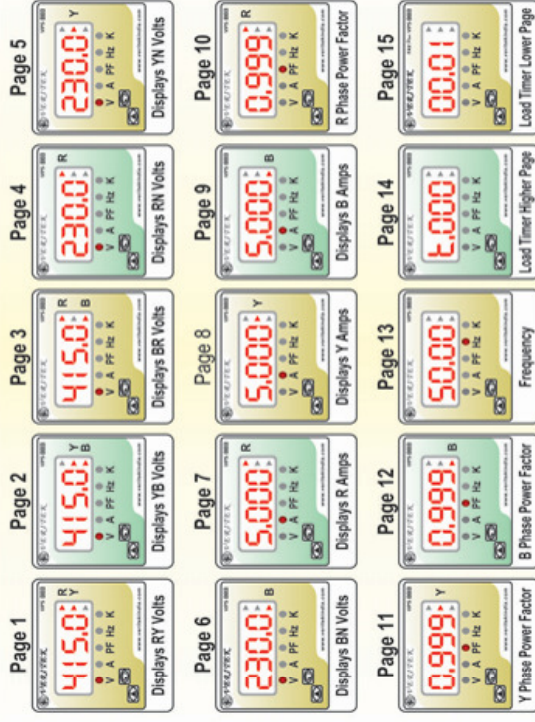
FEATURES

- State of Art Microcontroller Based Design
- Site Selectable CT ratio (Primary & Secondary) from front keypad
- Site Selectable PT ratio (Primary & Secondary) from front keypad
- True RMS measurement
- Password Protection
- Load Hour Timer
- Auto Ranging
- Auto / Manual Scroll
- Super bright LED display for crystal clear long distance day light viewing
- Built in Transducer
- Compact Size

PARAMETERS

- Volts
 - : RY (Phase-Phase)
 - : YB (Phase-Phase)
 - : BR (Phase-Phase)
 - : RN (Phase-Natural)
 - : YN (Phase-Natural)
 - : BN (Phase-Natural)
- Amps
 - : R Phase
 - : Y Phase
 - : B Phase
- Power Factor
 - : R Phase
 - : Y Phase
 - : B Phase
- Frequency
- Load Hour Timer

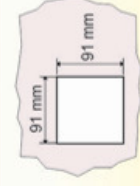
MEASUREMENT PAGES



MECHANICAL DIMENTION



Panel Cutout



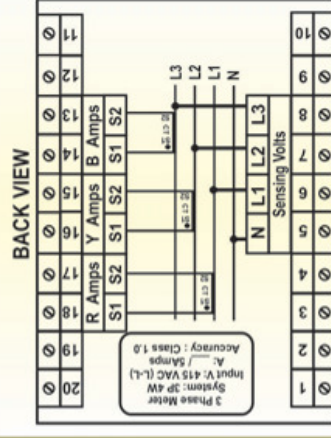
PROGRAMMING

- Press & keys together to enter Program Mode.
- The Meter Shows Password Entry Page (PAS Press Key the Displays Shows 0000. Enter the Password using Key, the Digit will shift rightwards Automatically every 5 seconds. After entering press key, if the password is correct, the unit will enter the program mode.
- Now the meter shows CT primary {CTP}
- Use key to enter this menu or Press key to go to the next menu. After entering menu the Digits (which is flashing) can be edited by using key. The display Automatically shifts from one digit to another after short period.
- After entering CT primary press Key to save & exit from this menu. Now this display shows CTP.
- Using Key the other menus such as CT secondary {CIS}, PT primary {PTP}, PT secondary {PTIS} and New password {nPAS} can be selected. After selecting particular menu press key to enter inside the menu & edit by repeating the above steps.
- After setting the desired parameters leave the meter for 8 Sec. to come out of the program mode.
- During normal meter operation press the key for few seconds to change from Auto / Manual scrolling mode.

SPECIFICATIONS

- Input : 3 Phase 4 Wire
- Volts : Range 40 - 500V AC
- Amps : 0.10 - 6.0 Amps
- Freq : Through Voltage sensing input
- Burden : 0.2 VA max. per input for Voltage & Current Signals
3 VA max. on Aux. Supply
- Display : 1 Line x 4 Digit
(0.56 Inches 7 Segment LED Display)
- Accuracy : Class 1.0 for Volt / Ammeter
For Hz : 0.1 % of full scale
For PF : +/- 2 electrical degrees
- Resolution : 0.1V for Voltage
0.01 for Frequency
0.001 for PF
(Auto Ranging for Amps)
- Computation : True RMS
- Frequency : 45 Hz - 55 Hz.
- Ambient : 0 - 50°C
- Humidity : < 95 % Non-condensing
- Weight : 280 gms
- Dimensions : 96 X 96 X 48 mm (L x W x D)
- Panel Cutout : (90°) mm X (90°) mm
- Mounting : Flush Mounting with side clamps.

ELECTRICAL WIRING/CONNECTION DIAGRAM



TEST CERTIFICATE

Type : VIF METER

Accuracy : Class 1.0 for V/A / KW / KVA, 0.1 % of FS for Hz Accuracy TEST :

Note:

A) For Digital Readouts the error is computed in counts.

– Class 1.0 = $\pm 1\%$ of Full Scale + 1 Count

– Class 0.5 = $\pm 0.5\%$ of Full Scale + 1 Count

Tested By Mr. RAVI
Date :
B.C.:

VOLTAGE	
10%	100%
+/- 1.0%	+/- 1.0%
OK	OK
CURRENT	
10%	100%
+/- 1.0%	+/- 1.0%
OK	OK
FREQUENCY	
100%	
+/- 0.1%	
OK	
POWER FACTOR	
10%	100%
+/- 2°	+/- 2°
OK	OK



NEPTUNE

FEATURES

- State of Art Microcontroller Based Design
- Site Selectable CT ratio (Primary & Secondary) from front keypad
- Site Selectable PT ratio (Primary & Secondary) from front keypad
- True RMS measurement
- Password Protection
- Load Hour Timer
- RPM (Generator Application)
- Auto Ranging
- Auto / Manual Scroll
- Super bright LED display for crystal clear long distance day light viewing
- Built in Transducer
- Compact Size

PARAMETERS

- Volts : R Y (Phase - Phase)
YB (Phase - Phase)
BR (Phase - Phase)
RN (Phase - Neutral)
YN (Phase - Neutral)
BN (Phase - Neutral)
- Amps : R Phase
Y Phase
B Phase
Average
- Power Factor : R Phase
Y Phase
B Phase
- Active Power (KW) : R Phase
Y Phase
B Phase
Total
- Apparent Power (KVA) : R Phase
Y Phase
B Phase
Total
- Frequency : System
- RPM
- Load Hour Timer

MEASUREMENT PAGES

Page 1

Displays Voltages (L-L)
L1-L2, L2-L3 & L3-L1

415
416
415

Page 2

Displays Voltages (L-N)
L1-N, L2-N & L3-N

241
242
241

Page 3

Displays Amps
L1, L2 & L3

7.36
6.37
7.36

Page 4

Displays Power Factor
L1, L2 & L3

0.98
0.97
0.98

Page 5

Displays Watts (KW)
L1, L2 & L3

7.36
6.37
7.36

Page 6

Displays Apparent Power (KVA) L1, L2 & L3

7.36
6.37
7.36

Page 7

Displays Average of Amps, Power Factor & Frequency

7.36
0.97
50.2

Page 8

Displays Watts (KW) Total

50.2

Page 9

Displays Apparent Power Total (KVA)

63.7

Page 10

Displays RPM (Generator application)

490

Page 11

Displays Load Hour

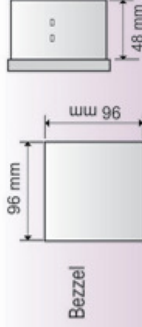
7.36

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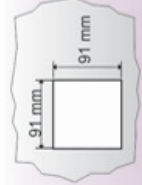


OPERATIONAL MANUAL

MECHANICAL DIMENTION



Panel Cutout



PROGRAMMING

- Press & keys together to enter Program Mode.
- The Meter Shows Password Entry Page (PAS 0000). Enter the Password using Key, the Digit will shift rightwards Automatically every 5 seconds. After entering press key, if the password is correct, the unit will enter the program mode.
- Now the meter shows CT primary {CTP}
- Use key to enter this menu or Press key to go to the next menu. After entering menu the Digits (which is flashing) can be edited by using key. The display Automatically shifts from one digit to another after short period.
- After entering CT primary press Key to save & exit from this menu. Now this display shows CTP.
- Using Key the other menus such as CT secondary (CTIS), PT primary (PTP), PT secondary (PTIS) and New password (nPAS) can be selected. After selecting particular menu press key to enter inside the menu & edit by repeating the above steps.
- After setting the desired parameters leave the meter for 8 Sec. to come out of the program mode.
- During normal meter operation press the key for few seconds to change from Auto / Manual scrolling mode.

SPECIFICATIONS

Input	: 3 Phase 4 Wire / 1 Phase 2 Wire
Volts	: Range 40 - 500V AC
Amps	: 0.10 - 6.0 Amps
Aux. Supply	: Range 40 - 270 V AC / DC
Freq	: Through R phase (Internally)
Burden	: 0.2 VA max. per input for Voltage & Current Signals 3 VA max. on Aux. Supply
Display	: 3 Line x 3 Digit {0.56 Inches 7 Segment LED Display}
Accuracy	: Class 1.0 for Volt / Ammeter/ KW/KVa For Hz : 0.1 % of full scale For PF : +/- 2 electrical degrees
Resolution	: 1V for Voltage 0.1 for Frequency Meter (Auto Ranging for other parameters)
Computation	: True RMS
Frequency	: 45 Hz - 55 Hz.
Ambient	: 0 - 50°C
Humidity	: < 95 % Non-condensing
Weight	: 280gms
Dimensions	: 96 X 96 X 48 mm (L x W x D)
Panel Cutout	: (90 ⁺¹ ₋₀)mm X (90 ⁺¹ ₋₀) mm
Mounting	: Flush Mounting with side clamps.

PAS 0000

CTP 005

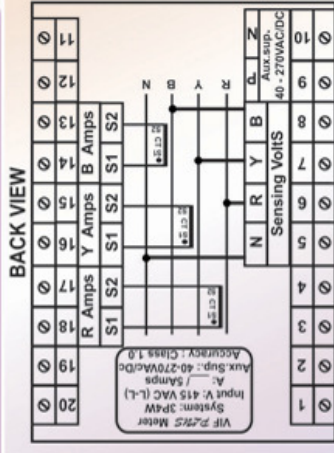
CTIS 005

CTP 000 230

CTIS 0 230

PAS 0000

ELECTRICAL WIRING / CONNECTION DIAGRAM



TEST CERTIFICATE

Type : VIF METER

Accuracy : Class 1.0 for V & A ; 0.1% of FS for Hz
Accuracy TEST:

VOLTAGE	CURRENT	WATTS	KVA
10% 100% +/- 1.0% +/- 1.0%	OK OK	10% 100% +/- 1.0% +/- 1.0%	10% 100% +/- 1.0% +/- 1.0%
OK OK	OK OK	OK OK	OK OK

POWER FACTOR	WATTS	KVA
10% 100% +/- 2° +/- 2°	10% 100% +/- 1.0% +/- 1.0%	10% 100% +/- 1.0% +/- 1.0%
OK OK	OK OK	OK OK

Note:

A) For Digital Readouts the error is computed in counts.

- Class 1.0 = $\pm 1\%$ of Full Scale + 1 count
- Class 0.5 = $\pm 0.5\%$ of Full Scale + 1 count

Tested By.: Mr.RAVI

Date :

B.C. :



NEPTUNE

POWER ANALYZER / MD CONTROLLER

OPERATIONAL MANUAL



PARAMETERS

▲ Volts : R Y (Phase - Phase)
Y B (Phase - Phase)
B R (Phase - Phase)
Average (Phase - Phase)
R N (Phase - Neutral)
Y N (Phase - Neutral)
B N (Phase - Neutral)
Average (Phase - Neutral)

▲ Amps

: R Phase
Y Phase
B Phase
Average

▲ Frequency

: System

▲ Power Factor

: R Phase
Y Phase
B Phase
System

▲ Active Power (KW)

: R Phase
Y Phase
B Phase
Total

▲ Reactive Power (KVAR)

: R Phase
Y Phase
B Phase
Total

▲ Apparent Power (KVA)

: Y Phase
B Phase
Total

▲ Phasor Angle (Phase wise)

Phase Angle (Phase wise)

Import Maximum Demand

Import Peak Maximum Demand

Export Maximum Demand

Export Peak Maximum Demand

Import Active Energy

Import Reactive - Inductive Energy

Import Reactive - Capacitive Energy

Import Apparent Energy

Export Active Energy

Export Reactive - Inductive Energy

Export Reactive - Capacitive Energy

Export Apparent Energy

Harmonics - Volts - Total (THD)

Harmonics - Amps - Total (THD)

Harmonics - Amps - Individual (upto 31st)

Harmonics - Volts - Individual (upto 31st)

Harmonics - Amps - Individual (upto 31st)

Load Hour Timer - Import

Load Hour Timer - Export

ON Hour Timer (for which the meter is on with / without load)

FEATURES

▲ State of Art Microcontroller Based Design

▲ 4 Line Ultra Bright Red LED display to show phase wise & System Parameters on same page

▲ Site Programmable CT & PT (Primary & Secondary)

▲ True RMS measurement

▲ Auto Scrolling Facility

▲ Password protection

▲ Eeprom retains Energy Parameters on power fail

▲ Computer Interface (RS 485)

▲ Maximum demand with Relay contact

▲ Harmonics (Individual & Total)

▲ Auto Ranging

▲ Universal Aux. Supply

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DISPLAY PAGES

PAGE	SYMBOL	PARAMETERS
1	V L-L	Volts (L-L) RY, YB, BR & Average
2	V L-N	Volts (L-N) RN, YN, BN & Average
3	PHI	Phasor Angle between Voltage in degrees
4	A	Amps R, Y, B & Total
5	Hz	Frequency
6	W	Watts (Active Power) R, Y, B & Total
7	Var	Var (Reactive Power) R, Y, B & Total
8	VA	VA (Apparent Power) R, Y, B & Total
9	PF	Power Factor R, Y, B & System
10	PHI	Phase Angle between volt & Amps in degrees
11	I	Import Maximum Demand
12	I	Import Peak Maximum Demand
13	E	Export Maximum Demand
14	E	Export Peak Maximum Demand
15	I	Import Active Energy
16	I	Import Reactive - Inductive Energy
17	I	Import Reactive - Capacitive Energy
18	I	Import Apparent Energy
19	E	Export Active Energy
20	E	Export Reactive - Inductive Energy
21	E	Export Reactive - Capacitive Energy
22	E	Export Apparent Energy
23	U	Harmonics - Voltage - THD
24	I	Harmonics - Current - THD
25	ON	ON Hour (duration for which the meter is ON with/without load)
26	I	Load Hour (Timer) - Import
27	I	Load Hour (Timer) - Export

SPECIFICATIONS

▲ Input	: 3 Phase 4 Wire
▲ Volts	: Range 10 - 500V
▲ Amps	: 0.015 - 6.0 Amps
▲ Freq	: Through Voltage Sensing Input
▲ Burden	: 0.2 VA max. per input for Voltage & Current Signals 3 VA max. on Aux. Supply
▲ Aux. Supply	: 40 - 270 VAC / DC
▲ Display	: 4 Line x 4 Digit {0.39 Inches 7 Segment LED Display}
▲ Accuracy	: Class 1.0 For Hz : 0.1 % of full scale For PF : +/- 2 electrical degrees
▲ Resolution	: 0.01 for Frequency Meter 0.1 for Energy (Auto Ranging for other parameters)
▲ Computation	: True RMS
▲ Frequency	: 45 Hz - 55 Hz.
▲ Ambient	: 0 - 50°C
▲ Humidity	: < 95 % Non-condensing
▲ Weight	: 280 gms
▲ Dimensions	: (D) 96 X 96 X 48 mm L x W x
▲ Panel Cutout	: (90 ⁺¹ -0) mm X (90 ⁺¹ -0) mm
▲ Mounting	: Flush Mounting with side clamps.

TEST CERTIFICATE

Type : POWER ANALYZER

Accuracy : Class 1.0 ; 0.1% of FS for Hz
Accuracy TEST :

VOLTAGE	POWER FACTOR
100%	100%
+/- 1.0%	+/- 2°
OK	OK
CURRENT	WATTS
100%	100%
+/- 1.0%	+/- 1.0%
OK	OK
FREQUENCY	KVA
100%	100%
+/- 0.1%	+/- 1.0%
OK	OK

Note:
A) For Digital Readouts the error is computed in counts.

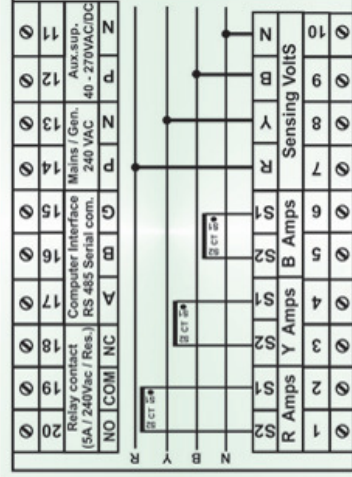
– Class 1.0 = ±1% of Full Scale + 1 count
– Class 0.5 = ± 0.5% of Full Scale + 1 count

Tested By: Mr.RAVI

Date : 26 / 04 / 2013

B.C. : 1613 / 01 / PA

ELECTRICAL WIRING / CONNECTION DIAGRAM



PROGRAMMING

1) Press key to enter Program Mode.

2) The Meter Shows Password Entry Page (USR PASS 0000).

Enter the Password using Key to increment count & Key to move to the next digit. After entering the password press key, if the pass word is correct, the unit will enter the program mode.

3) Following Programming menus are available

MENU	SYMBOL	DESCRIPTION
1	Rddr	Unit Address for RS485 communication.
2	Pt-r	To set PT Primary & Secondary Value
3	Ct-r	To set CT Primary & Secondary Value
4	Clr-i	To clear Import Energy
5	Clr-E	To clear Export Energy
6	nPRS	To set New Password
7	mdty	To select MD type
8	mdt	To set MD Integration time
9	md-i	To set MD Threshold for Import
10	md-E	To set MD Threshold for Export
11	CPdi	To clear Peak MD Import
12	CPdE	To clear Peak MD Export
13	brud	To set baud rate & odd / even parity
14	ConE	To Reset ON Timer
15	ClE i	To Reset Import Timer
16	ClE E	To Reset Export Timer
17	ScrL	To Select Auto / Manual Scroll

Select the Menu to be edited using Key to enter respective menu.

Menu 1: (Unit Address for RS485 communication) when Key is pressed the display shows (Addr 001).

The address can be edited using & Keys. After entering desired value press key to save value.

Menu 2: (To set PT Primary & Secondary) when Key is pressed the display shows Pt-r (Pt P 0001 & Pt S 0001).

The ratio can be edited using & Keys. After entering desired value press key to save value.

Menu 3: (To set CT Primary & Secondary) when Key is pressed the display shows Ct-r (Ct P 0001 & Ct S 0001).

The ratio can be edited using & Keys. After entering desired value press key to save value.

Menu 4: (To clear Import Energy) when Key is pressed the display shows CLrI. Press key once again, unit reconfirms by asking "ru SurE ? CLrI" By pressing Key once again the Import energies will get clear or press Key to come out.

Menu 9 : (To set MD threshold for Import) when Key is pressed the display shows "md-i". The threshold can be edited using & Keys. After entering desired value press key to save value. Once this threshold crosses Relay will Energise for 30 Seconds.

Menu 10 : (To set MD threshold for Export) when Key is pressed the display shows "md-E". The threshold can be edited using & Keys. After entering desired value press key to save value. Once this threshold crosses Relay will Energise for 30 Seconds.

Menu 11 : (To clear Peak MD Import) when Key is pressed the display shows CPdi. Press key once again, unit reconfirms by asking "ru SurE ? CPdi" By pressing Key once again the Peak MD import will get clear or press Key to come out.

Rddr
001

Pt P
0001
Pt S
0001

Pt P
0001
Ct S
0001

CLrI
ru
SurE
? CLrI

md-i
ru
SurE
? CPdE

brud
9600
PR
Even

ConE
ru
SurE

Menu 5: (To clear Export Energy) when Key is pressed the display shows CLrE. Press key once again, unit reconfirms by asking "ru SurE ? CLrE" By pressing Key once again the Import energies will get clear or press Key to come out.

Menu 6: (To set New Password) when Key is pressed the display shows "nPAS". The password can be edited using & Keys. After entering desired value press key to save value.

md type
Rct

Menu 7: (To select Maximum Demand (MD) Type) when Key is pressed the display shows "mdty". By Pressing Key ACT (Active power) or APP (Apparent Power) can be selected. After selecting desired type press key to save.

md
IntP
0025

Menu 8: (To set MD Integration time) when Key is pressed the display shows "mdIt". The time can be edited using & (time is in minutes). After entering desired value press key to save value.

CLrI
ru
SurE

Menu 15: (To Reset IMPORT TIMER) when Key is pressed the display shows CONt. Press key once again, unit reconfirms by asking "CLrI ru SurE" By pressing Key once again the IMPORT TIMER will get clear or press Key to come out.

CLrE
ru
SurE

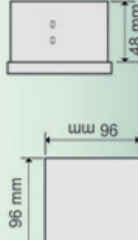
Menu 16: (To Reset EXPORT TIMER) when Key is pressed the display shows CONt. Press key once again, unit reconfirms by asking "CONt ru SurE" By pressing Key once again the EXPORT TIMER will get clear or press Key to come out.

RUJo
ScrL
d. S

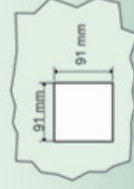
Menu 17: (To select Auto / Manual Scroll) when Key is pressed the display shows ScrL. You can select "dis" to disable Auto scroll or select "EN" to enable Auto scroll using & Keys.

Press Key to come out of Program MODE.

Bezel



MECHANICAL DIMENTION



Panel Cutout

