

NIPPEN Model UNO+ is a Automatic Power Factor Controller used for measurement and control of PF using reactive power compensation (kVAR based sensing). Capacitor banks are suitably switched ON and OFF automatically to provide necessary compensation. The sensitivity setting optimizes the switching speed. Intelligent switching algorithm executes the data processing at ultra high speed to achieve the target PF. This ensures protection of capacitor banks against abnormality in voltage, current and set value of capacitors whenever these are beyond the higher and lower threshold limits. Crisp bright 14.2mm 3 digit display in 3 rows give instantaneous values of electrical parameters. Correct compensation is also monitored and signaled when improper. They are also used in user friendly programming functions.

Apparent power (kVA),  
 Power factor (PF) (Acc. 1 Elect.)  
 Energy :- Active energy (kWh)(active import & active export energy)  
 (Acc.1.0%) Reactive energy (kVAh) (active capacitive & inductive energy) Apparent energy (kVAh)  
 Relay status for alarm.  
 THD for Voltage and current of all phases.(upto 31st harmonic for %A,%V for all model)  
 RTC( REAL TIME CLOCK)  
 Run Hours (min current >50mA) resettable & ON hours (lifetime counter)  
 Number of Interruptions  
 RS 485 serial port with standard MODBUS RTU protocol.

**RELEVANT STANDARDS**  
 EMC: IEC 61326  
 Fast Transient Burst Test (EFT): IEC 61000-4-4  
 Safety: IEC 61010-1-2001  
 Test of insulation properties; IEC 60060-1  
 Test of accuracy requirements: IEC 62052-11  
 Test of electrical requirements: IEC 62052-1

**ENVIRONMENT**  
 Enclosure: IP-52(Front)  
 IP-20 (Terminal back)  
 Temperature:  
 Ambient temperature: -10° C to 55° C  
 Storage temperature: -10° C to 70° C  
 Relative Humidity: <95%, Non-condensing

Net Weight: 450 gm(approx)  
 Gross Weight: 500 gm(approx)

4

**FEATURES**  
 Up to 6/12 stages with stage indication.  
 Automatic/Manual Mode selections.  
 Target PF Programmable.  
 Password Protection for set values.  
 Individual Capacitor mode can be programmed by ON-OFF-AUTO.  
 Ct primary direct setting from 5 A9999 A  
 Output contact rating 5A/230V.  
 Ct polarity auto detecting.  
 Since kVAR is sensed, the instrument works at very low current (> 5% load).  
 b)Control Function: PF, sensitivity rated steps, switching program, reconnecting time, discharge time & reaction time.

Manual and Auto scrolling facility.  
 Aux. Voltage 230/110VAC or 80-270 V AC/DC .  
 User configurable (Editable) Password.  
**UNIQUE FEATURES**  
 True RMS measurement & 4 quadrant operation.  
 Simultaneous sampling of volts & amps using internal ASIC.  
 0.5 % accuracy in Multifunction Metering. .  
 Communication with PCs, PLCs, DCS through an optional RS485 Serial Port  
 (MODBUS RTU)  
 Harmonics measurement for voltage and currents  
 THD% Harmonics.  
 (up to 31st Harmonic)  
 Two relay output for alarm & trip , VLN,VLL,ILN,HZ,, kW,kVA and PF on site  
 programmable with UNDER / OVER & TIME DELAY selection.

2

PAGEWISE DETAILS				
S.No	Display	LED'S "ON"	Description	Model
1	V <sub>LN</sub>	● V <sub>LN</sub>	Voltage line to Neutral	ALL
2	V <sub>LL</sub>	● V <sub>LL</sub>	Voltage line to line	ALL
3	A	● A	Line current	ALL
4	F P E	● Hz	Frequency	ALL
5	W	● W	Active power	ALL
6	V A r	● VAr	Reactive power	ALL
7	V A	● VA	Apparent power	ALL
8	P.F.	● P.F.	Power Factor of system	ALL
9	V <sub>LN</sub> THD %	● V <sub>LN</sub> THD%	% Harmonics for Voltage	ALL
10	A THD %	● A THD%	% Harmonics for Current	ALL
11	T		Real Time Clock	ALL
12	A I r		Alarms status	ALL
13	RUG	● VLN	Average voltage line to Neutral	ALL
14	RUG	● VLL	Average voltage Phase to Phase	ALL
15	RUG	●	Average Current	ALL
16	tQt	● W	Total Active Power ie W, kW etc	ALL
17	tQt	● kVar	Total Reactive Power VAr kVar etc	ALL
18	tQt	● kVA	Total Apparent Power VA, kVA etc	ALL
19	RUG	● P.F	Average PF	ALL
20	r	● VLN	Run hours (re-settable)	ALL
21	L	●	Load hours (Life Time Counter)	ALL

5

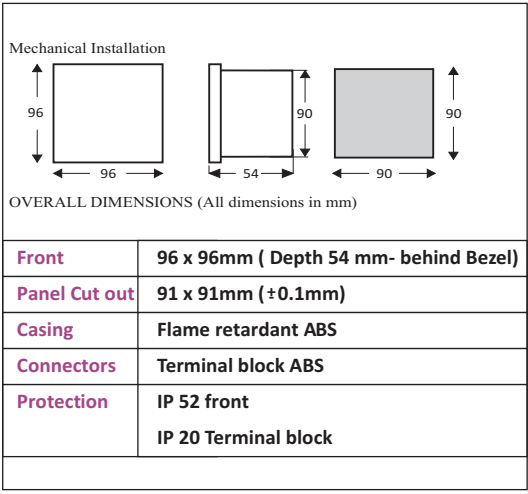
S.No	Display	LED'S "ON"	Description	Model
23	R	● R	Total Active Energy (kwh) consumed (EB)	ALL
24	E	● E	Energy Export (EB)	ALL
25	J	● J	Energy Import (EB)	ALL
26	r	● r	Reactive Energy Total (Algebraic Sum) (EB)	ALL
27	C	● C	Capacitive reactive Energy (EB)	ALL
28	L	● L	Inductive reactive Energy (EB)	ALL
29	P	● P	Apparent Energy (EB) KVAh	ALL

**FRONT PANEL**  
 > The particular parameters displayed are indicated by a glowing LED on the left hand side of the front panel  
 > Energy is indicated by 2LEDs viz. Respective LEDs representing active, reactive and apparent.  
**NOTE**  
 1) All voltage readings are multiplied by the PT RATIO  
 2) All current readings are multiplied by CT RATIO  
 3) All power and energy are multiplied by CT.PT RATIO (PT RATIO X CT RATIO)  
 >K (LED) in ON condition - indicates reading in KILO  
 >M (LED) in ON condition - indicates reading in MEGA  
 >K & M (LED) in ON condition - indicates reading in GIGA  
 Applicable For All parameter.

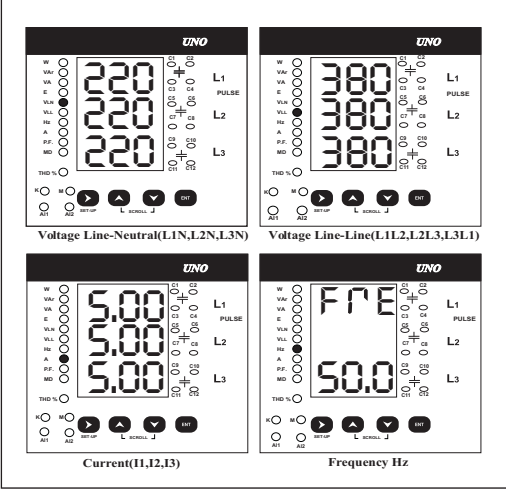
Monitors export & import of energy for both EB & DG  
 Auto –scaling of kilo, mega & giga decimal point.  
 Pulse 1000pulses/kWh.  
 The installation type, CT Ratios and PT Ratios, Meter ID, Password & RTC are site selectable. The UNO series has the communication port i.e. RS-485 for connection to SCADA or EMS or BMS system. UNO series meters are a versatile meter with all the features needed to implement a robust electrical load management system.

**PARAMETER DISPLAYED**  
 Voltage :- 3 phase Line –neutral voltage(VLN)  
 (Acc. 0.5%) 3 phase Line –line voltage (VLL)  
 Average voltage (VLN & VLL) VL1N + VL2N + VL3N , VL1VL2 + VL2VL3 + VL1VL3  
 Current :- 3 phase Current (IR,IY,IB)  
 (Acc. 0.5%) Average current I1 + I2 + I3  
 Frequency :- Hz (Acc. 0.2%)  
 Power :- Active power (kW) &  
 (Acc. 1.0%) Reactive power (kVAR),

3



6



## Set-up parameter screen

### Key Description -

- Key- To go to set-up menu & Exit.
- Key- To move the cursor from left to right in display.
- Key- To scroll the alpha numeric value from 0-9 in display.
- Key- To scroll the alpha numeric value from 9-0 in display.
- Key- To complete the operation, once have done enter.

Press key, until the password screen is displayed.

Password - **PASS-0000** ENTER your stored password or press enter twice, and the **GEN** screen will appear.

**CT primary- CTP-0005** Enter once, CT primary value to be set here.  
Set CT primary Up to 9999 by using Key & scrolling the Value by using keys & to set the value. Then press enter once, the CT primary screen appears and it will store the same. On pressing up key once, the CT secondary screen will appear.

**CT secondary- CTS-0005** Enter once, CT secondary value to be set here.  
Set CT secondary Up to 0005 by using Key & scrolling the Value by using keys & to set the value. (Default value 0005 is set by factory) Then press enter once, the CT secondary screen appears, and it will store the same. On pressing up key once, the PT primary screen will appear.

### EXAMPLE FOR CT RATIO

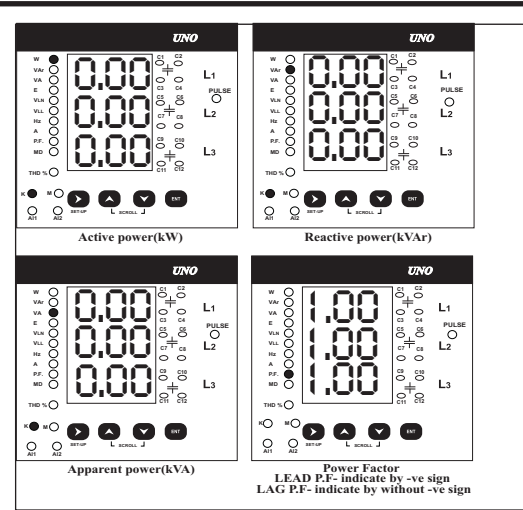
- 100/5A  
CT primary value set as - **CTP-0100**  
CT secondary value set as - **CTS-0005**

**PT primary- PTP-0220** Enter once, PT primary value to be set here.  
Set PT primary Up to 9999 by using Key & scrolling the Value by using keys & to set the value. Then press enter once, So the PT primary screen will appear, and it will store the same. On pressing up key once, the PT secondary screen will appear.

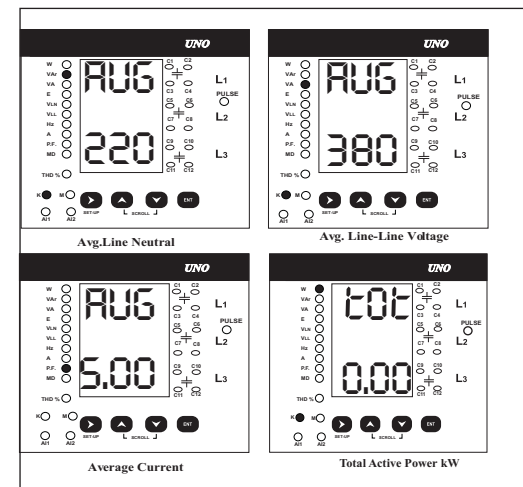
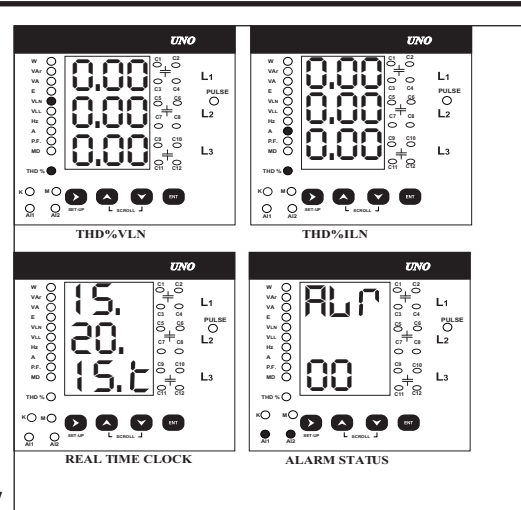
**PT secondary- Pts-0220** Enter once, PT secondary value to be set here.  
Set PT secondary Up to 0220 by using Key & scrolling the Value by using keys & to set the value. (Default value 0220 is set by factory) Then press enter once, the PT secondary screen will appear, & it will store the same. Pressing up key once, the **RTC** screen will appear.

### EXAMPLE FOR PT RATIO

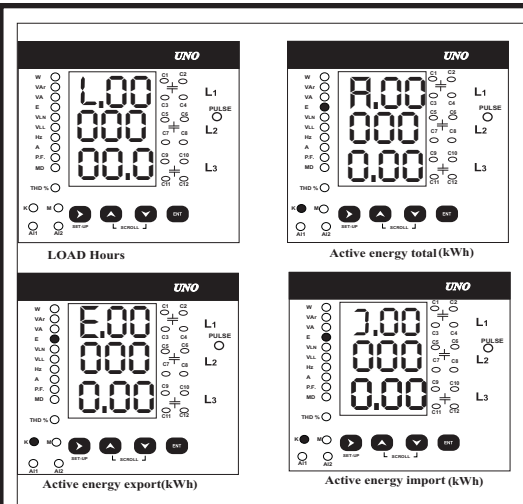
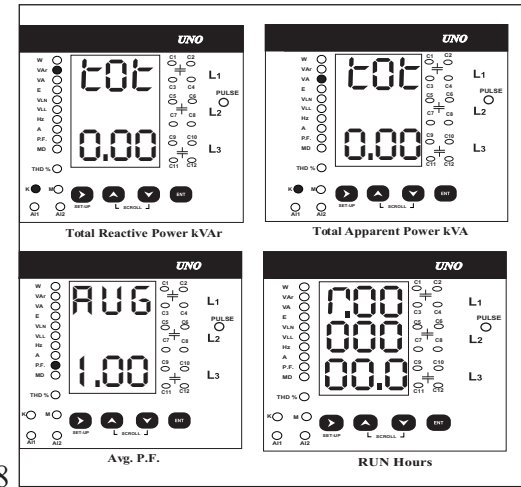
- 1.1/2.2/3.3/6.6KV/110V  
PT primary value set as - **PTP-1100**  
PT secondary value set as - **PTS-0110**
- 11/22/33/66KV/110V  
PT primary value set as - **PTP-1100**  
PT secondary value set as - **PTS-0011**



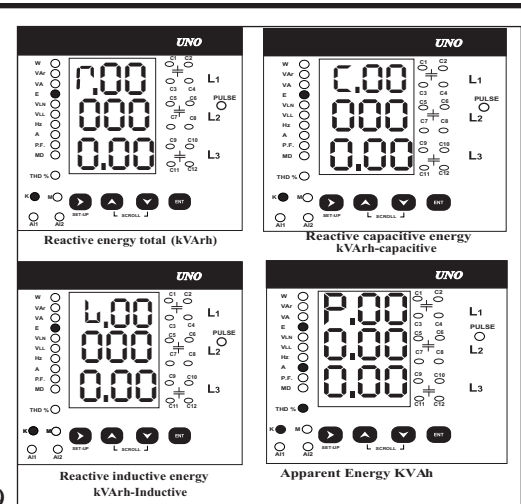
7

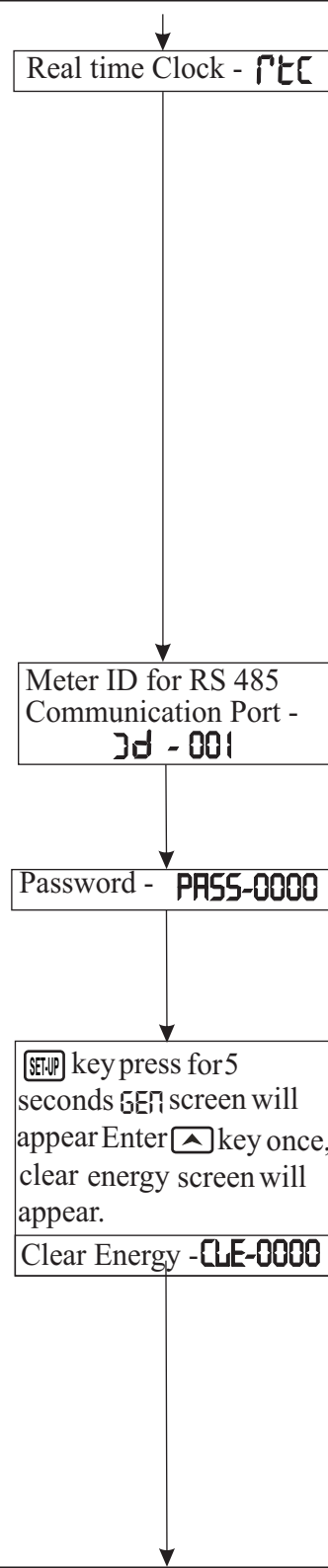


8



9





On pressing enter once, the Hour **HR** screen will appear. Enter Hours by using **SETUP** Key & scrolling the alpha numeric Value keys **▲** & **▼** to set the hours Time format 24.00.

On pressing enter once, the Minutes screen will appear. Enter keys **▲** & **▼** to set the Minutes.

Minutes by using **SETUP** Key & scrolling the alpha numeric Value using keys **▲** & **▼** to set the Minutes.

On pressing enter once, the seconds **SEC** screen will appear. Enter seconds by using **SETUP** Key & scrolling the alpha numeric Value using keys **▲** & **▼** to set the seconds.

On pressing enter once, the Year **YY** screen will appear. Enter Years by using **SETUP** Key & scrolling the alpha numeric Value using keys **▲** & **▼** to set the Year.

On pressing enter once, the Day **DAY** screen will appear. Enter the Day scrolling the alpha numeric Value using keys **▲** & **▼** to set the Day.

On pressing enter once, the **JD** screen will appear, Enter the number of Meter ID by using **SETUP** Key & scrolling the Value using keys **▲** & **▼** to set the value. Then press enter once, The **JD** screen to appear & it will store the same. On pressing **▲** up key once, the **PASS** screen will appear.

This screen is used to set the desired password for meter protection, so no one can change the setting of meter. Enter the value by using **SETUP** Key & scrolling the Value using keys **▲** & **▼** to set the value.

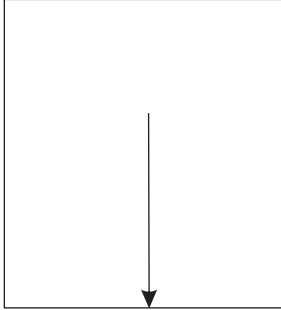
(Default value 0000 is set by factory) Then press enter once, the **SEEN** SCREEN to appear. Now all settings have been done. Now Press the Setup key to view the all parameters in main display.

Enter once, **(A.E)** Active Total Energy screen will appear, to clear the energy enter twice.

Enter up **▲** once, **(E.E)** Export Energy screen will appear, to clear energy enter twice.

Enter up **▲** once, **(I.E)** Active Import Energy screen will appear, to clear the energy enter twice.

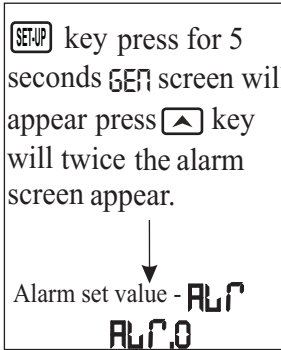
Enter up **▲** once, **(R.E)** Total Reactive Energy screen will appear, clear the energy enter twice.



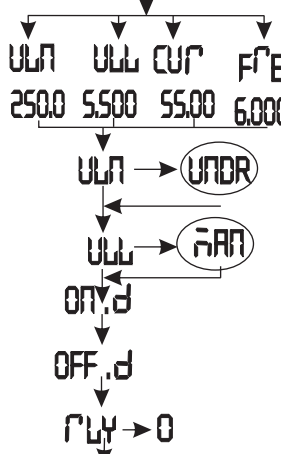
Enter up **▲** once, **(C.E)** Capacitive Energy screen will appear, to clear the energy enter twice.

Enter up **▲** once, **(L.E)** Inductive Energy screen will appear, to clear the energy enter twice.

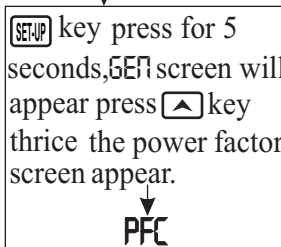
Enter up **▲** once, **(P.E)** Apparent Energy screen will display appear, to clear the energy enter twice. To go to main press **SETUP** key thrice.



This screen is used to set the limit configuration. Four different types of limit configurations can be selected voltage, current, frequency, Pressing enter once, the voltage **(ULN)** screen will appear. Set the voltage value by using **SETUP** Key & scrolling the Value using keys **▲** & **▼** to set the value. On pressing enter once. This Over voltage **(ULL)** screen will appear. If under voltage is required, scroll the **▲** key once, then press enter, to display the screen **(CUR)** This auto screen is used to operate the relay in automatic mode or by scrolling **▲** key



to once, time operate the relay in manual **(F.FE)** mode. Pressing enter the **(ON.D)** on delay screen to trip the relay appears. Here one can set the time of delay to ON the relay by scrolling the keys **▲** & **▼** Then press enter once, the **(OFF.D)** off time delay screen for tripping the relay appear. Here one can set the time of delay to OFF the relay by scrolling the keys **▲** & **▼**. On pressing enter once relay number **0** will appear on the screen. This screen is to select the relay, which is going to trip the alarm. If there is no used need to operate the relay, select the no **(N.C)** connection to relay by scrolling the keys **▲** & **▼** Pressing enter once, **ALRV** screen will appear.



On pressing **▲** up key once, **PF** screen will appear here. Here we can set the desired power factor value. Default setting is 1.000 by using **▲** and **▼** keys it has been change to 0.999 By using **▲** and **▼** keys it has been set to Lag or Lead Now the target PF **▼** will be stored

On pressing **▲** up key once, **NO.OF RLY** screen will appear here. Here we can set the no. of relay to or the capacitor.

On pressing **▲** up key once, **RE.CON** screen will appear here. Reconnection time by default it is adjust for 30 secs. This is the minimum time required for the capacitors to fully changed



CAP-VAL

CAP-MOD

AUTO-SEN

discharged when power 'ON'

The reconnection time can be edited and put in the memory by pressing 'ENT'

On pressing  up key once, CAP-VAL screen will appear here. Here we can see the present kVAR value of capacitor by scrolling up  key.



On pressing  up key once, CAP-MOD screen will appear here. Here 3 modes to be defined.

Step Mode 1. Here 3 mode are to be defined

2=Auto

1= Forced 'ON'

0=forced 'OFF'

On pressing  up key once, AUTO-SEN screen will appear here. press  key once, it goes to auto sensing mode to sense the capacitor.

Auto sensitive(Operating in automatic mode ).It senses the kVAR of each CAPs for its rating.

A blinks.The stage indicators will be ON in sequence.It feeds the kVAR value of each CAPs in the STEP set the settings automatically.

### TEST CERTIFICATE

S.No.	TEST	TEST CONDITION			STATUS	
1	Insulation	a)Voltage Circuit and Earth b)Current Circuit and Earth			Complied	
2	H V Test	2kV for 1min a)Voltage Circuit and Earth b)Current Circuit and Earth			Complied	
3	Accuracy Test	Parameter	100%	50%	5%	Complied
		PF	Less than 1elect.			Complied
		kW	Within 0.5%			Complied
		kVA	Within 0.5%			Complied
		V	Within 0.5%			Complied
		A	Within 0.5%			Complied
F	Less than 0.1Hz			Complied		

Ref Calibration standards

1. MTE SWS 1.3 class0.1

S.No. 26664


S.No.22904

2. YEW 2533E 31 class 0.1

S No 26BU006513

>12 months WARRANTY

Tested by :.....

Approved by :  .....

Date.....