DUAL KWH

FEATURES

State of Art Microcontroller Based Design

4 Line 4 Digit ultra bright LED display

Site programmable CT ratio(Primary & Secondary)

Site programmable PT ratio (Primary & Secondary)

True RMS measurement

Password Protection

RS 485 Computer Interface

Auto Ranging

Universal Aux. Supply

MECHANICAL DIMENSION

Bezzel

96 mm

96 mm

55 mm

Panel Cutout

91 mm

91 mm

PARAMETERS

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

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

Load Hour - Import

Load Hour - Export

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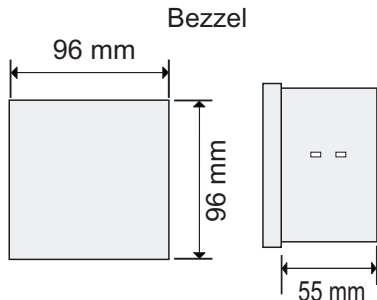
DISPLAY PAGES

Page	Symbol	PARAMETERS
1	V L-L ●	Voltage (L-L) RY, YB, BR & Average
2	V L-N ●	Voltage (L-N) RN, YN, BN & Average
3	PHr □	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	PF ●	Power Factor R, Y, B & System
8	I RE	Import Active Energy
9	IrLE	Import Reactive - Inductive Energy
10	IrCE	Import Reactive - Capacitive Energy
11	I RPE	Import Apparent Energy
12	ERE	Export Active Energy
13	ErLE	Export Reactive - Inductive Energy
14	ErCE	Export Reactive - Capacitive Energy
15	ERPE	Export Apparent Energy
16	Onht	ON Hour (duration for which the meter is ON with /without load)
17	LdtI	Load Hour (timer) - Import
18	LdtE	Load Hour (timer) - Export

Electrical Wiring / Connection Diagram
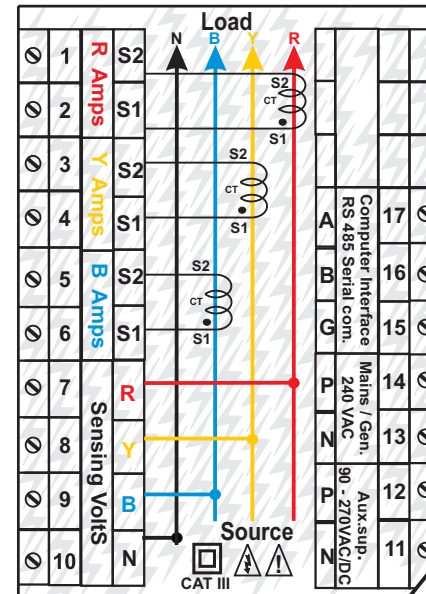
SPECIFICATIONS

Input	:	3 phase 4 wire / 1 phase 2 wire
Volts	:	Range 10-500V AC L-L
Amps	:	0.015 to 6.00Amp AC
Burden	:	0.2 VA max. per phase for Voltage & Current Inputs 3 VA max. on Aux. Supply
Aux.Supply	:	90 - 270 VAC / DC
Display	:	4 Line x 4 Digit {0.39 Inches 7 Segment LED Display}
Computation	:	True RMS
Frequency	:	45 Hz - 65 Hz.
Ambient	:	-10 to 55°C
Storage	:	-20 to 75°C
Humidity	:	< 95 % Non-condensing
Weight	:	280gms
Dimensions	:	96 X 96 X 55 mm (L x W x D)
Panel Cutout	:	(90^{+1}_{-0})mm X (90^{+1}_{-0}) mm
Mounting	:	Flush Mounting with side clamps.

Measurement range :

Volts	:	10 - 500VAC L-L
Amp	:	0.015A - 6.00Amp AC
Display update	:	1Sec
Hz	:	45.0 to 65.0HZ
Resolution	:	0.1 for Energy , Auto ranging for other parameters.
Accuracy	:	$\pm$0.5% of full scale for voltage, current, power,power factor.
Frquency	:	$\pm$0.1% for Hz
Energy	:	class 1.0

PROGRAMMING

1) Press **Prog** 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 **Prog** key, if the pass word is correct, the unit will enter the program mode.
Default factory set password is 2000

```
USr
PASS
0000
```

3) Following Programming menus are available

Menu	Symbol	Description
1	Addr	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	CLrE	To clear Export Energy
6	nPAS	To set New Password
7	bAUd	To set baud rate & odd / even parity
8	COnt	To Reset ON Timer
9	CLt I	To Reset Import Timer
10	CLtE	To Reset Export Timer
11	SCrL	To Select Auto / Manual Scroll

Select the Menu to be edited using **▶/▼** **▲** Keys and press **Prog** Key to enter respective menu.

Menu 1:**(Unit Address for RS485 communication)**
when **Prog** Key is pressed the display shows {Addr 001}.
The address can be edited using **▲** & **▶/▼** Keys. After entering desired value press **Prog** key to save value.

```
Addr
001
```

Menu 2:**(To set PT Primary & Secondary)**
when **Prog** Key is pressed the display shows Pt-r {Pt P 0001 & Pt S 0001}.
The value can be edited usin **▲** **▶/▼** Keys. After entering desired value press **Prog** key to save value.
For eg. If PT ratio is 22KV / 110V you can enter value as 0200 0001.

```
Pt P
0001
Pt S
0001
```

Menu 3:**(To set CT Primary & Secondary)**
when **Prog** Key is pressed the display shows Ct-r {Ct P 0001 & Ct S 0001}.
The value can be edited usin **▲** **▶/▼** Keys. After entering desired value press **Prog** key to save value.

```
Ct P
0001
Ct S
0001
```

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

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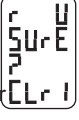
Menu 5: **(To clear Export Energy)**
when **Prog** Key is pressed the display shows CLrE. Press **Prog** key once again, unit reconfirms by asking "ru SUrE ? CLrE" By pressing **Prog** Key once again the Import energies will get clear or press **ESC** Key to come out.

```
r U
SUrE
?
CLrE
```
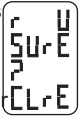
Menu 6:**(To set New Password)**
when **Prog** Key is pressed the display shows " CHG PASS 0000 ".
The password can be edited using **▲** & **▶/▼** Keys. After entering desired value press **Prog** key to save value.

```
CHG
PASS
0000
```

Menu 7 : **(To set the Baud Rate & Parity)**
when **Prog** Key is pressed the display shows "baud". The Baud Rate for RS485 communication can be set using **▲** key. Using **▶/▼** key you can select Baud / Parity menu. The Even / odd / none parity can be set using **▲** Key.
After entering desired value press **Prog** key to save value. Maximum Baud rate 9600.

```
bAUd
9600
PAr
EuEn
```

Menu 8: **(To Reset ON TIMER)**
when **Prog** Key is pressed the display shows COnt. Press **Prog** key once again, unit reconfirms by asking "COnt ru SurE " By pressing **Prog** Key once again the ON TIMER will get clear or press **ESC** Key to come out.

```
COnt
ru
SurE
```

Menu 9: **(To Reset IMPORT TIMER)**
when **Prog** Key is pressed the display shows CLtI. Press **Prog** key once again, unit reconfirms by asking "CLtI ru SurE " By pressing **Prog** Key once again the IMPORT TIMER will get clear or press **ESC** Key to come out.

```
CLt I
ru
Suri
```
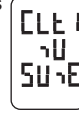
Menu 10: **(To Reset EXPORT TIMER)**
when **Prog** key is pressed the display shows CLtE. Press **Prog** key once again, unit reconfirms by asking "CLtE ru SurE " By pressing **Prog** Key once again the EXPORT TIMER will get clear or press **ESC** Key to come out.

```
CLtE
ru
SurE
```

Menu 11: **(To select Auto / Manual Scroll)**
when **Prog** key is pressed the display shows ScrL.
You can select "dIS" to disable Auto scroll or select "EN" to enable Auto scroll using **▲** & **▶/▼** Keys.

```
Auto
SCrL
diS
```

Press **ESC** Key to come out of Program MODE.

Notes :

1) 230VAC input has to be given across terminal marked M/G to put the meter in Export/ DG mode for dual source operators.
2) Ensure S1,S2,CT connectors & R,Y,B sequence is correct. In case S1,S2 is reverse watt reading will appear with a negative sign.
3) When M/G input is available watt readings will become negative to indicate now DG/ Export mode is active.
4) The meter can also be put in DG/ Export mode by sending a broadcast command on RS485 Bus (see protocal details).
In this case 230VAC need not be applied on the M/G terminals.

Safety Precautions :

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.
If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.
If there is physical damage to the unit then do not use it.
Read complete instruction prior to installation and operation of the unit.

Wiring Guidelines :

1) To Prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement.
2) Wiring shall be done strictly according to the terminal layout with shortest connection. Confirm that all connection are correct.

Caution :

1) To ensure the safe operation of unit , check the wiring and connections.