

PROGRAMMING GUIDE – POWER NAVIGATOR / eNAVIGATOR with TOD

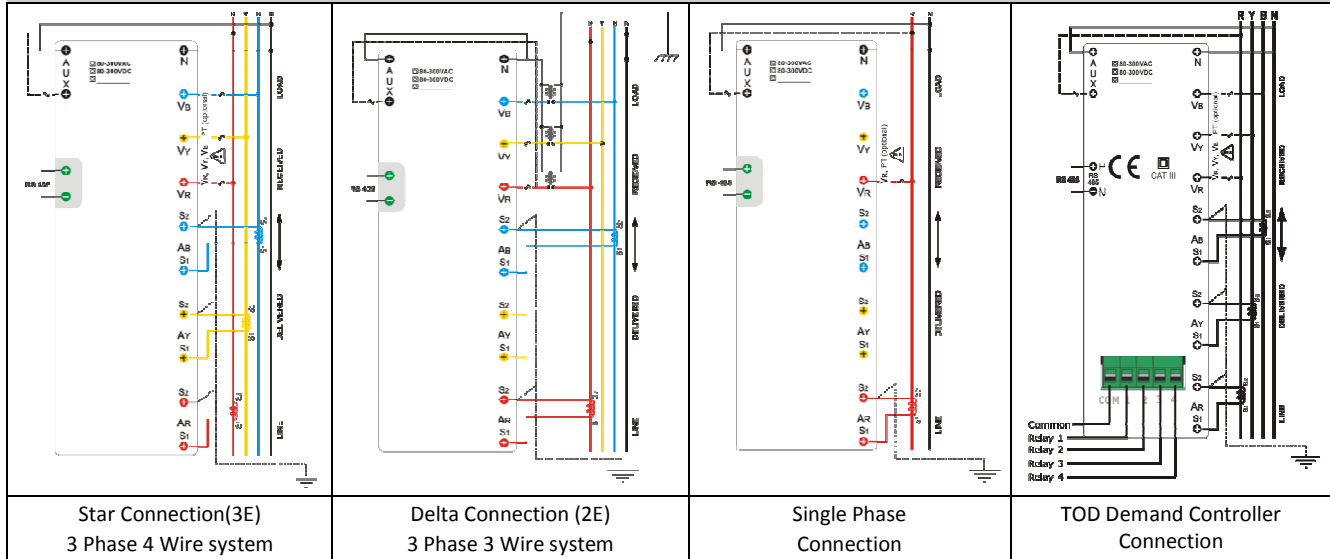
1. FEATURES

- STAR (Wye)/ DELTA/1 Phase Programmable.
- Universal Auxiliary (80 - 300 VAC / DC) supply.
- PT ratio / CT ratio programmable including CT Secondary.
- 4 row 6 digit display with Auto scaling & Auto Scrolling. (EN DMC TOD)
- 7 digit 4 Row Graphical LCD display with Auto scaling & Auto Scrolling. (PN DMC TOD)
- Dynamic communication (user selectable parameter sequence of register map)
- Two Energy readings in single page.
- User configurable (Editable) password.
- Clearance & Creepage distance meets IEC 61010 standard.
- Compact size and Weight.
- Universal Voltage Input (50 - 550 VAC) and Current Secondary (0.05A to 6A).
- "OLD" Register for storing Cleared Energy and Load Hours.

2. UNIQUE FEATURES

- True RMS measurements.
- Simultaneous sampling of volts & amps
- 6 demand & 6 Energy TOD option.
- Max Demand occurrences for each demand TOD's
- Upgradable to higher versions
- Auto scaling of Kilo,Mega,Giga & decimal point
- High/Low VLL,VLn,A,HZ,W,VA,VAR,PF value storage
- Data memory optional(1MB & 8 MB)
- Individual harmonics (Upto 31 st level)
- THD Measurement
- 2 Programmable Parameters (only for PN series)
- Phase wise Voltage and Current waveforms (only for PN series)

3. WIRING DIAGRAM



4. KEY FUNCTIONS

Key	In SET (Programming) mode	In RUN (Measurement) mode
RIGHT/Energy	To select the value and to accept the value	To scroll energy pages to look at different parameters.
UP/Power	To edit the value/system type up-ward in edit mode and scroll through the parameters.	To scroll power pages to look at different parameters.
DOWN/Basic	To edit the value/system type down-ward in edit mode and scroll through the parameters.	To scroll basic pages to look at different parameters
OPTION	Jumps to save Page	To scroll the option page to look at the demand slots an occurrences of High & Low limits

5. LED INDICATIONS: LED Indication for eNavigator and Display/LED Indication for Power Navigator

LED status / Display status		Meaning	LED status	Meaning
K – ON	K	Kilo	I/O 1 – ON	Relay status Safe Limit (low limit)/default / step1
M – ON	M	Mega	I/O 2 – ON	Relay status Forecast demand >Hi.L1 / step2
K & M – ON	G	Giga	I/O 3 – ON	Relay status Rising demand >Hi.L2 / step3
K & M – OFF	without K, M & G	Direct reading	I/O 4 – ON	Relay status Rising demand >Hi.L1 / step4
Minus (-) ON	L	Lag/Delivered	⏏/T1 – Blink	Pulse LED
Minus (-) OFF	C	Lead	📶 – ON	Communication ON

6. DISPLAY OF PARAMETERS : Display of Parameters for eNavigator/Power Navigator

DISPLAY	Meaning	DISPLAY	Meaning	DISPLAY	Meaning
LL/LL	Voltage line to line	Athd	Amps THD	Intcr	Number of Interrupts
Ln/Ln	Voltage line to Neutral	Athd03	Amps THD Phase-wise up to 31st level	Uethd03	Voltage THD Phase-wise up to 31st level
rY/ry	Voltage RY Phase	F.FACT.V	K-Factor V	On.Hr	On Hour
yB/yb	Voltage YB Phase	F.FACT.A	K-Factor A	0	Old
br/br	Voltage BR Phase	Wt	Watts Total	CLR	Clear
A/A	Current Average	VA	Total VA	rd	Rising Demand
F/F	Frequency	VAR	Total VAR	Fd	Forecast Demand
An/An	Neutral Current	PF	Power Factor	nd	Maximum Demand
rPñ/RPM	Revolution Per Minute	Wh	Active Energy Received	AL	Additional Load
UPhAng	Voltage Phase Angle	VAh	Apparent Energy	Et	Elastice Time
APhAng	Current Phase Angle	VARhL	Reactive Inductance Energy	Hi	High Level of Parameter
UnBAL.V	Unbalance Voltage	VARhC	Reactive Capacitance Energy	Lo	Low Level of Parameter
UnBAL.A	Unbalance Current	AUG	Average	b	Baud Rate
Uethd	Voltage THD	LdHr	Load Hour	d	delivered
Ah	Amps average Received	L	Lagging Power factor	c	Leading Power factor
M1-M6	No. of demand slots	S1-S6	No. of energy slots	clock	Real time clock

Conversions of alphabets used ñ (M) ũ (W) ł (K)

7. ENTERING CONFIGURATION (SETUP) MODE

To configure the setup parameters in EN/PN meters with TOD option through front panel keys, the following steps can be followed.

Step	Actions	Display Reads	Range/Options/Comments
1	Press RIGHT & UP keys together to enter SETUP	SETUP	
2	Press DOWN key	Row 1 PASWD (Password) is displayed. Row 2 0000 with first digit "0" blinking.	
3	Press UP key once to increment the first digit to "1".	PASSWORD = 1000 (default/factory set).	If any other password is already set move UP/DOWN key to set the right password
4	Press RIGHT key four times to accept the password.	Row 1: display ELEMNT (element) Row 2: STAR (Default)	Defines the power system configuration. Options: STAR /DELTA/1.Phase
5	Press RIGHT key to select required system type	Row 1: display ELEMNT Row 2: Blinks STAR	Options: STAR /DELTA/1.Phase
6	Press UP/DOWN key to select STAR/DELTA/1. PHASE	Row 1: display ELEMNT Row 2: STAR	(selected mode blinks)

7	Press RIGHT key to accept	Row 1: display ELEMNT Row 2: selected system type stabilizes	
8	Press DOWN key.	Row 1 : Pt. Pri.(PT Primary) Row 2 : xxx.x (415.0 -default/factory set)	
9	Press RIGHT key to set the PT primary value	Row 1: Pt. Pri (PT Primary) Row 2 : First digit blinking, can be edited using UP/DOWN key.	
10	Press RIGHT key to accept the edited value for first digit.	Row 1: Pt. Pri (PT Primary) Row 2 : Second digit blinking, can be edited using UP/DOWN key. Press RIGHT key to accept the edited value. Continue the same method until fourth digit.	Program Range for PT Primary : 100V to 999kV If value set is above this limit, display returns to the maximum PT Pri value acceptable.
11	Press RIGHT key	Row 1: Pt. Pri (PT Primary) Row 2 : Decimal point blinking. Can be set at appropriate location using UP/DOWN key. Ascertain the correct scale (Kilo/Mega) is selected. Kilo/Mega is placed on the right hand side of the display as K/M. Press RIGHT key to accept the edited value.	E.g.: To set 11.00kV Set first four digits (1100) as explained above press UP/DOWN key to place decimal point at appropriate location. Letter K/M will indicate the Kilo/Mega
12	Press DOWN key to go to the next parameter.	Row 1: Pt. SEC (PT Secondary).Follow the procedure as described in steps 9 to 11. Row 2 : xxxx (415.0 -default/factory set)	Range: 50V to 550V. If value set is above this limit, display returns to the maximum PT sec value acceptable.
13	Press DOWN key	Row 1: Ct. Pri. (CT Primary) Row 2 : xxxx (5.000 -default/factory set) Repeat steps 9 to 11 to change the settings.	Program Range for CT Primary: 0.5A to 99kA If value set is above this limit, display returns to the maximum CT Pri value acceptable.
14	Press DOWN key	Row 1: Ct. SEC. (CT Secondary). Repeat steps9 to 11. Row 2 : xxxx (5.000 -default/factory set)	Range: 0.5A to 6A If value set is above this limit, it returns to the maximum CT sec value acceptable.
15	Press DOWN key	Row 1: VA.SEL (Method of VA Selection). Row 2 : VEC.HAr (Vector Harmonics)	Press RIGHT key to select the required method Arithmetic (Arith), Vector harmonics (VEC.HAr). Vector (VECTor).
16	Press DOWN key (Only for PN series)	Row 1: PARAM1 Row 2: WAtts (Default: Watts)	Options: WAtts /FREQ/A/ VLL/ Ab/Ay/Ar/ VA/PF Options can be edited using RIGHT & UP/DOWN keys.
17	Press DOWN key (Only for PN series)	Row 1: PARAM2 Row 2: PF (Default: PF)	
18	Press DOWN key	Row 1: YEAr Row 2 : xxxx	Range: 2000 to 2040
19	Press DOWN key	Row 1:dAtE Row 2 : xx.xx (Mm.dd)	Jan 01 to December 31
20	Press DOWN key	Row 1: time (Time) Row 2 : xx.xx (HH.mm)	00:00 to 23.59
21	Press DOWN key	Row 1:dm.tyPE. (Demand Type) Row 2: SLidin (sliding)	Demand Type: SLidin/bloc (sliding/block)
22	Press DOWN key	Row 1: dm.PAr. (Demand parameter) Row 2: WAtts	Demand parameter: WAtts/VAr/A.Avg/VA
23	Press Down key	Row 1: dm.PrD (demand period). Row 2: 15.00 (Default Threshold Value)	Range: 5 to 30 minutes
24	Press Down key	Row 1: dm.cont (Demand control). Row 2: Forc.dm (Forecast demand)	Demand Control: Forc.dm/ StEP.dm
25	Press Down key	Row 1: dM.Slot (No. of Demand slots) Row2: 6.000 (Default Value)	Range: 1- 6
26	Press DOWN key	Row 1: dmd.SL.1 (slot 1Demand time) Row2: 06.00 (Default Time : hh.mm)	Range: 00.00 to 23:59
27	Press DOWN key	Row 1: dmd.SL.2 (slot 2 Demand time) Row2: 09.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
28	Press DOWN key	Row 1: dmd.SL.3 (slot 3 Demand time) Row2: 12.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)

29	Press DOWN key	Row 1: dmd.SL.4 (slot 4 Demand time) Row2: 18.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
30	Press DOWN key	Row 1: dmd.SL.5 (slot 5 Demand time) Row2: 22.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
31	Press DOWN key	Row 1: dmd.SL.6 (slot 6 Demand time) Row2: 22.01 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
At Step. No. 24 if demand control type is programmed as Forecast demand following steps is applicable(32.a to 32.s)			
Note: Slot set time should be in increasing order only			
32.a	Press DOWN key	Row 1: FC.Int (Forecast Interval) Row 2: 7.000	Range: 20% to 50% of Demand period.
32.b	Press DOWN key	Row 1: SLt.1.H (Slot 1 Highest demand value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
32.c	Press DOWN key	Row 1: SLt.1.H1(Slot 1 second Highest demand value) Row 2: xxxx	Range: 50% to 99% of highest limit (SLt.1.H)
32.d	Press DOWN key	Row 1: SLt.1.L (Slot 1 Lowest demand value) Row 2: xxxx	Range: 50% to 99% of second highest limit (SLt.1.H1)
32.e	Press DOWN key	Row 1: SLt.2.H (Slot 2 Highest demand value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
32.f	Press DOWN key	Row 1: SLt.2.H1(Slot 2 second Highest demand value) Row 2: xxxx	Range: 50% to 99% of highest limit (SLt.2.H)
32.g	Press DOWN key	Row 1: SLt.2.L (Slot 2 Lowest demand value) Row 2: xxxx	Range: 50% to 99% of second highest limit (SLt.2H1)
32.h	Press DOWN key	Row 1: SLt.3.H (Slot 3 Highest demand value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
32.i	Press DOWN key	Row 1: SLt.3.H1(Slot 3 second Highest demand value) Row 2: xxxx	Range: 50% to 99% of highest limit (SLt.3.H)
32.j	Press DOWN Key	Row 1: SLt.3.L (Slot 3 Lowest demand value) Row 2: xxxx	Range: 50% to 99% of second highest limit (SLt.3.H1)
32.k	Press DOWN key	Row 1: SLt.4.H (Slot 4 Highest demand value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
32.l	Press DOWN key	Row 1: SLt.4.H1(Slot 4 second Highest demand value) Row 2: xxxx	Range: 50% to 99% of highest limit (SLt.4.H)
32.m	Press DOWN key	Row 1: SLt.4.L (Slot 4 Lowest demand value) Row 2: xxxx	Range: 50% to 99% of second highest limit (SLt.4.H1)
32.n	Press DOWN key	Row 1: SLt.5.H (Slot 5 Highest demand value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
32.o	Press DOWN key	Row 1: SLt.5.H1(Slot 5 second Highest demand value) Row 2: xxxx	Range: 50% to 99% of highest limit (SLt.5.H)
32.p	Press DOWN key	Row 1: SLt.5.L (Slot 5 Lowest demand value) Row 2: xxxx	Range: 50% to 99% of second highest limit (SLt.5.H1)
32.q	Press Down key	Row 1: SLt.6.H (Slot 6 Highest demand value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
32.r	Press DOWN key	Row 1: SLt.6.H1(Slot 6 second Highest demand value) Row 2: xxxx	Range: 50% to 99% of highest limit (SLt.6.H)
32.s	Press DOWN key	Row 1: SLt.6.L (Slot 6 Lowest demand value) Row 2: xxxx	Range: 50% to 99% of second highest limit (SLt.6.H1)
At Step. No. 24 if demand control type is programmed as Step demand following steps is applicable(33.a to 33.x)			
33.a	Press DOWN key	Row 1: tod.1.S1(Step demand slot1 step1 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.b	Press DOWN key	Row 1: tod.1.S2 (Step demand slot1 step2 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.c	Press DOWN key	Row 1: tod.1.S3 (Step demand slot1 step3 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.

33.d	Press DOWN key	Row 1: tod.1.S4 (Step demand slot1 step4 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.e	Press DOWN key	Row 1: tod.2.S1 (Step demand slot2 step1 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.f	Press DOWN key	Row 1: tod.2.S2 (Step demand slot2 step2 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.g	Press DOWN key	Row 1: tod.2.S3 (Step demand slot2 step3 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.h	Press DOWN key	Row 1: tod.2.S4 (Step demand slot2 step4 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.i	Press DOWN key	Row 1: tod.3.S1 (Step demand slot3 step1 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.j	Press DOWN key	Row 1: tod.3.S2 (Step demand slot3 step2 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.k	Press DOWN key	Row 1: tod.3.S3 (Step demand slot3 step3 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.l	Press DOWN key	Row 1: tod.3.S4 (Step demand slot3 step4 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.m	Press DOWN key	Row 1: tod.4.S1 (Step demand slot2 step1 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.n	Press DOWN key	Row 1: tod.4.S2 (Step demand slot4 step2 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.o	Press DOWN key	Row 1: tod.4.S3 (Step demand slot4 step3 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.p	Press DOWN key	Row 1: tod.4.S4 (Step demand slot4 step4 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.q	Press DOWN key	Row 1: tod.5.S1 (Step demand slot5 step1 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.r	Press DOWN key	Row 1: tod.5.S2 (Step demand slot5 step2 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.s	Press DOWN key	Row 1: tod.5.S3 (Step demand slot5 step3 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.t	Press DOWN key	Row 1: tod.5.S4 (Step demand slot5 step4 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.u	Press DOWN key	Row 1: tod.6.S1 (Step demand slot6 step1 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.v	Press DOWN key	Row 1: tod.6.S2 (Step demand slot6 step2 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.w	Press DOWN key	Row 1: tod.6.S3 (Step demand slot6 step3 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
33.x	Press DOWN key	Row 1: tod.6.S4 (Step demand slot6 step4 value) Row 2: xxxx	Range: 0.5% to 100% of Full scale.
34	Press DOWN key	Row 1: no. Slot (No. of Energy slots) Row2: 5.000	Range:1- 6
35	Press DOWN key	Row 1: tod.SL.1 (slot1 Energy accumulation time). Row2: 6.000 (Default Time : hh.mm)	Range: 00.00 to 23:59
36	Press DOWN key	Row 1: tod.SL.2 (slot 2 Energy accumulation time). Row2: 9.000 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
37	Press DOWN key	Row 1: tod.SL.3 (slot 3 Energy accumulation time) Row2: 12.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
38	Press DOWN key	Row 1: tod.SL.4 (slot 4 Energy accumulation time) Row2: 18.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of

			the previous slot time)
39	Press DOWN key	Row 1: tod.SL.5 (slot 5 Energy accumulation time) Row2: 22.00 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
40	Press DOWN key	Row 1: tod.SL.6 (slot 6 Energy accumulation time) Row2: 22.01 (Default Time : hh.mm)	Range: 00.00 to 23:59 (Lowest time will be 1 minute ahead of the previous slot time)
41	Press DOWN key	Row 1:bAUd (Baud rate) Communication Speed Row 2: XXXX (9600-Default / factory set)	Defines the Baud rate Option: 1200, 2400, 4800, 9600, 19.2k.
42	Press DOWN key	Row 1: PAritY Row 2: Even/ Odd/ None	Even(even)/ Odd(odd)/ No(No parity) (Internal Communication error Check)
43	Press DOWN key	Row 1: dEV .Id (Device ID) Row 2:1.000	Defines the ID. Communication identification Number. Option :1- 247
44	Press DOWN key	Row 1: POLES (Poles) Row 2: 4.000	Option: 1-28 (For rpm)
45	Press DOWN key	Row 1: rEV.LOC(Reverse Lock) Row 2: no	Reverse Lock Option: NO/ YES.
46	Press DOWN key	Row 1: PASWd (Password). User Programmable password, range 1000 to 9999. CAUTION: Memorize the password. Use the password for programming/ editing next time. Instrument will reject other passwords. Row 2: -----	If the password is forgotten the meter will be reset and calibrated at factory only.
47	Press DOWN Key	Row 1: EnERGY ROW 2: rESOLU	Option: resolution/counter (rESOLU /COUNTR).Energy value format i.e., the energy accumulated in the meter to be displayed in resolution or counter format
48	Press DOWN key	Row 1: StArt.A Row 2: 0.400	Meter displays the current >= selected value. Range: (0.2% to 10% of full scale)
49	Press DOWN key	Row 1: dISP.U.t (For EN)/ dISP.U.R (For PN) Row 2: 1.000	Range: 1 to 5 seconds Update rate for displaying parameters.
50	Press DOWN key	Row 1: Auto.t. Row 2: 5.000	Range: 1 to 10 seconds Display increment during auto scroll.
51	Press DOWN key	Row 1: POP.ON.t (pulse output ON time) Row 2: 250.0	Range: 50 to 500m Sec. Pulse width defined for pulse output occurrence.
52	Press DOWN key	Row 1:AO.1.Par(Analog output 1) Row 2:DISABL	Analog output parameters: VA/PF/ WAtTS/FrEq/A/VLL /dISABL
53	Press DOWN key	Row 1:AO.1.oFS(Analog output 1 full scale value) Row 2:0.t.20.mA	Options: 0.t.20.mA/4.t.20.mA
54	Press DOWN key	Row 1:AO.2.Par(Analog output 2) Row 2:DISABL	Analog output parameters: VA/PF/ WAtTS/FrEq/A/VLL /dISABL
55	Press DOWN key	Row 1:AO.2.oFS(Analog output 2 full scale value) Row 2:0.t.20.mA	Options: 0.t.20.mA/4.t.20.mA
56	Press DOWN key (Only for PN series)	Row 1: PWR.SAV Row 2: DISABL	Defines Power Save of the LCD back light Option: ENABLE/DISABL
57	Press DOWN key	Row 1:bYt.Ord Row 2: FLOAt	Options: FLOAt/biG.End/LitLE.E
58	Press DOWN Key	Row 1:S.CHG.tr(Slot change over trip) Row 2:no (Default)	Slot change over trip no/yes
58	Press DOWN key	R o w 1 : S A V E Row 2: "Y" blinking.	If "n"(no) is selected then Meter enters into RUN mode without memorizing any edited Values in the setup

Once the required parameter is programmed press the DOWN key continuously till it reaches SAVE page or press the OPTIONS key to reach SAVE page directly.

5.1 The List of parameters can be configured and the range is given below

Sl.No.	Parameter	Default setup	Range
1	Connection mode(ELEMnt)	STAR	STAR/ DELTA/ 1.Phase
2	PT Primary (PT.Pri)	415.0	100V- 999kV
3	PT Secondary (PT. SEC.)	415.0	50V – 550V
4	CT Primary (CT.Pri.)	5.000	0.5 A – 99kA
5	CT SECondary (CT. SEC.)	5.000	0.5A – 6A
6	VA selection (UA.SEL.)	Vec.H	Arith (Arithmetic) / Vector/ vec.H (vector harmonics)
7	Parameter – 1 (PARAM1)	WAtts	WAtts /FREQ/A/ VLL/ Ab/Ay/Ar/ VA/PF
8	Parameter – 2 (PARAM2)	PF	PF / WAtts /FREQ/A/ VLL/ Ab/Ay/Ar/ VA
9	Year(YEAR)	2011	2000 to 2040
10	Date (dAtE)	01.01	01.01 to 12.31
11	Time (time)	00.00	00.00 to 23.59
12	Demand Type (dn.tYPE)	SLidIn	SlidIn(sliding) / bLOC (block / fixed)
13	Demand Parameter (dn.Par)	Watts	WAtts (Watts)/ VA / A.Avg (Amps Avg) /Var
14	Demand Period (dn.Prd)	15.00	5 to 30 Minutes
15	Demand Control(dn.cont)	Forc.dm	Forecast/step
16	Demand Slots (dn.Slot)	6.000	1- 6
17	Demand Slot1(dnd.SL.1)	06.00	00.03 -23.59
18	Demand Slot2(dnd.SL.2)	09.00	06.01-23.59
19	Demand Slot3(dnd.SL.3)	12.00	09.01-23.59
20	Demand Slot4(dnd.SL.4)	18.00	12.01-23.59
21	Demand Slot5(dnd.SL.5)	22.00	18.01-23.59
22	Demand Slot6(dnd.SL.6)	22.01	22.01-23.59
At Step. No. 15 if demand control type is programmed as Forecast demand following steps is applicable(23.a to 23.s)			
23.a	Forecast interval(FC.Int)	7.000	20% to 50% of Demand period.
23.b	Demand Slot1 highest value(SLt.1.H)	1800	0.5% to 100% of Full scale.
23.c	Demand Slot1 second highest value(SLt.1.H1)	1700	50% to 99% of highest limit (SLt.1.H)
23.d	Demand Slot1 lowest value(SLt.1.L)	1300	50% to 99% of second highest limit (SLt.1.H1)
23.e	Demand Slot2 highest value(SLt.2.H)	1800	0.5% to 100% of Full scale.
23.f	Demand Slot2 second highest value(SLt.2.H1)	1700	50% to 99% of highest limit (SLt.2.H)
23.g	Demand Slot2 lowest value(SLt.2.L)	1300	50% to 99% of second highest limit (SLt.2.H1)
23.h	Demand Slot3 highest value(SLt.3.H)	1800	0.5% to 100% of Full scale.
23.i	Demand Slot3 second highest value(SLt.3.H1)	1700	50% to 99% of highest limit (SLt.3.H)
23.j	Demand Slot3 lowest value(SLt.3.L)	1300	50% to 99% of second highest limit (SLt.3.H1)
23.k	Demand Slot4 highest value(SLt.4.H)	1800	0.5% to 100% of Full scale.
23.l	Demand Slot4 second highest value(SLt.4.H1)	1700	50% to 99% of highest limit (SLt.4.H)
23.m	Demand Slot4 lowest value(SLt.4.L)	1300	50% to 99% of second highest limit (SLt.4.H1)
23.n	Demand Slot5 highest value(SLt.5.H)	1800	0.5% to 100% of Full scale.
23.o	Demand Slot5 second highest value(SLt.5.H1)	1700	50% to 99% of highest limit (SLt.5.H)
23.p	Demand Slot5 lowest value(SLt.5.L)	1300	50% to 99% of second highest limit (SLt.5.H1)
23.q	Demand Slot6 highest value(SLt.6.H)	1800	0.5% to 100% of Full scale.
23.r	Demand Slot6 second highest value(SLt.6.H1)	1700	50% to 99% of highest limit (SLt.6.H)
23.s	Demand Slot6 lowest value(SLt.6.L)	1300	50% to 99% of second highest limit (SLt.6.H1)
At Step. No. 15 if demand control type is programmed as Step demand following steps is applicable(24.a to 24.x)			
24.a	Stepwise Demand Slot1 step1 value(tod.1.S1)	17.97	0.5% to 100% of Full scale.
24.b	Stepwise Demand Slot1 step2 value(tod.1.S2)	1800	0.5% to 100% of Full scale.
24.c	Stepwise Demand Slot1 step3 value(tod.1.S3)	1700	0.5% to 100% of Full scale.
24.d	Stepwise Demand Slot1 step4 value(tod.1.S4)	1300	0.5% to 100% of Full scale.
24.e	Stepwise Demand Slot2 step1 value(tod.2.S1)	17.97	0.5% to 100% of Full scale.
24.f	Stepwise Demand Slot2 step2 value(tod.2.S2)	1800	0.5% to 100% of Full scale.

24.g	Stepwise Demand Slot2 step3 value(tod.2.S3)	1700	0.5% to 100% of Full scale.
24.h	Stepwise Demand Slot2 step4 value(tod.2.S4)	1300	0.5% to 100% of Full scale.
24.i	Stepwise Demand Slot3 step1 value(tod.3.S1)	17.97	0.5% to 100% of Full scale.
24.j	Stepwise Demand Slot3 step2 value(tod.3.S2)	1800	0.5% to 100% of Full scale.
24.k	Stepwise Demand Slot3 step3 value(tod.3.S3)	1700	0.5% to 100% of Full scale.
24.l	Stepwise Demand Slot3 step4 value(tod.3.S4)	1300	0.5% to 100% of Full scale.
24.m	Stepwise Demand Slot4 step1 value(tod.4.S1)	17.97	0.5% to 100% of Full scale.
24.n	Stepwise Demand Slot4 step2 value(tod.4.S2)	1800	0.5% to 100% of Full scale.
24.o	Stepwise Demand Slot4 step3 value(tod.4.S3)	1700	0.5% to 100% of Full scale.
24.p	Stepwise Demand Slot4 step4 value(tod.4.S4)	1300	0.5% to 100% of Full scale.
24.q	Stepwise Demand Slot5 step1 value(tod.5.S1)	17.97	0.5% to 100% of Full scale.
24.r	Stepwise Demand Slot5 step2 value(tod.5.S2)	1800	0.5% to 100% of Full scale.
24.s	Stepwise Demand Slot5 step3 value(tod.5.S3)	1700	0.5% to 100% of Full scale.
24.t	Stepwise Demand Slot5 step4 value(tod.5.S4)	1300	0.5% to 100% of Full scale.
24.u	Stepwise Demand Slot6 step1 value(tod.6.S1)	17.97	0.5% to 100% of Full scale.
24.v	Stepwise Demand Slot6 step2 value(tod.6.S2)	1800	0.5% to 100% of Full scale.
24.w	Stepwise Demand Slot6 step3 value(tod.6.S3)	1700	0.5% to 100% of Full scale.
24.x	Stepwise Demand Slot6 step4 value(tod.6.S4)	1300	0.5% to 100% of Full scale.
25	Number of energy slots (no. Slot)	5	1-6
26	Slot1 energy accumulation time(tod.SL.1)	06.00	00.00-23.59
27	Slot2 energy accumulation time(tod.SL.2)	09.00	00.00-23.59
28	Slot3 energy accumulation time(tod.SL.3)	12.00	00.00-23.59
29	Slot4 energy accumulation time(tod.SL.4)	18.00	00.00-23.59
30	Slot5 energy accumulation time(tod.SL.5)	22.00	00.00-23.59
31	Slot6 energy accumulation time(tod.SL.6)	22.01	00.00-23.59
32	Baud rate(bAUd)	9600	1200 to 19.2k
33	Parity(ParitY)	Even	Even/ Odd/ no
34	Device Id (dEV.Id)	1.000	1.000 to 247.0
35	No of Poles (POLES)	4.000	1.000 to 28.00
36	Reverse lock(rEu.LOC)	No	Yes/no
37	Password (PASud)	1000	1000 to 9999
38	EnEGY (energy)	rESOLU	rESOLU /COUПtr
39	StArt.A (starting current)	0.400	0.2% to 10 % of fullscale
40	Display update time(dISP.U.t)	1.000	1 to 5 seconds
41	Display increment time during autoscroll (Auto.t)	5.000	1 to 10 seconds
42	POP.OP.t(Pulse out put on time)	250.0	50 to 500 milliseconds
43	Analog Output 1 parameter	diSAbL	VLL/ A/Freq/Watts/PF/VA
44	Analog Output 1 fullscale	0.t.20mA	0.t.20mA/4.t.20mA
45	Analog Output 2 parameter	diSAbL	VLL/ A/Freq/Watts/PF/VA
46	Analog Output 2 fullscale	0.t.20mA	0.t.20mA/4.t.20mA
47	Power Save Mode	DISABL	DISABL / ENABLE
48	Byte order type(bYt.Ord)	FLOAt	FLOAt/biG.End/LitLE.E
49	Slot change over trip (S.CHG.tr)	no	No/yes

6. Clearing the Integrator/High, low limits/maximum demand:

To Clear parameters from the front panel, Press UP and DOWN Keys together, and 'CLEAR' is shown on the display. Enter the Password (Default password is 1000. Set up and clear has the same password) and it will display "**CLr.Int**". Press DOWN Key for selecting **CLr.Int** (Clear Integrator)/**CLr.Hi.L** (Clear max. /min values)/**CLr.Md** (Clear Max. demand). Once the parameter to be cleared is selected, Press RIGHT key, display will prompt to 'n' (no). Press UP/DOWN key for changing to 'Y'(Yes) or to 'n'(no) and Press the RIGHT key to do the operation.

Note: Once the data is cleared (except energy) the value will not be retained.

7. Enabling and disabling of Auto scrolling:

Enabling auto scrolling: Press UP key continuously for 5 seconds or until display shows EnAbLE Auto.Sc for upward scrolling. Press Down key continuously for 5 seconds or until display shows EnAbLE Auto.Sc for downward scrolling.

Disabling auto scrolling: Press any one of the 4 keys to disable auto scrolling .Display shows dISAbL Auto.Sc and returns to normal mode.

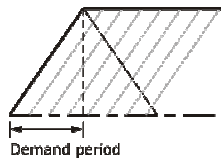
8. DEMAND

Demand control is a method of controlling the consumption not to overload the grid. Demand is calculated in different ways, different parameters depend on the region/ country. There are two types of demand measurement names Sliding window & Fixed (Block) window. Forecast demand control & Step wise demand Control.

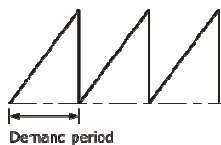
TOD DEMAND CONTROLLER:

TOD Demand controller is designed to control for loads to achieve the desired savings. The instrument measure the demand based on sliding or fixed (block) window. The demand calculations can be chosen based on Watts, VA or Amps (Average) or VAR parameters for the given time period (Demand Period).

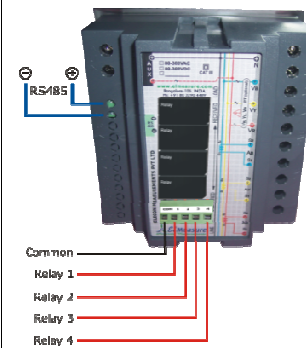
Sliding Window: This window slides every 1 second (update time), so it automatically synchronizes with EB meter. But it will not return to zero at the end of the demand period. For the fluctuating load this is the better method of measurement. The graphical representation of sliding window is shown below.



Block Window: This window slides every demand period. It has to be synchronized to EB meter manually. It will return to zero at the end of demand period. This can be used for the fairly stable load. The graphical representation of block window.



Connection Diagram: Connection Diagram for Demand controller / Digital Output and RS 485

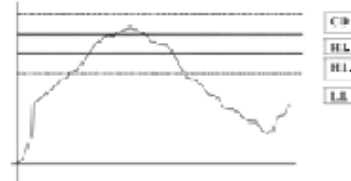


Note: Connections to the terminals located at the rear side of the unit is to be made by using preferably 12 to 14 SWG (2.6mm² to 2.0mm²) industrial grade wire. Relay rating No contact SPST. 250VAC / 30VDC @ 2 Amps resistive.

Forecast Demand Control: Forecast demand control is more suitable for sliding window technique. This control predicts the rising demand before the set time (Forecast Interval) and gives the alarm/annunciation for pro active action. The user can then shed some non-critical loads. (Additional load information is available in Demand page). 4 relays are used to control the demand

1. Relay 2 will be activated if Forecast Demand > High Limit.
2. Relay 3 will be activated if Rising Demand > High Limit 1.
3. Relay 4 will be activated if Rising Demand > High Limit as a final trip.
4. Relay 1 can reconnect, once the rising demand comes down to the safe limit (Low Limit).

TOD Demand Pattern:



- C.D - Contract Demand (sanctioned demand)
- H.L - High Limit
- H.L1 - High Limit 1
- L.L - Low limit

Step demand control: Step demand control is suitable for sliding and fixed window.

4 loads or 4 set of loads can be connected to the relays for tripping. Each step tripping level can be programmed independently (1% to 100% of Full scale). In the step demand control the control is based on the rising demand only.

1. Relay 1 will be activated if Rising demand > Step1 Level.
2. Relay 2 will be activated if Rising demand > Step2 Level.
3. Relay 3 will be activated if Rising demand > Step3 Level.
4. Relay 4 will be activated if Rising demand > Step4 Level.

How to synchronize with EB meter:

1. Enter into setup mode and set the right password.
2. Press the down key until it reaches Year page at the setup.
3. Edit the year to lower year (i.e. if present year is 2009 edit it to 2008).
4. Press the OPTIONS key and save the setup.
5. Enter once again to setup and set the right password.
6. Press the down key until it reaches 'Year' page at the setup.

7. Edit the current year (Eg. edit to 2009 for the above example)
8. Press the OPTIONS Key, meter displays Save Y
9. Wait till the EB meter reads zero. Press the right key the moment EB meter displays zero.
10. Both should have the same power ON and OFF events. If there is any difference, synchronization should be re done manually in the same method mentioned above.

TOD (Demand and Energy) Time programming:

TOD time to be programmed in the ascending order only. Assume the TOD timing is 06.00hrs to 09.00 hrs, 18.00hrs to 21.00 hrs as the peak time, 09.00hrs to 18.00hrs, and 21.00hrs to 23.00hrs half peak hours, 23.00hrs to 06.00 hrs is normal hours, the programming should be in the following manner

No of TOD slots - 5

TOD 1 slot is 06.00
TOD 2 slot is 09.00
TOD 3 slot is 18.00
TOD 4 slot is 21.00
TOD 5 slot is 23.00

In this case the

End time of slot 1 is Start time of slot 2

End time of slot 2 is Start time of slot 3.

End time of slot 3 is Start time of slot 4.

End time of slot 4 is Start time of slot 5.

End time of slot 5 is Start time of slot 1.

Slot 6 will be dummy. Even if it is programmed to any value there will not be any effect.

Note: Slot 2 time settings > Slot 1 time settings
Slot 3 time settings > Slot 2 time settings
Slot 4 time settings > Slot 3 time settings
Slot 5 time settings > Slot 4 time settings
Slot 6 time settings > Slot 5 time settings