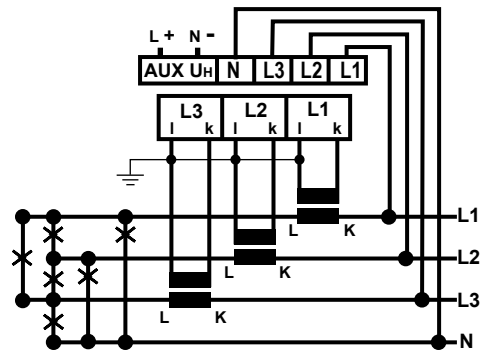


RS485 option      Relay option  
Pod Positions

1



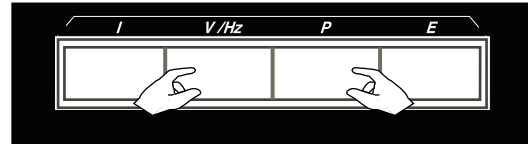
	Voltage				Current		
	L1	L2	L3	N	L1	L2	L3
1ph	✓	✗	✗	✓	✓	✗	✗
1ph 3W	✓	✓	✓	✓	✓	✓	✓
3ph 3W	✓	✓	✓	✗	✓	✗	✓
3ph 4W	✓	✓	✓	✓	✓	✓	✓
3ph 3W BAL	✓	✓	✓	✗	✓	✗	✗
3ph 4W BAL	✓	✗	✗	✓	✓	✗	✗

Unused Voltage terminals are internally connected  
Secondary of CT's must be connected to earth

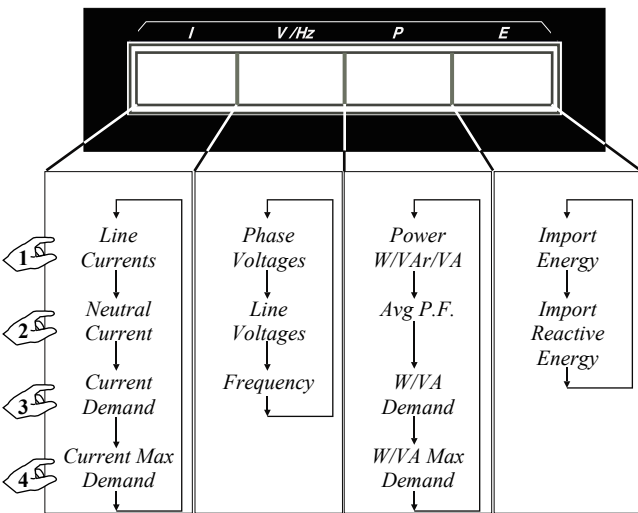
2

### Display Screens

Each screen is displayed by pressing its appropriate button, (I for Current, V/Hz for Voltage and Frequency, P for Power and E for Energy). Further presses of a screen's button will scroll through the available measurements associated with that button. Each button's state is stored in memory.

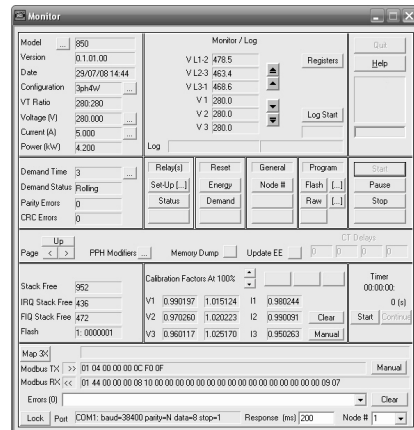


The LED brightness is adjusted by holding down the two centre buttons.



3

Software: Software can be provided for use with the optional RS485 module. The plug-in module enables the unit to communicate with devices using the popular Modbus protocol.



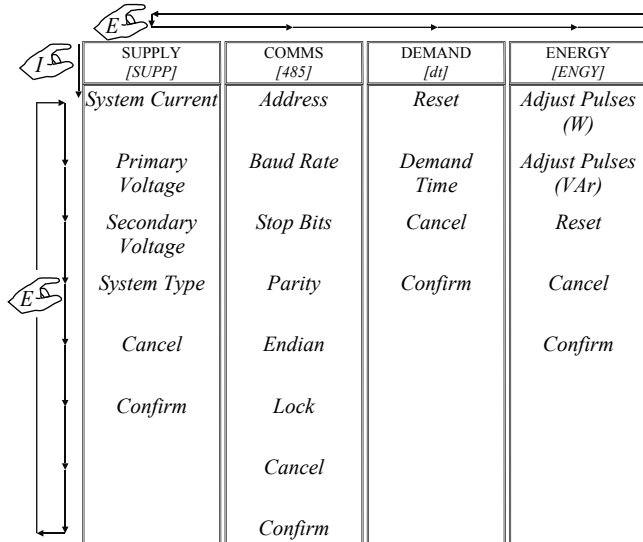
4

### Settings Menu

The main menu is entered by holding buttons 'I' and 'E' down for approximately 5 seconds. The main menu and all sub-menus are scrolled through using the 'E' button. Any selection is made using the 'I' button.

If no buttons are pressed for 6 minutes the unit will exit the Settings Menu.

The Settings Menu structure is defined below:



5

RELAY [RLAY]	CODE [CODE]	EEPROM [STOR]	END [END]
Relay Type	Edit	Cancel	...
Pulse Length	Set	Confirm	
Pulses per Hour	Cancel		
Cancel	Confirm		
Confirm			

6

- Supply [SUPP]
- SYSTEM CURRENT [SYSI]
- PRIMARY VOLTAGE [UPRI]
- SECONDARY VOLTAGE [USEC]
- SYSTEM TYPE [TYPE]

The VT ratio and the system current are entered using this sub-menu. The secondary voltage (meter input) is optimised at 280V L-N. Decimal point positioning and exponent selection is used in this section

- Un-Balanced
- [1P2] 1 phase 2 wire
- [3P3] 3 phase 3 wire
- [3P4] 3 phase 4 wire
- [1P3] 1 phase 3 wire
- Balanced
- [3P3B] 3 phase 3 wire
- [3P4B] 3 phase 4 wire

The system's type is selected from the list on the right:

- Comms [485]
- ADDRESS [ADDR]

(RS485 option) Network settings can be detected and the unit configured automatically. If manual configuration is preferred, the meter can be set up as follows:

- BAUD RATE [BAUD]
- STOP BITS [STOP]

The unit's baud rate, number of stop bits and parity can be selected from the lists on the right:

- [ 4.8] 4800 baud
- [ 9.6] 9600 baud
- [19.2] 19200 baud
- [38.4] 38400 baud
- [57.6] 57600 baud
- [0] no stop bits
- [1] 1 stop bit
- [2] 2 stop bits

- PARITY [PAR]
- ENDIAN [ENDI]

Floating point numbers can be transmitted in either Big Endian (default) or Little Endian BYTE order and can be selected using the ENDIAN item.

- LOCK [LOC]

Locking prevents the unit hunting for a valid network if communication errors are occurring and can be set using the LOCK item.

7

- Demand [dt]
- RESET [RSET]

The unit integrates all measurements of Amps, Power and VA within a variable time length, sliding window. The reset option will reset all demand and maximum demand measurements.

- DEMAND TIME [DTST]

The demand time (window) can be set to a value of between 3 and 60 minutes inclusive.

- Energy [ENGY]

There are two energy accumulators in the unit; Import Power and Import VAr. Modifications to the pulses per hour rate can be done through this sub-menu.

- ADJUST PULSES [ADJ] (W)

Adjust pulses (W or VAr) allows the selection of a DIVISOR from the list on the right:

- 1000
- 100
- 10
- 1
- 0.1
- 0.01
- 0.001

- ADJUST PULSES [ADJ] (VAr)

Caution: Changing the divisor and confirming the selection will reset ALL energy readings

- RESET [RSET]

The reset option resets ALL energy readings.

- Relay [RLAY]

The relay(s) (optional) can operate as W.h or VAr.h types. The principle relay can be set up in this sub-menu. If two relays are installed the secondary relay is automatically set as the alternative type.

- RELAY TYPE [TYPE]

- OFF
- 40
- 60
- 80
- 100
- 120
- 140
- 160
- 180
- 200

- PULSE LENGTH [PULS LNTH]

The pulse length of the relay(s) can be set from the list on the right (0-200ms). PPH are modified using the decimal point positioning method.

- PULSES per HOUR [PPH]

9

- Code [CODE]

The Pass Code is used to help prevent unauthorised tampering with the unit's settings.

- EDIT PASS CODE [EDIT]

The Pass Code can be changed using the EDIT facility in the sub-menu.

- SET PASS CODE [SET]

It is activated using the SET option.

- EEPROM [STOR]

The EEPROM sub-menu allows the user to save all settings into the unit's non-volatile memory. It is recommended that this option is used whenever settings have been updated. However, the unit will save all settings on a power down or brown out condition.

- END [END]

This selection leaves the main menu and resumes displaying measurements.

\*\*\*\*\*

- CANCEL [CNCL]

At the end of most sub-menus is the option to cancel any changes made in that sub-menu.

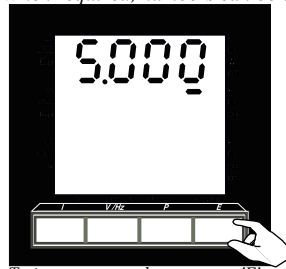
- CONFIRM [CONF]

Confirmation is required before any changes are implemented. The changes are effective as soon as they are confirmed.

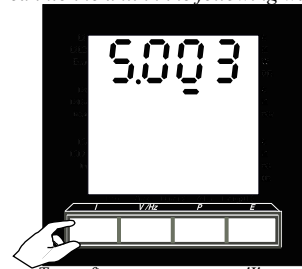
11

## Entering Data

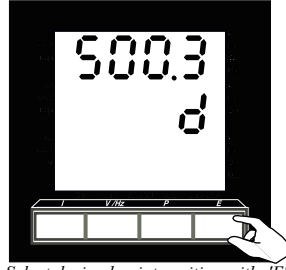
When required, numbers can be entered into the unit in the following way:



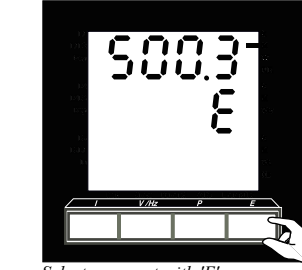
To increment a column - press 'E'



To confirm or move - press 'E'



Select decimal point position with 'E'

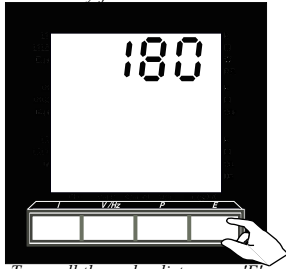


Select exponent with 'E'

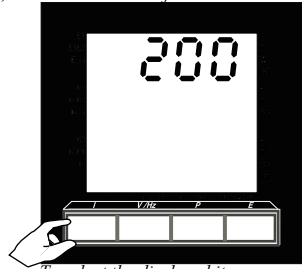
8

## Lists

When only fixed data can be entered, selection is made from a list:



To scroll through a list - press 'E'

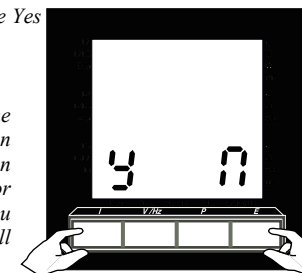


To select the displayed item - press 'E'

When a decision has to be made the Yes - No screen is displayed

## Entering Data - Summary

Pressing the 'I' button accepts the currently selected item and moves on to the next. Pressing the 'E' button either changes the item's option or increments a column. Other menu items that may be displayed are all treated in the same manner.



press 'I' for Yes press 'E' for No

10

### Input (accuracy range)

Un 28V to 330V L-N (48V to 570V L-L)  
 Burden < 0.5VA  
 In 0.5A to 6A via CT  
 Burden < 0.5VA  
 Frequency 45Hz to 65Hz

Secondary of CTs must be connected to earth

### Overload

800V L-L indefinitely  
 In x 10 for 1 sec

### Accuracy

Voltage 0.5% +/- 2 digits  
 Current 0.5% +/- 2 digits  
 Power (W, VAr, VA) 1.0% +/- 2 digits  
 Power Factor 1% of range  
 Frequency 0.1 Hz  
 Energy IEC 1036 Class 1

### Auxiliary Voltage

100V to 440V ac (45Hz to 65Hz)  
 100V to 420V dc  
 Burden: < 10VA

### Display

Digits 3 lines 9999  
 Digit size 14.2mm 7 segment  
 Update time 1 second

### Options

Plug-in RS485 module (Modbus)  
 Plug-in relay module (W.h VAr.h)

### Insulation

Test Voltage 3 kV RMS 50 Hz for 1 min between case, input, aux.

### Impulse Test

EMC 5kV transient complying with IEC 801 / EN 55020 HF

Surge withstand IEC 801 / EN55020 ANSI C37.90A

### Interference

EHF 2.5 kV 1MHz complying with IEC 255-4

### Protection

Class II complying with IEC348 /BS4753 / DIN 57411 / VDE

### Environment

Working Temperature 0 to 60 deg C

Storage Temperature -40 to 85 deg C

Relative Humidity 0-95% non condensing

Shock 30G in 2 planes

### Shock

### Enclosure

Standard DIN case 96 x 96 x 60mm

Panel mounting 4 retaining clips

Cutout 92.8mm x 92.8mm

### Applied Standards

General IEC688, BSEN60688, BS4889, IEC 359

EMC Emissions BSEN61000-6-3 :2007

EMC Immunity BSEN61000-6-4 :2007

Safety IEC 1010, BSEN601010

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