

**BK PRECISION®**

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**BK PRECISION®**

**Instruction Manual**

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**5332 Analyst 2050  
5333 Analyst 2060**

**AC/DC Clamp on  
Power Meters**

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USA  
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International Electrical Symbols	
	Caution! Refer to this manual before using the meter
	Meter is protected by Reinforced or Double Insulation

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**1. INTRODUCTION**

The advanced design ensures reliable and accurate measurements under a wide range of operating conditions. Measurement features include:

- Non-intrusive AC/DC current
- True RMS, Crest Factor and THD for complex and distorted waveforms
- Volts / Watts / VA / PF / kWhr
- 3 Phase measurements
- Screen SAVE mode
- MIN, MAX, AVE, REC Mode
- Internal and PC Data logging\*
- Multi parameter and waveform display modes

**Additional Features 5333**

- Live harmonics analysis and display
- Ripple measurement
- Extended memory for data logging

Conforms to the latest international directives and standards concerning safety and electromagnetic compatibility.

- European Low Voltage Directive 73/23/EEC and 93/68/EEC
- European EMC Directive 89/336/EEC and 93/68/EEC
- Submitted for approval to UL 3111-1

**Safety Standards**

- IEC 1010-1: 1992-09 Safety requirements for electrical equipment for measurement, control and laboratory use.
- Part 2-032: 1994-12 Particular requirements for hand held current clamps for electrical measurement and test.
- Part 2-031: 1993-02 Particular requirements for hand held probe assemblies for electrical measurement and test.

600V Cat IV (750V cat III) Pollution degree 2

**EMC Standards**

- RF Susceptibility
- EN 50082-1: 1992 3V/m Residential, Commercial and Light Industry
- RF Emission
- EN 50081-1: 1992 Residential, Commercial and Light Industry
- FCC Part 15 Class B
- \*Requires optional WinLog accessory

**1.1 Instrument Features**

The main operating features of the instrument are as follows. See Fig. 1.

- (1) Clamp-on jaws for current measurement
- (2) Jaw opening lever
- (3) Rotary switch for function selection
- (4) Dot matrix LCD
- (5) Screen cursor control
- (6) REC mode
- (7) Backlight
- (8) Oscilloscope / Harmonics mode
- (9) HOLD and SELECT
- (10) ZERO. Amps Zero
- (11) SAVE. Screen save mode
- (12) Numeric display mode
- (13) and (14) Test lead input terminals
- (15) Digital output

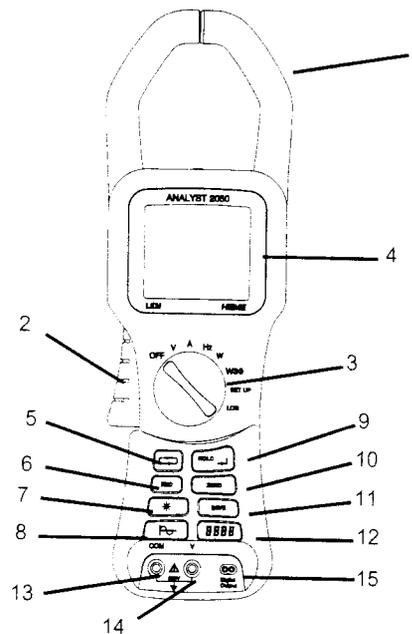


Fig. 1  
Instrument Features

**2. SPECIFICATION**

**2.1 Electrical data**

(All accuracy's stated at 23°C ± 1°C)

**2.1.1 Current measurement**

(DC, DCRMS, ACRMS)

Measuring range.....	0 - 2000A DC or AC pk
Autorange facility.....	40A / 400A / 2000A
Resolution.....	10mA in 40A range 100mA in 400A range 1A in 2000A range

**Accuracy**

RMS and DC

I > 10A .....	± 1.5% rdg ± 5 dgts
I < 10A .....	± 0.2A

AVE

I > 10A .....	± 3% rdg ± 5 dgts
I < 10A .....	± 0.5A

Pk

I > 10A .....	± 5% rdg ± 5 dgts
I < 10A .....	± 0.5A

AHr

I > 10AHr.....	± 2% rdg ± 5 dgts
I < 10AHr.....	± 0.5AHr

CF (Crest Factor)

1 ≤ CF < 3 .....	± 3% rdg ± 5 dgts
3 ≤ CF < 5 .....	± 5% rdg ± 5 dgts
Resolution .....	0.01

RPL (Ripple)

2% ≤ RPL < 100%.....	± 3% rdg ± 5 dgts
100% ≤ RPL < 600%.....	± 5% rdg ± 5 dgts
Resolution .....	0.1%
I <sub>DC</sub> > 5A, I <sub>AC</sub> > 2A	

All measurements DC and 10Hz to 1kHz.

Maximum overload 10,000A or

RMS x frequency < 400,000. Amps RMS

is a true RMS measurement (AC + DC)

**Harmonics**

THD (Total Harmonic Distortion)

1% ≤ THD < 100% .....	± 3% rdg ± 5 dgts
100% ≤ THD < 600% .....	± 5% rdg ± 5 dgts
Resolution .....	0.1%

DF (Distortion Factor)

1% ≤ DF < 100% .....	± 3% rdg ± 5 dgts
100% ≤ CF < 600%.....	± 5% rdg ± 5 dgts
Resolution.....	0.1%

H01 ≤ I <sub>harm</sub> < H13.....	± 5% rdg ± 2 dgts
H13 ≤ I <sub>harm</sub> ≤ H25.....	± 10% rdg ± 2 dgts

All measurements up to 25<sup>th</sup> harmonic

Frequency range F<sub>0</sub>: 45Hz to 65Hz

I<sub>acrms</sub> > 10A, I<sub>harm</sub> > 10% I<sub>acrms</sub>

**2.1.2 Voltage measurement**

(DC, DCRMS, ACRMS)

Measuring range .....	0 - 750V DC or AC
Autorange facility.....	4V / 40V / 400V / 750V
Resolution .....	1mV in 4V range 10mV in 40V range 100mV in 400V range 1V in 750V range

**Accuracy**

RMS and DC

V > 1V .....	± 1% rdg ± 5 dgts
V < 1V .....	± 0.02V

AV

V > 1V .....	± 3% rdg ± 5 dgts
V < 1V .....	± 0.03V

Pk

V > 1V .....	± 5% rdg ± 5 dgts
V < 1V .....	± 0.03V

CF (Crest Factor)

1 ≤ CF < 3.....	± 3% rdg ± 5 dgts
3 ≤ CF < 5.....	± 5% rdg ± 5 dgts
Resolution.....	0.01

RPL (Ripple)

2% ≤ RPL < 100% .....	± 3% rdg ± 5 dgts
100% ≤ RPL < 600% .....	± 5% rdg ± 5 dgts
Resolution.....	0.1%
V <sub>DC</sub> > 0.5V, V <sub>AC</sub> > 0.2V	

All measurements DC and 10Hz to 1kHz.

Maximum overload 1,000 V RMS

Volts RMS is a true RMS measurement (AC + DC)

**Harmonics**

THD (Total Harmonic Distortion)

1% ≤ THD < 100% .....	± 3% rdg ± 5 dgts
100% ≤ THD < 600%.....	± 5% rdg ± 5 dgts
Resolution.....	0.1%

**DF (Distortion Factor)**

1% ≤ DF < 100% ..... ± 3% rdg ± 5 dgts  
 100% ≤ CF < 600% ..... ± 5% rdg ± 5 dgts  
 Resolution ..... 0.1%

H01 ≤ V<sub>harm</sub> < H13 ..... ± 5% rdg ± 2 dgts  
 H13 ≤ V<sub>harm</sub> ≤ H25 ..... ± 10% rdg ± 2 dgts

All measurements up to 25<sup>th</sup> harmonic  
 Frequency range F<sub>c</sub> 45Hz to 65Hz  
 V<sub>acrms</sub> > 1V, V<sub>harm</sub> > 10% V<sub>acrms</sub>

**2.1.3 Watts measurement (Single and 3 Phase)**

(DC, DCRMS, ACRMS)

Measuring range ..... 0 - 1200kW DC or  
 850kW AC  
 Autoranging facility ..... 4kW, 40kW, 400kW,  
 1200kW  
 Resolution ..... 1W in 4kW  
 10W in 40kW  
 100W in 400kW  
 1kW in 1200kW  
 Accuracy ..... 2.5% rdg ± 5 dgts  
 W1Ø < 2kW ..... ± 0.08 kW  
 W3Ø < 4kW ..... ± 0.25kW

**2.1.4 VA measurement (Single and 3 Phase)**

(DC, DCRMS, ACRMS)

Measuring range ..... 0-1200kVA DC or  
 850kVA AC  
 Autorange facility ..... 4kVA, 40kVA, 400kVA,  
 1200kVA  
 Resolution ..... 1VA in 4kVA  
 10VA in 40kVA  
 100VA in 400kVA  
 1kVA in 1200kVA  
 Accuracy VA > 2kVA ..... ± 2.5% rdg ± 5 dgts  
 VA < 2kVA ..... ± 0.08kVA

**2.1.5 VAR Measurement (Single and 3 Phase)**

Measuring range ..... 0 - 850kVAR  
 Auotrange facility ..... 4kVAR, 40kVAR,  
 400kVAR, 850kVAR  
 Resolution ..... 1VAR in 4kVAR  
 10VAR in 40kVAR  
 100VAR in 400kVAR  
 1kVAR in 850kVAR  
 Accuracy VAR > 4kVAR.. ± 2.5% rdg ± 5 dgts  
 VAR < 4kVAR.. ± 0.25kVAR  
 Power Factor range ..... 0.3 < PF < 0.99

**2.1.6 Power Factor (Single and 3 Phase)**

Measuring range 0.3 cap ... 1.0 ... 0.3 ind  
 (72.5° cap ... 0° ... 72.5° ind)  
 Resolution ..... 0.01  
 Accuracy ..... ± 3°

**2.1.7 Kilowatt Hour (kWhr)**

Measuring range ..... 40,000kWhr  
 Autorange facility ..... 4kWhr, 40kWhr,  
 400kWhr, 4,000kWhr,  
 40,000kWhr  
 Resolution ..... 1Whr in 4kWhr  
 10Whr in 40kWhr  
 100Whr in 400kWhr  
 1kWhr in 4,000kWhr  
 10kWhr in 40,000kWhr  
 Accuracy kWhr > 2kWhr ... ± 3% ± 5 dgts  
 kWhr < 2kWhr ... ± 0.08kWhr

All measurements

Frequency range ..... DC and 10Hz to 1kHz  
 Current range ..... 10A to 1400A RMS  
 Voltage range ..... 1V to 600V RMS  
 Maximum input ..... 600V RMS / 2000A Pk  
 Maximum overload ..... 1000V RMS / 10,000A

**2.1.8 Frequency measurement**

(From Current or Voltage sources)

Measuring range ..... 10Hz to 1kHz  
 Resolution ..... 0.1Hz  
 Accuracy 40 - 70Hz ..... ± 0.5% rdg  
 10 - 1000Hz ..... ± 1% rdg  
 Current Range ..... 10A to 1400A RMS  
 Voltage Range ..... 1V to 600V RMS

**2.1.9 Scope Function**

2.1.9.1 Current measurement

Ranges ..... 10A/20A/40A/100A  
 ..... 200A/400A/1000A/2000A  
 Resolution ..... 1A in 40A  
 10A in 400A  
 50A in 2000A  
 Accuracy ..... ± 3% rdg ± 1 pixel  
 Maximum overload ..... 10,000A

2.1.9.2 Voltage measurement

Ranges .....	4V/10V/20V/40V/100V 200V/400V/1000V
Resolution .....	100mV in 4V 1V in 40V 10V in 400V 31.25V in 1000V
Accuracy .....	± 2% rdg ± 1 pixel
Maximum overload .....	1000V RMS
Frequency range .....	DC and 10Hz to 600Hz
Time base .....	2ms, 4ms, 10ms, 50ms/div
Refresh rate .....	0.5 seconds

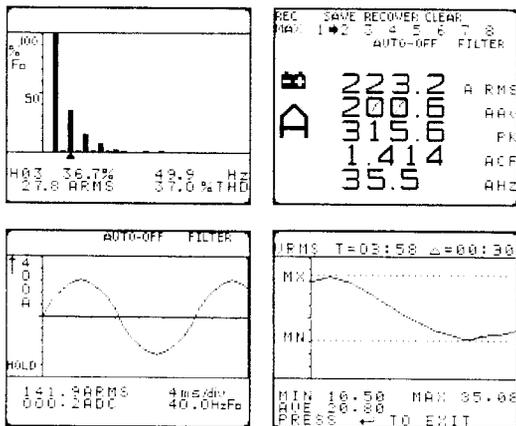
2.1.10 Digital output

RS-232 Interface to a PC  
9600 baud 1 start bit 8 data bits 1 stop bit  
Requires WinLog interface and software

2.2 General Data

2.2.1 Display

Backlit dot matrix LCD 160x128.



2.2.2 Power Supply

Battery type 1.5V Alkaline AA MN 1500 or IEC LR6 x 6

Battery life typically:

- 24 hours (backlight off)
- 12 hours (backlight on)

2.2.3 Environmental

FOR INDOOR USE ONLY

Reference conditions. All accuracy's stated at 23°C ± 1°C

Operating temperature 0°C to 50°C (32°F to 122°F)

Temperature coeff. of current ≤ ±0.15% of rdg per °C

Temperature coeff. of voltage ≤ ±0.15% of rdg per °C

Maximum relative humidity 80% for temperatures up to 31°C (87°F) decreasing linearly to 50% relative humidity at 40°C (104°F)

Maximum operating altitude 2000m

2.2.4 Mechanical

Dimensions ..... Length 300mm (12 inches)  
Width 98mm (3.75 inches)  
Depth 52mm (2 inches)

Weight inc. batteries..... 820g / 1.8lbs.

Case material ..... Bayblend T85MN

Jaw opening ..... 60mm

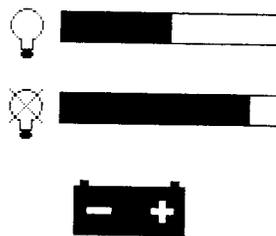
Jaw capacity..... 58mm diameter

Accessories..... Voltage probes  
Carrying case  
Operator's manual

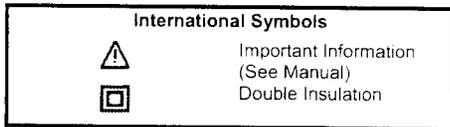
Cleaning ..... The unit can be cleaned with an Isopropanol impregnated cloth. Do not use abrasives or other solvents.

2.2.5 Power-up

At power-up the following screen is displayed for 5 seconds indicating the battery status. The remaining battery lifetime is displayed, with and without the backlight. When the display changes to the digital mode, the instrument is ready for use.



### 3. OPERATING INSTRUCTIONS



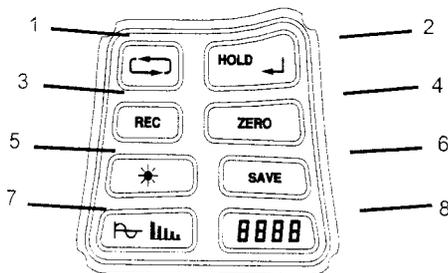
#### 3.1 Rotary Switch / Keypad selections

The instrument functions are selected by a rotary switch and an 8 key keypad. The rotary switch positions are as follows:

OFF	Instrument off
V	Voltage
A	Current
Hz	Frequency / THD
W	Power
W3∅	3 phase Power
Set up	Options Menu
Log	Logging Menu

When switching the instrument ON, wait for the auto calibration to finish before taking measurements.

The push button keys are as follows:



- Option cursor movement and screen changer
- HOLD and Option select
- REC mode (Min, Max, Av)
- ZERO
- Backlight ON / OFF
- SAVE
- Oscilloscope/Harmonics (5333) mode
- Numeric Display mode

#### SAVE Mode

This function allows the capture of up to 8 screens which can be either waveforms or numerical data. For the 5333 both waveform and harmonics screens are captured simultaneously in one memory location. Pressing the SAVE mode key brings up the following text on the screen:

```

SAVE  RECOVER  CLEAR
 1    2    3    4    5    6    7    8
    
```

Use the key to move the cursor and the **HOLD** key to select either SAVE, RECOVER or CLEAR. Repeat this process to select one of the SAVE locations from 1 to 8.

The whole screen is saved in the selected location and can be recovered at a later date - even after the instrument has been powered off. A second press of the SAVE key returns the instrument back to the normal mode of operation.

#### 3.2 Voltage measurement of RMS or DC Voltage

##### SAFETY WARNING

**To avoid possible electric shock and damage to the instrument, do not attempt to measure any voltage that might exceed the maximum range of the instrument - 600Vrms and 1kHz**

- Move the rotary switch to the V position.
- Insert the test leads into the sockets on the front of the instrument. Connect the red lead to the V terminal, and the black lead to the COM terminal.
- Apply the test leads to the circuit under test and read the displayed voltage. See Fig. 2.
- Use the key to change the parameters displayed.  
Screen 1 = V DC, V RMS (AC + DC)  
Screen 2 (5332) = V RMS, V Av, V Pk, V CF, V Hz  
Screen 2 (5333) = V RMS, V Av, V Pk, V CF, V Rpl
- Use the HOLD key to freeze the display.
- Use the key to display the waveform of the voltage and the key to change the timebase.
- Use the key to display the harmonic content of the voltage and the key to select individual harmonics (5333 only)
- Use the 8888 key to return to the digital display.

- Use the REC key to enter the RECORD mode. Use the  key to show the MAX, MIN, AVE displays of the screen readings. Press the REC key again to exit.

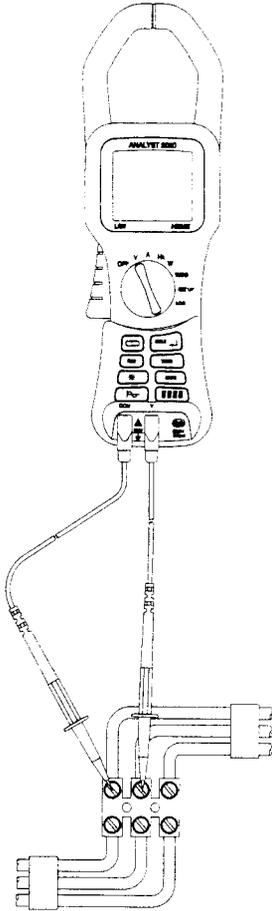


Fig. 2  
Voltage Measurement

### 3.3 Current measurement

- Remove any Voltage test leads from the instrument.**
- Move the rotary switch to A position.
- Press the trigger to open the jaws and clamp around the current carrying conductor as shown in Fig. 3.
- Read the display. Use the  key to change the parameters displayed.  
Screen 1 = A DC, A RMS (AC + DC)  
Screen 2 (5332) = A RMS, A Av, A Pk, A CF, AHZ  
Screen 2 (5333) = A RMS, A Av, A Pk, A CF, A Rpl
- Use the HOLD key to freeze the display.
- Use the  key to display the waveform of the current and the  key to change the timebase.
- Use the  key to display the harmonic content of the current and the  key to select individual harmonics (5333 only)
- Use the 8888 key to return to the digital display.
- Use the ZERO key to zero the display if necessary or if relative readings are required.
- Use the REC key to enter the RECORD mode. Use the  key to show the MAX, MIN, AVE values of the screen readings. Press the REC key to exit.

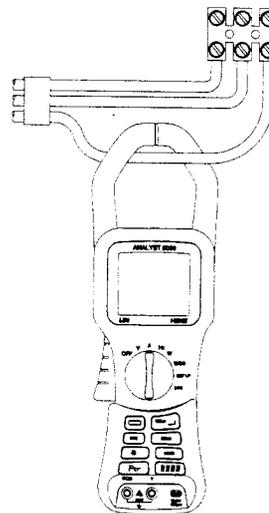


Fig. 3  
Current Measurement

### 3.4 Measurement of Watts / VA / PF / kWhr (Single Phase)

- Move the rotary switch to the W position.
- Insert the test leads into the sockets on the front of the instrument. Connect the red lead to the V terminal, and the black lead to the COM terminal.
- Press the trigger to open the jaws, and clamp them on the current carrying conductor, as shown in Fig. 4.
- Read the display. Use the  key to change the parameters displayed.  
Screen 1 = kVA, kW, kVAR, PF, kWhr  
Screen 2 = V RMS, A RMS, kW, PF, Ahr
- Use the HOLD key to freeze the display.
- Use the REC key to enter RECORD mode. Use the  key to show the MAX, MIN, AVG displays of the screen readings. Press the REC key again to exit.

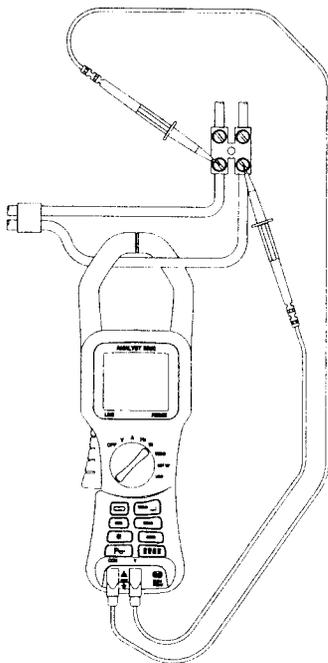


Fig. 4

Single Phase Watts Measurement

### 3.5 Measurement of W / VA / PF / kWhr in a balanced system (3 Phase)

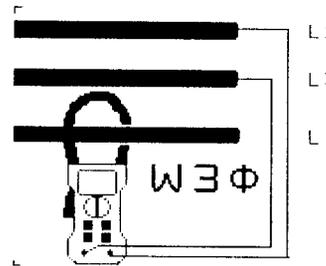


Fig. 5

Watts 3 $\Phi$  Configuration

- Move the rotary switch to the W3 $\Phi$  position.
- A screen prompt, Fig. 5, indicates the above method of connection.
- Insert the test leads into the sockets on the front of the instrument. Connect the red lead to the V terminal and the black lead to the COM terminal.
- Apply the test leads to the circuit under test:  
Red lead to Phase L2  
Black lead to Phase L3
- Press the trigger to open the jaws and clamp them around the current carrying Phase L1, as shown in Fig. 5.
- Read the display. Use the  key to change the parameters displayed.  
Screen1 = kVA, kW, kVAR, PF, kWhr  
Screen2 = V RMS, A RMS, kW, PF, Ahr
- Use the HOLD key to freeze the display.
- Use the REC key to enter RECORD mode. Use the  key to show the MAX, MIN, AVE displays of the screen readings. Press the REC key again to exit this mode.

W3 $\Phi$  gives the total power based on a balanced system.



### 3.6 Frequency / THD Measurement

- Move the rotary switch to the Hz position.
- Insert the test leads into the sockets on the front of the instrument. Connect the red lead to the V terminal, and the black lead to the COM terminal.
- To measure the frequency of the voltage supply apply the test leads to the circuit as shown in Fig. 2 and read the display.
- To measure the frequency of the current, press the trigger to open the jaws, and clamp them on the current carrying conductor, as shown in Fig. 3 and read the display.
- Use the key to change the parameters displayed.  
Screen 1 = Hz, ACRMS  
Screen 2 = Hz(F<sub>0</sub>), ACRMS, THD, DF
- When configured to measure power (Fig. 4) with the test leads connected and the jaws clamped around a current carrying conductor, the instrument displays the frequency of the current source (providing ARMS > 10A). If ARMS < 10A, a volts frequency measurement will be made (providing VRMS > 1V), otherwise --- will be displayed.
- Press the HOLD / ZERO button to freeze the display.
- Use the REC key to enter RECORD mode. Use the key to show the MAX, MIN, AVE displays of the screen readings. Press the REC key again to exit this mode.

#### Additional features 5333

- Use the key to display the waveform of the current / voltage and the key to change the timebase.
- Use the key to display the harmonic content of the current/voltage and the key to select individual harmonics.

### 3.7 Set Up

The following screen is displayed:

```

CONTRAST          XXXXXXXX
AUTO POWER DOWN  ON or OFF
RANGING           ON or OFF
LOW PASS FILTER  ON or OFF
PF DISPLAY       DEG or COS Ø
    
```



LOW PASS FILTER (ON) = -12dB / octave, F>100Hz

Default settings are shown in bold.

The keys are used to make selections from the menu.

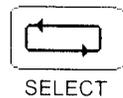
### 3.8 LOG

Two modes of data logging are available: either logging to an internal non-volatile memory or logging to an external PC, using the digital output lead.

Selection of the rotary switch position 'LOG' brings up the following menu:

```

                OPTIONS
LOG              INT <PC>
SET TIME
ENABLE LOG      OFF <ON>
DISPLAY DATA
SEND TO PC
    
```



Detailed description is as given below:

INT Indicates internal logging

PC Indicates external (to a PC) logging

In PC mode, data is continually sent to the digital output and is not logged within the instrument. Logs all the parameters shown on the instrument display.

#### SET TIME

Increments the selection

Moves on to the next selection

||

For ease of operation if the current time is changed, then the start is automatically reset to this time + 60 minutes, and the end time is set to the start time + 60 minutes. The minimum sample interval is 1 second, and the maximum sample 1 hour. A 24 hour clock is used.

Start / Stop and logging intervals can be selected as required.

CURRENT TIME HR:MIN  
 START TIME HR:MIN  
 END TIME HR:MIN  
 SAMPLE INTERVAL MIN:SEC  
 EXIT

The maximum number of points that can be logged is:  
**5332 = 2000 readings**, 1000 sets of 2 or 400 sets of 5  
**5333 = 5000 readings**, 2500 sets of 2 or 1000 sets of 5

The maximum logging duration is determined by the battery life (24hrs.) and the memory. Data being logged is an average over the sample period.

**ENABLE LOG**

The logging function can be enabled from the main log menu. The low battery symbol flashes if there is insufficient battery life to complete the logging session defined in the SET TIME menu.

When internal logging is enabled the logging will commence within 5 seconds of selecting the

measurement screen with the rotary switch and key. All data displayed on the selected screen will be logged. 'MEMORY' flashes if there is insufficient memory to complete the logging session defined in the SET TIME menu. Once logging has commenced an on screen timer counts down the remaining logging period. Logging will terminate if the screen display is changed

through moving the rotary switch or pressing the key before the end of the logging session.

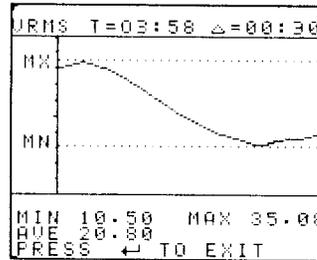
If PC logging is enabled, all measurements appearing on the instrument display will be logged to the PC. Logging will not terminate if the screen is changed.

**DISPLAY DATA**

On entry to this menu a list of the parameters which have been logged are displayed. The key increments through the list, and the <sup>HOLD</sup> key selects ONE parameter for display. For example:  
 ARMS, A Av, A Pk, A CF

**EXIT** returns to the previous menu.

On the chart display screen the single parameter is shown vs time, and an EXIT is displayed on the screen allowing the user to return to the logging parameter select menu.



The following information is also displayed:

LOGGING DURATION T = HR:MIN  
 SAMPLE INTERVAL Δ = MIN:SEC  
 MIN MAX AVE

**SEND TO PC**

This allows the user to download data to a PC running the WinLog program. Previously the user must have selected "DOWNLOAD LOG" from the Instrument option within the WinLog program.

On selection of SEND TO PC the text will flash until all data has been downloaded to the PC.

**3.8 WinLog**

WinLog is the PC resident software for the new 5332 & 5333 Power Meters. The software is used to continually log electrical power measurements or download stored data to a Personal Computer for further analysis

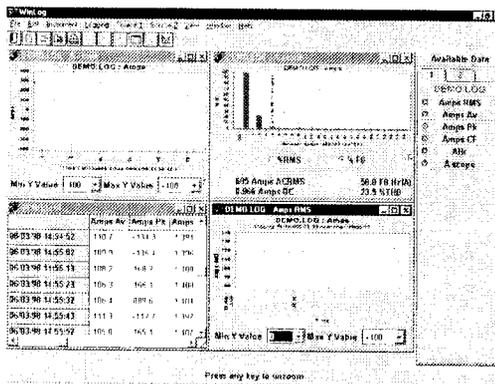


Fig. 7 WinLog Software



Key features include:

- Easy to use Windows format
- Data presentation in display mimic, table and chart modes
- Waveform, harmonics and data download
- Harmonics analysis of waveforms
- Logging of up to 5 parameters, waveforms and harmonics
- Simple exporting of data and trends into other applications

#### **4. SAFETY**

The instrument has been designed to comply with IEC1010-2-032 Installation Category (Overvoltage Category) IV 600V Pollution degree 2 and UL 3111-1. Conforms with the EEC Low Voltage Directive 73/23/EEC and 93/68/EEC.

IEC 1010 is a safety standard which has the following features:

- Installation categories I to IV relate the maximum working voltage to overvoltage transients that can be expected in the measuring environment. 600V CAT IV, the maximum expected transients must not exceed 8kV peak.
- In a pollution degree 2 environment the internal design of the instrument can cope with transient conductivities due to condensation.

**Safe operation of the instrument is the responsibility of the operator who must be suitably qualified and/or authorised. Users of this equipment and or their employees are reminded that Health and Safety Legislation requires them to carry out valid risk assessments of all electrical work, so as to identify potential sources of electrical danger and risk of electrical injury such as from inadvertent short circuits. Where the assessments show that the risk is significant, then the use of fused test leads constructed in accordance with the HSE guidance note GS38 'Electrical Test Equipment for use by Electricians' is advised.**

If the instrument is used in a manner not specified by the manufacturer, then the protection provided by the equipment may be impaired.

#### **Maximum Safe Voltage**

**Current** :- 600V MAXIMUM AC RMS or DC between uninsulated conductor and ground and maximum frequency of 1kHz. This limitation applies to uninsulated conductors only.

**Voltage**:- 600V MAXIMUM AC RMS or DC between live conductor and ground. 600V MAXIMUM AC RMS or DC between V and COM terminals and a maximum frequency of 1kHz.

#### **Important Information**

- **The instrument is intended for indoor use only.**
- Do not attempt to take any measurement of current or voltage higher than the maximum range of the instrument.
- The unit is not hermetically sealed and should NOT be brought into contact with surface water.
- Frequently inspect the test leads and the instrument for damage. If the instrument is physically damaged or does not function properly, it should not be used.

**USE ONLY SUITABLY RATED VOLTAGE TEST LEADS TO IEC 1010-2-031. (600V CAT IV Pollution Degree 2).**

#### **5. BATTERY REPLACEMENT**

Replacement with other than the specified batteries will invalidate the warranty.

Fit only Battery Type 1.5V Alkaline MN1500, IEC LR6 or equivalent x 6.

 will appear on the LCD display to indicate that the minimum operating battery voltage has been reached.

#### **SAFETY WARNING**

**Before removing the battery cover, make sure that all external voltages are disconnected from the instrument. For certainty remove all leads and unclamp the instrument.**

To change the batteries, see Fig. 8

- Switch off the instrument
- Undo the retaining screws (A and B) on the battery cover and lift the cover clear of the unit.
- Replace the used batteries
- Ensure the battery cover is replaced and the locking screws tightened, before further use.

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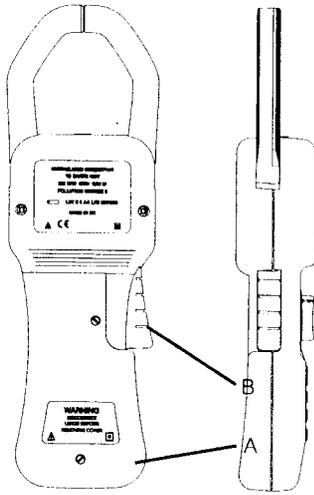


Fig. 8  
Battery Replacement

## 6. WARRANTY

Your clamp on power meter is guaranteed for one year from the date of purchase against defective material or workmanship. If the meter fails during the warranty period, we shall at our discretion, repair or replace it with a new or reconditioned unit provided we are satisfied that the failure is due to defective material or workmanship.

To make a claim under warranty, the meter should be returned to us, postage prepaid, with a description of the defect. The use of batteries, other than that specified invalidates this warranty.

Goods alleged by the buyer to be defective shall not form the subject of any claim for injury, loss, damage, or any expense howsoever incurred whether arising directly or indirectly from such alleged defects other than death or personal injury resulting from the seller's negligence.

No condition is made or to be implied nor is any warranty given or to be implied as to the life or wear of goods supplied or that they will be suitable for any particular purpose or for use under specific conditions, notwithstanding that such purpose or conditions may be made known to the seller.

## 7. OTHER PRODUCTS

B&K Precision offers a wide range of instrumentation for the measurement and analysis of current, voltage and power. Visit [www.bkprecision.com](http://www.bkprecision.com) to view the whole line of B&K products.

**B&K Precision's policy is one of continuous product improvement and the company reserves the right to revise the above specifications without notice.**

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**DECLARATION OF CONFORMITY**

**Equipment Name/Type Number: 5332 & 5333**

Manufacturer: LEM HEME LIMITED  
Address: 1 Penketh Place, West Pimbo,  
Skelmersdale,  
Lancashire, WN8 9QX.  
United Kingdom.

**European Standards: -**

**EMC** EN50082-1 : 1992 Generic Immunity Standard.  
Part 1. Residential, commercial and light  
industry.

EN50081-1 : 1992 Generic Emission Standard.  
Part 1. Residential, commercial and light  
industry.

**Safety** BSEN61010-1 : 1993 General Requirements.  
Safety requirements for electrical equipment for  
measurement, control and laboratory use:-

BSEN61010-2-032 : 1994-12 Particular  
requirements for hand held current clamps for  
electrical measurement and test.

BSEN61010-2-031 : 1993-12 Particular  
requirements for hand held probe assemblies  
for electrical measurement and test.

Description of Equipment : AC/DC Clamp On Power  
Meter.

I certify that the apparatus identified above  
conforms to the requirements of Council Directives:-

- (1) Electromagnetic Compatibility Directive  
89/336/EEC
- (2) Low Voltage Directive 73/23/EEC
- (3) CE Marking Directive 93/68/EEC

Signed:

Name :

Date:



BRIAN M. HOPKINS  
OPERATIONS DIRECTOR

9/9/98