CE

INSTRUCTION MANUAL

POWER CLAMP METER 307

3 3/4 Digits of 4000 Count
40 Segments Bar Graph Display
Auto or Manual Range
Auto Power Off 30 Minutes
PC Interface with RS-232C
True RMS
True Power, Apparent Power, Power Factor

Protek

1. INTRODUCTION

Thank you for your purchasing the model 307 AC/DC power clamp meter. This meter is reliable high-precision instrument designed using advanced technology. Before you use the meter, please read this instruction manual completely and familiarize yourself thoroughly with all its functions and controls. With proper use and care, this power clamp meter will give you years of satisfactory service.

2. SAFETY INFORMATION

The meter is designed to prevent an accidental shock, but you must carefully read the following safety information for your safety.

- Know very well the method of measurement before measuring.
- Always refer to the safety symbols and be sure that the function selector switch is set to the proper function prior to making a measurement.
- To avoid damage to the instrument don't exceed the maximum limits of the input values shown on the electrical specification tables.
- When measuring high voltage or current, avoid working alone and seek assistance.
- Do not use the meter or test leads if they are damaged.
  Use extreme caution when working around bare conductors or bus bars.
- Accidental contact with the conductor could result in electric shock.
- Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.
- Never measure current while the test leads are inserted into the input jacks.
- When measuring a resistance or using the continuity buzzer, disconnect the resistive device under test from the main power supply and any load connected to it. A voltage may be present even after the power is shut off due to a charged capacitor.

- Replace the batteries when the low battery voltage indicator is displayed on the LCD.
- Power off after using.
- Avoid storing the meter in a place where temperature and humidity are high.

► SAFETY SYMBOLS

Symbol	Description
⚠	Caution refer to this manual before using the meter.
⚠	Dangerous voltages.
▣	The meter is protected throughout by double insulation or reinforced Insulation.
Ⅲ	Installation Category(Overvoltage Category) Ⅲ ; Distribution level, fixed installation, with smaller transient overvoltages than Installation Category(Overvoltage Category)Ⅳ.
WARNING	To avoid electric shock, remove test leads before opening case
CE	Comply with EN50081-19(EN55011)/50082-1:1997 EN61010-1, EN61010-2-031
≂	DC/AC Voltage
⏚	Earth
V	Voltage
Ω	Resistance
Hz	Frequency
COM	Ground

3. FEATURES

- Current measurement to 1000A AC/DC
- Voltage measurement to DC 600V, AC 600Vrms
- Average Power, Apparent Power and Power Factor to 600kW, 600kVA and 0.3, respectively
- 45Hz to 400Hz. AC Frequency response
- True RMS Readings for AC Voltage/Current.
- Auto-ranging function
- Max/Min/Avg
- Data-hold function
- Continuity buzzer
- Environment conditions
  - Pollution Degree 2
  - Altitude up to 2000m(6500ft)
  - Indoor use only
  - Ambient operating temperature 0℃ to 40℃ (32°F to 104°F)
  - Relative humidity 80% maximum

4. TECHNICAL SPECIFICATIONS

1. Genral Specifications

Display	3 3/4 digits LCD with max. reading of 4000
Bar-graph Display	40 segments
Range	Auto range is the default mode, Manual range when the range key is pressed.
Polarity	No indication for positive polarity, Minus(-) sign for negative polarity automatically
Over range indication	LCD display will show an "OL".
Warning	Beeper will sound for high voltage input > 600V
Sampling rate	2 time/sec for Digit display, 14 time/sec for Bar-graph display
Low Battery indication	7.1V ±10%
Operating Temp & Hudmidity	0°C to 40 C, <80% RH non-condensing
Storage Temp & Hudmidity	-20°C to +60 C, <70%RH non-condensing
Temp. Coefficient	Specified accuracy x 0.1/°C at 0 to 18 °C & 28 to 40 °C
Auto Power Off Time	30 minutes typ.
Interface	RS232C serial data communication with PC
Power Consumption	10mA typ.for V,A,Ohm,Hz; 15mA typ. for W,VA,PF with 9V battery
Jaw Opening Diameter	Ø46.3mm(1.82")
Accessoires	Test leads, Instruction manual, Carrying case, RS 232C Cable, Diskette(2) and Battery(9V)
Size	86(W) x 44(H) x 273(D)mm [3.4"(W)x1.7"(H)x10.7"(D)]
Weight	900g(1.75 LBS)

2. Electrical Specification

• Voltage

Function	Range	Accuracy	Resolution	Input Impedance	Max. Input
DCV	4.000V	±(0.1%rdg+3dgt)	1mV	11 MΩ	1000V DC (10Mohm1/2W) beeper sounds at >600V
	40.00V		10mV	10 MΩ	
	400.0V	±(0.5%rdg+3dgt)	100mV		
	600V		1V		
ACV	40.00V		10mV	10 MΩ	750VAC rms 45Hz to 1kHz beeper sounds at >600V
	400.0V	±(1%rdg+5ugt)	100mV		
	600V		1V		

* Applicable true rms crest factor for ACV and ACA is max 3 for full scale. Each waveform and its crest factor and additional error are :

<WAVEFORM>	<CREST FACTOR>	<ADDITIONAL ERROR>
SQUARE	1	0.2%
SINE	1.414	0%
TRIANGLE	1.73	0.3%
OTHERS	2	0.5%
	3	1.7%

• Current & Power

Function	Range	Accuracy	Resolution	Input
ACA	400.0A	±(2.0%rdg+5dgt)	0.1A	- "OL" display for >1000A - For 45Hz to 400Hz
	1000A		1A	
DCA	400.0A		0.1A	- "OL" display for >1000A
	1000A		1A	
ACW/ ACVA	600.0kW	±(2%Rdg+5dgt)	0.1kW	- Max 750Vrms, Max 1000A - For 45Hz to 400Hz - Beeper sounds at >600V
DCW (or DCVA)	600.0kW		0.1kW	- Max 1000VDC, Max 1000A - Beeper sounds at >600V
PF	0.30~1.00	±(2%rdg+5dgt)	0.01	- Max 750Vrms, Max 1000A - For >100V at 45~400Hz - Beeper sounds at >600V

* For low current <150A, ±10digit of additional error is added to the above accuracy spec. The 1000A range in ACA and DCA does not require the additional error even for low current.
* For DCA and DCW measurement, DCA offset adjustment using the knob at the rear lower left corner of the meter should be performed to cancel magnetization error of the clamp jaw.

• Frequency

Function	Range	Accuracy	Resolution	Sensitivity	Max. Input
FREQ.	10KHz	±(0.1%rdg+1dgt)	1Hz	1Vp-p Max. at >20Hz	750VAC (1nF 1kV)
	100KHz		10Hz		
	1MHz		100Hz		

* Typical sensitivity : 0.1Vrms for sine wave from 45Hz to 1MHz.

• Resistance

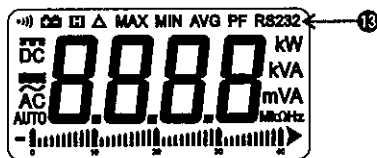| Function	Range	Accuracy	Resolution	Overload Protection
OHM	400Ω	±(0.5%rdg+3dgt)	100mΩ	250Vrms (500ohm PTC)
	4KΩ		1Ω	
	40KΩ		10Ω	
	400KΩ		100Ω	
	4MΩ	±(1.0%rdg+5dgt)	1KΩ	
	40MΩ	±(2.0%rdg+5dgt)	10KΩ	
Buzzer	400Ω	40Ω ±10%	OPEN/NO TONE at >44Ω SHORT/ BUZZER SOUNDS at <36Ω	

5. DESCRIPTION OF PARTS & CONTROLS

❶ Transformer Jaws **:** Senses the AC/DC current flowing through the conductor.

❷ Trigger Handle **:** Opens and closes the jaws of the meter. Press to open, release to close the jaws.

❸ Data Hold Button **:** When pressed freezes the measured value displayed on the LCD. An **H** will appear on the LCD and the displayed value will not change even if the input values changes or the test leads removed. This is especially useful in a dim lit room or in an area with many cables. Pressing this button a second time will release the hold mode.
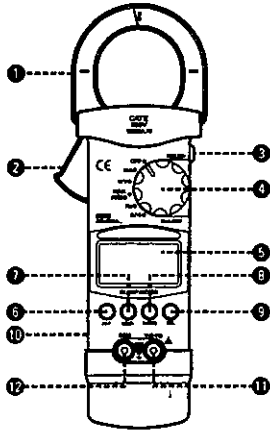
❹ Function Select Knob **:** The rotary knob selects the measurement function that is indicated by the marker "slot"on the knob when the slot is aligned with the measurement symbol inscribed on the body of the meter. Rotate this knob to the off position when the meter is not being used.

❺ LCD **:** The LCD is a large 3-3/4 digit 4000 count display that has all the enunciators for the measurement functions. It also incorporates a 40 segment analog bar graph, which updates 14 times per second.

❻ ALT-F **:** This key is used to select the alternate functions, which share the same position on the rotary function switch (e.g. **ACV/DCV**). When the Function selector switch is rotated to this position the default function is ACV. Pressing The ALT-F again will select DCV.

❼ MAX/MIN/AVG **:** This function allows the operator to record the Minimum, Maximum or Average value of a meter reading over a period of time. Pressing this button once selects the MAX value, pressing it again selects the MIN value and pressing it a third time selects the AVG value. Pressing the MAX/MIN/AVG button for longer than 1 second will releases this function and normal operation will continue.

The average function adds the present value the sum of the previous 99 readings and then averages these values according to the following formula.

Average= {sum of previous 100 data measured}/100

❽ RANGE **:** The auto-range mode is the default mode when the meter is powered on for the Voltage, Resistance and Frequency functions. The meter will automatically select the appropriate measurement range from the value applied to the input terminals.
If it is necessary to see a fast change in the input or, if the range needs to be changed very quickly to a different value it may be necessary to use the Manual range mode. This may be accomplished by pressing the **RANGE** button. Pressing and releasing this button advances the decimal point to the next highest value. Pressing the **RANGE** key longer than 5 seconds will restore the auto range mode.

❾ REL mode **:** The Relative mode allows the operator to measure a value with respect to a reference other than zero. Example: When 1.500 is applied to the input and displayed on the LCD, pressing the REL key will enter 1.500 as the new reference. The LCD display will now read 0.000. If the source is then changed from 1.5 to 1.6 the display will read 1.000.If the source is change to 1.400 the display will read 1.000. Pressing the REL for longer than 2 second will release the REL mode and the meter will return normal operation.

❿ ZERO ADJ **:** When measuring DC current there is a plus or minus offset introduced into the reading by the magnetized core of the current transformer. Rotating this control for a zero reading on the LCD neutralizes this offset.

⓫ V/Ω/Hz **:** This terminal is used for measuring Voltage, Resistance or Frequency. Insert the red test lead into this jack.

⓬ **COM :** This is the common terminal. Insert the black test lead in to this terminal

⓭ **RS232 :** This is the interface between the 307 Clamp-on meter and the PC via of the IR cable.

⓮ **AUTO POWER OFF :** This meter will turn off automatically after 30 minutes of non-use, thereby increasing the life of the meter. To disable the auto power off: Press the **HOLD** button while turning the meter on, continue to press the hold button for at least one second after power is applied. Note when operating this meter from the PC interface the **AUTO POWER OFF** is automatically disabled.

⓯ *Powering on the meter after AUTO POWER OFF :* Pressing the **ALT-F** key will restore the power to the meter.

6. MEASUREMENT PROCEDURES

Note : Perform the following procedure before connecting the leads to a voltage source.

1. Measuring AC Voltage
Connect the red test lead to the **V- Ω -Hz** terminal and the black lead to the **COM** terminal. Rotate the Function select knob to the Volts position. When the meter is turned on **ACV** is the default function. Connect the test leads to the voltage source to be measured. The meter will auto range to the range that will give the most accurate reading. If a specific range is desired, press and release the **RANGE** button until the appropriate range is selected.
Warning : Applying a voltage to the input that exceeds 600V RMS may cause electric shock or damage to the meter.

2. Measuring DC Voltage
Connect the red test lead to the **V- Ω -Hz** terminal and the black lead to the **COM** terminal. Rotate the Function select knob to the Volts position. Press the. **ALT-F** button to select **DCV**. Connect the test leads to the voltage source to be measured. The meter will auto range to the range that will give the most accurate reading. If a specific range is desired press and release the **RANGE** button until the appropriate range is selected.
Warning : Applying a voltage to the input that exceeds 600V DC may cause electric shock or damage to the meter.

3. Measuring AC Current
Rotate the function select knob to the 1000A or 400A position, AC amps is the default measurement. Open the Jaws and place the meter around the conductor to be measured. The conductor should be as close to the center of the jaws as possible to insure an accurate reading.
NOTE: If the wires are internal to a cable they must be separated and the Jaw placed around a single conductor.
Warning : Remove all test leads from the meter when making current measurements.

4. Measuring DC Current

Rotate the function select knob to the 1000A or 400A position. Press the **ALT-F** button to select DC current. If the display is not reading 0 Amps adjust the off set control on the lower left side of the meter (see page 10). Press the trigger to open the Jaws and clamp the meter around the conductor to be measured. The conductor should be as close to the center of the jaws as possible to insure an accurate reading. The arrow on the below the jaws indicate the direction for positive current flow. If the current is flowing opposite the arrow a negative indication will be displayed.

NOTE: If the wires are internal to a cable they must be separated and the Jaw placed around a single conductor.

Warning : Remove all test leads from the meter when making current measurements

5. AC Watts measurement

Rotate the function selector switch to the Watts/VA/PF position; **AC Watts** is the Default function. Connect the red test lead to the **V- Ω -Hz** terminal and the black lead to the **COM** terminal.. Connect the test leads to the voltage source to be measured and clamp the jaws around one conductor being measured. Allow a few seconds for the display to stabilize before taking the measurement.

Warning : Applying a voltage to the input that exceeds 600V RMS may cause electric shock or damage to the meter.

6. AC VA measurement (apparent power)

Rotate the function selector switch to the Watts/VA/PF position. Connect the red test lead to the **V- Ω -Hz** terminal and the black lead to the **COM** terminal.. Connect the test leads to the voltage source to be measured and clamp the jaws around one conductor being measured. Press the **ALT-F** button to select AC VA. Allow a few seconds for the display to stabilize before taking the measurement.

Warning : Applying a voltage to the input that exceeds 600V RMS may cause electric shock or damage to the meter.

7. Power Factor Measurement

Rotate the function selector switch to the Watts/VA/PF position. Connect the red test lead to the **V- Ω -Hz** terminal and the black lead to the COM terminal. Connect the test leads to the voltage source to be measured and clamp the jaws around one conductor being measured. Press the **ALT-F** button twice to select PF. Allow a few seconds for the display to stabilize before taking the measurement.

Warning : Applying a voltage to the input that exceeds 600V RMS may cause electric shock or damage to the meter.

8. DC Power Measurement

Rotate the function selector switch to the Watts/VA/PF position. Connect the red test lead to the **V- Ω -Hz** terminal and the black lead to the COM terminal. Connect the test leads to the voltage source to be measured and clamp the jaws around one conductor being measured. Press the **ALT-F** button 3 times to select DC Watts. Allow a few seconds for the display to stabilize before taking the measurement.

Warning : Applying a voltage to the input that exceeds 600V RMS may cause electric shock or damage to the meter.

9. Frequency Measurement

Rotate the function selector switch to the Hz position. Connect the red test lead to the V- Ω -Hz terminal and the black lead to the **COM** terminal. Connect the test leads to the frequency source to be measured. The out put of the frequency source should be over 0.1 volts for a stable reading. The meter will auto range to the range that will give the most accurate reading. If a specific range is desired, press and release the **RANGE** button until the appropriate range is selected.

Warning : Applying a voltage to the input that exceeds 600V DC may cause electric shock or damage to the meter.

10. Resistance and continuity

Note : Remove all power to the circuit that you are measuring resistance or testing continuity.

Resistance Measurement : Rotate the **FUNCTION SELECT** switch to the Ω/CONT

position. Insert the red test lead in the **V- Ω -Hz** jack and the Black test lead in the **COM** Jack. If the test leads are open OL will be displayed on the LCD Connect the test leads to the circuit you are measuring. The meter will auto range to the range that will give the most accurate reading and display the resistance value. If a specific range is desired press and release the **RANGE** button until the appropriate range is selected.

Continuity Test : Press the **ALT-F** button to select continuity. Connect the test leads to the resistive device, If the resistance is greater than 44 ohms the buzzer will not sound and the LCD will read "**OPEN**" sound and the LCD will read "**SHrt**".

Warning : Remove all voltages from the circuit under test and discharge all capacitors. Failure to do so may cause electric shock or damage the meter.

7. OPERATION OVER THE RS-232C INTERFACE

1. Connection between the meter(PCM;Power Clamp Meter) and a PC

Refer to following connection way by using the RS-232C cable in condition that a PC's power is turned off.

2. Technical Information

The default transmission parameters are the following:

Baud Rate   9600
Stop bit   1
Data bits   7
Parity   None

Each of the 9 data bytes contains specific information about the measurement. In order to enable the meter for communication with the PC a hex 01 is Transmitted in the first byte. The data byte information is as follows:

1st	2nd	3rd			4th		5th	6th	7th	8th		9th
8bit	4bit	4bit	4bit	4bit	4bit	4bit			4bit	4bit	4bit	4bit	8bit
Start (01) in Hex.	Range	Function	Dot-location	Display status 1	MSB				LSB	Menu	Display Status 2	Check sum

The following tables are the detail information about each data bytes for transmission.

(1) TX 9 Data Byte
(i) 1st Byte : 0x7a
(ii) 2nd Byte

High 3bit					Low 4bit					
6th	5th	4th	Decimal	Range Status	3rd	2nd	1st	0	Decimal	Function
0	0	1	1	1	0	0	0	0	0	DCA
0	1	0	2	2	0	0	0	1	1	ACA
0	1	1	3	3	0	0	1	0	2	DCV
1	0	0	4	4	0	0	1	1	3	ACV
1	0	1	5	5	0	1	0	0	4	Average Power
1	1	0	6	6	0	1	0	1	5	Apparent Power
					0	1	1	0	6	Power Factor

							0	1	1	1	7	Frequency
							1	0	0	0	8	OHM
							1	0	0	1	9	Continuity
							1	0	1	0	10	DC Power

(iii) 3rd Byte

High 3bit				Low 4bit				
6th	5th	4th	Position Status	3rd	2nd	1st	0	Value Status
X	0	0	First (0.000)	X	X	0	0	Decimal
X	0	1	Second (00.00)	X	X	0	1	OL (Over Load)
X	1	0	Third (000.0)	X	X	1	0	Main Digit Off
X	1	1	No Dot (0000)	X	0	X	X	+ (Sign)
0	X	X	OPEn at Continuity	X	1	X	X	- (Sign)
1	X	X	SHrt at Continuity					

(iv) 4th, 5th, 6th, 7th Byte

High 3bit					Low 4bit					
6th	5th	4th	Decimal	Status	3rd	2nd	1st	0	Decimal	Digit
0	0	0	0	Not Used	0	0	0	0	0	0
0	0	0	0	Not Used	0	0	0	1	1	1
0	0	0	0	Not Used	0	0	1	0	2	2
0	0	0	0	Not Used	0	0	1	1	3	3
0	0	0	0	Not Used	0	1	0	0	4	4
					0	1	0	1	5	5
					0	1	1	0	6	6
					0	1	1	1	7	7
					1	0	0	0	8	8
					1	0	0	1	9	9

(v) 8th Byte

High 3bit					Low 4bit				
6th	5th	4th	Decimal	Status	3rd	2nd	1st	0	Status
0	0	0	0	Normal	0	X	X	X	Auto Range
0	0	1	1	MAX	1	X	X	X	Manual Range
0	1	0	2	MIN	X	0	X	X	Low Batt Off
0	1	1	3	AVG	X	1	X	X	Low Batt On
					X	X	0	X	Hold Off
					X	X	1	X	Hold On
					X	X	X	0	Rel Off
					X	X	X	1	Rel On

Receiving consists of 1 data byte. The following table is for receiving.

(2) RX 1Data Byte

Rx Value	Alarm Name	Micom Execution
0x01	RS232C Connection Alarm	RS232C communication Enable & Connection
0x02	RS232C Disconnection Alarm	RS232C communication Enable & Connection
0x1E	Alt Key Occur Alarm	Alt Key Tech Execution
0x1D	Max, Min, Avg (MMA)Key Occur Alarm	MMA Key Tech Execution
0x1B	Range Key Occur Alarm	Range Key Tech Execution
0x17	Rel Key Occur Alarm	Rel Key Tech Execution
0x08	Hold Key Occur Alarm	Hold Key Tech Execution
0x1C	MMA Key pushed on 1s	
0x19	RNG Key pushed on 1s	
0x13	REL Key pushed on 1s	

3. Example for user

The following program is an example of a user program.

```
# Data Receiver
   ReadData = ReadData & MSComm.Input
   DataLen = Len(ReadData)
   Current_Pos = 0

   Do While InStr(Current_Pos + 1, Hex(Asc(ReadData)), "7A")
      Next_Pos = InStr(Current_Pos + 1, Hex(Asc(ReadData)), "7A")
      If Next_Pos = 1 Then Exit Do
   Loop

   If Next_Pos = 1 Then
      For i = 1 To DataLen
         Buf = Mid(ReadData, i, 1)
         If Counter = 9 Then Counter = 0
         buffer(Counter) = Asc(Buf)
         Counter = Counter + 1
         ReceiveVigo = True
      Next
      ReceiveVigo = False
      If SampleTime = False Then
         Data_Analyzer
      End If
   End If

   ReadData = " "
```

4. Hardware and software requirements

(1) Hardware: 486 or Pentium IBM PC, with 32 Mbytes of base ram or better.

(2) Software: Windows 95 or above.
  * For the other detail information and S/W setup refer to the Document of the "Read Me.txt" file in the S/W.

8. Maintenance

1. Battery replacement

Rotate the Function select switch to the off position. Turn the meter over (LCD facing down) unscrew the rear panel battery holder cover. Remove the battery and Insert a fresh 9V battery in the battery holder. Replace the battery cover and tighten the screw.

2. Maintenance & Cleaning

- Qualified service people should only perform repairs or servicing not covered in this manual.
- Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on the meter.

9. CALIBRATION PROCEDURES

Refer to the adjustment table on the next page.

1. DC Reference Voltage Adjustment

Rotate the function selector knob to DCV. Apply 300V DC from a certified calibrator to the V-Ω-Hz and COM inputs of the meter Adjust VR2 for a 300V reading on the LCD.

2. AC Reference Voltage Adjustment

Rotate the Function Select knot to the DCV/ACV position. Select the ACV function by pressing the AC/DC Ω/Cont. button. Apply 300V AC from a certified calibrator to the V-Ω-Hz and COM inputs of the meter Adjust VR9 for a 300V reading on the LCD.

3. DC Current Ref Adjust

Rotate the Function select knob to the 1000A position, Adjust the DC zero adjust knob (see page 11 item 10) to it's center of rotation. Clamp the meter jaws to a source of 500A AC current to eliminate any residual magnetism in the transformer. Remove the meter from the 500 Amp current source and adjust VR 10 for a zero reading on the LCD.
Clamp the Jaws of the meter to the DC calibration source (arrow on meter body pointing to the positive current flow) and apply 500 A DC.

Adjust VR 3 for a 500A reading on the LCD. Apply a -500 Amp current from the calibrator and readjust VR 3. Repeat this procedure until both positive and negative readings are equal and in specification.

4. AC Current Adjustment

Press the **ALT-F** button to select AC current. Clamp the Jaws of the meter to the AC current calibration source and apply 500A 60Hz.
Adjust VR 8 for a 500A reading on the LCD.

5. Watts Ref Adjustment

Before proceeding with this adjustment, perform the adjustment procedure for DCV, DCA, ACV and ACA. Rotate the function select knob to the watts position and perform the adjustments shown in the table below.

| NO | Input | | Adjust | Target Value | Detect Point | Test Equip |
	Voltage	Current				
1	300V AC	0A	VR4	AC 0.000mV*	TP1	DMM
2	0V AC	500A AC	VR5	AC 0.000mV*	TP1	DMM
3	0V AC	0A DC	VR6	DC 0.000mV	TP1	DMM
4	300V AC	500A	VR7	150.00kW	LCD	Visual

* These adjustments must be as close to 0.000 as possible.
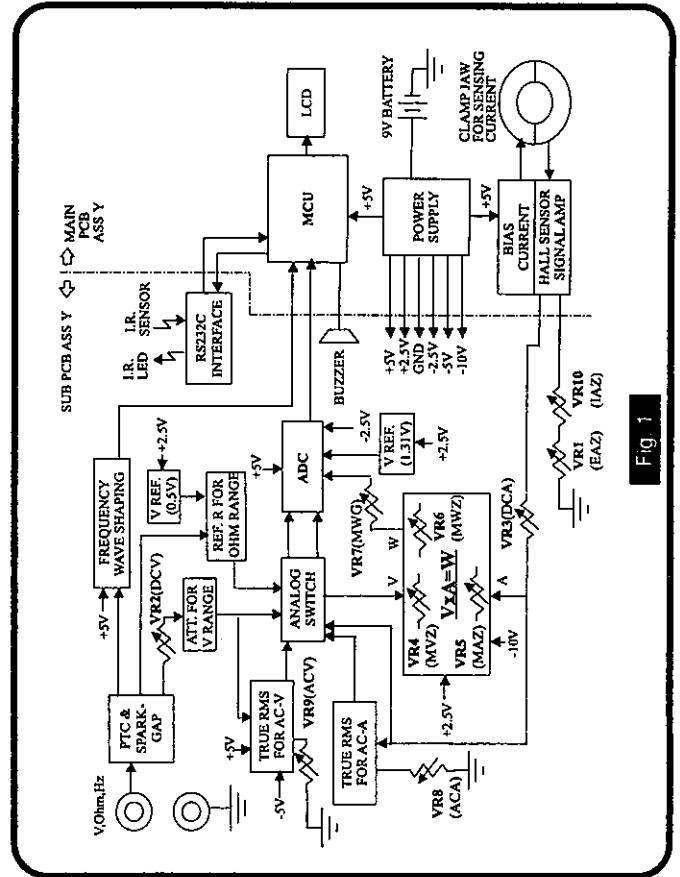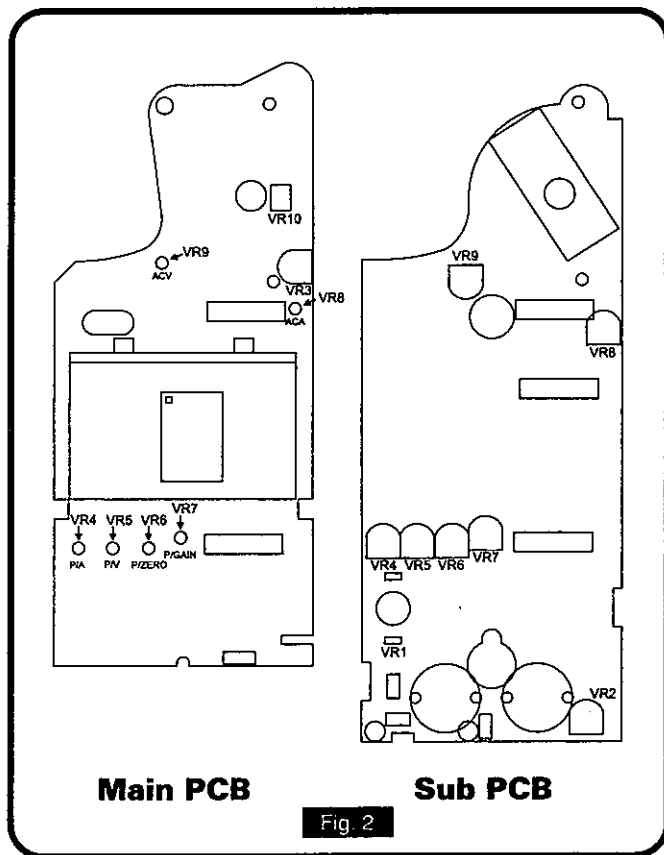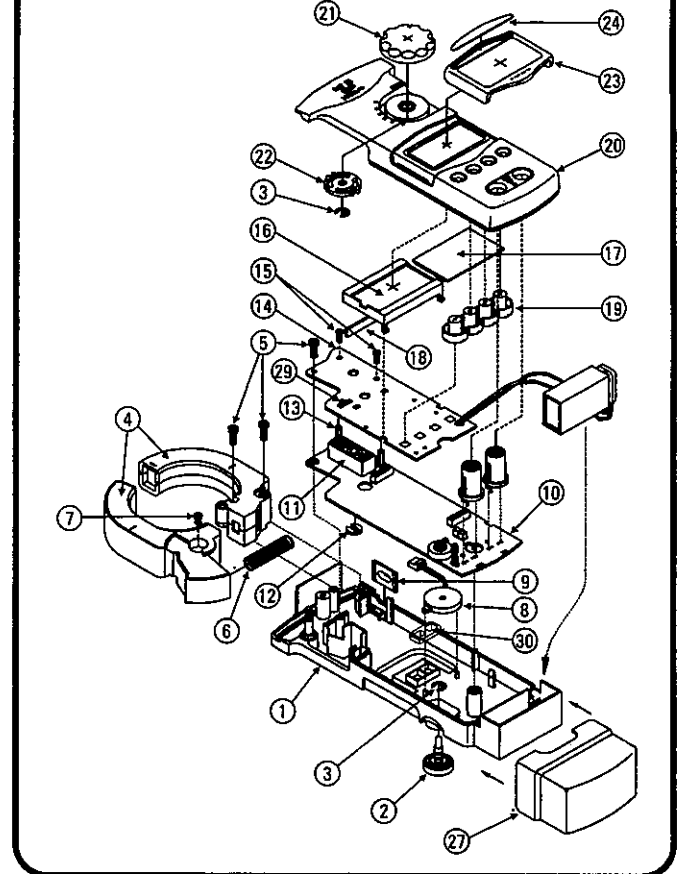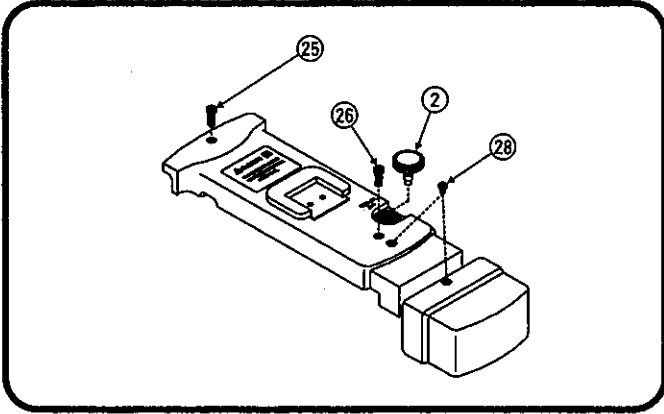
10. FUNCTIONAL BLOCK DIAGRAM

Fig. 1

11. ASSEMBLY DIAGRAM

I. Main Unit Assembly

Main PCB   Sub PCB

Fig. 2

2. Button Assembly

3. Assembly Parts List

NO	PART CODE	DESCRIPTION	SPECIFICATION	QTY
1	C07-B004-48142	BOTTOM CASE	M332009-C001A ABS (HC-307)	1
2	K02-V001-34050	VOLUME KNOB	M332008-C029A ABS (HC-305)	1
3	R08-E001-25074	E-RING	4.0PI*0.6T	2
4	J03-J001-34078	JAW ASS'Y	HC305	1
5	S02-T001-18541	TAPPING SCREW	PH(+)3.0PI*8.0 BLACK/C, 2PART	3
6	S16-C003-34069	COIL SPRING	M332008-C028A HSW2 BK(HC305)	1
7	N02-H002-10953	HEXAGON NUT	M4.0*0.7P NI/PL	1
8	B26-B001-34036	BUZZER	D24-288GL	1
9	B38-P001-34037	PUSH BUTTON	M332008-C024A ABS (HC-305)	1
10	P27-M001-48148	MAIN PCB ASS'Y	HC307	1
11	H03-C005-48144	CONTACT HOLDER	M332009-C003A POM (HC-307)	1
12	W02-P002-34089	PLASTIC WASHER	M332008-C020A POM (HC-305)	1

NO	PART CODE	DESCRIPTION	SPECIFICATION	QTY
13	P15-H001-48146	HEXAGON POLE	M332009-C005A (4x11.3)(HC-307)	2
14	P27-S001-48149	SUB PCB ASS'Y	HC307	1
15	S02-M001-25702	MACHINE SCREW	BH(+)M2.3*5 NI/PL	4
16	H03-L002-34049	LCD HOLDER	M332008-C023A ABS (HC-305)	1
17	L02-L001-48804	LCD	T2.5 (HC-307)	1
18	Z01-L001-34074	LCD ZEBRA	M332008-C026A SIL&CARB (HC305)	2
19	R11-K001-34065	KEY-PAD RUBBER	M332008-C018A S-RUBBER (HC305)	1
20	C07-F003-48402	FRONT CASE	M332008-C001B ABS/SILK (HC-307)	1
21	K02-R001-48145	ROTARY KNOB	M332009-C004A ABS (HC-307)	1
22	R17-R001-34088	ROTARY	M332008-C014A POM (HC-305)	1
23	W04-L001-34073	LCD WINDOW	M332008-C012 ACRYLIC (HC-305)	1
24	P11-N001-48403	NAME PLATE	M332008-C016A PC/SILK (HC-307)	1
25	S02-M001-28374	MACHINE SCREW	PH(+)M3.0*12.0 BLACK	1
26	S02-T001-35104	TAPPING SCREW	PH(+)3.0PI*12.0 BLACK/C 2PART	2
27	C26-B003-48143	BATTERY COVER	M332009-C002A ABS (HC-307)	1
28	S02-M001-35102	MACHINE SCREW	FH(+) 3.0*6.0 BLACK	1
29	C22-S001-04351	SLIDE CONTACT	PBS-SH 0.15t (301U, 1015U)	3
30	C26-S002-39242	SENSOR COVER(1)	608 (ARC M333065-C017A)	1

12. ACCESSORY LIST

NO	NAME	ID CODE	QTY
1	TEST LEADS	TL601	1
2	RS232C CABLE	HC608 RS232 CABLE	1
3	INSTRUCTION MANUAL	307 MANUAL	1
4	CARRING CASE	307 CARRYINGCASE	1
5	DISKETTE	307 RS232 S/W	2
6	BATTERY	9V NEDA1604,6F22,006P	1