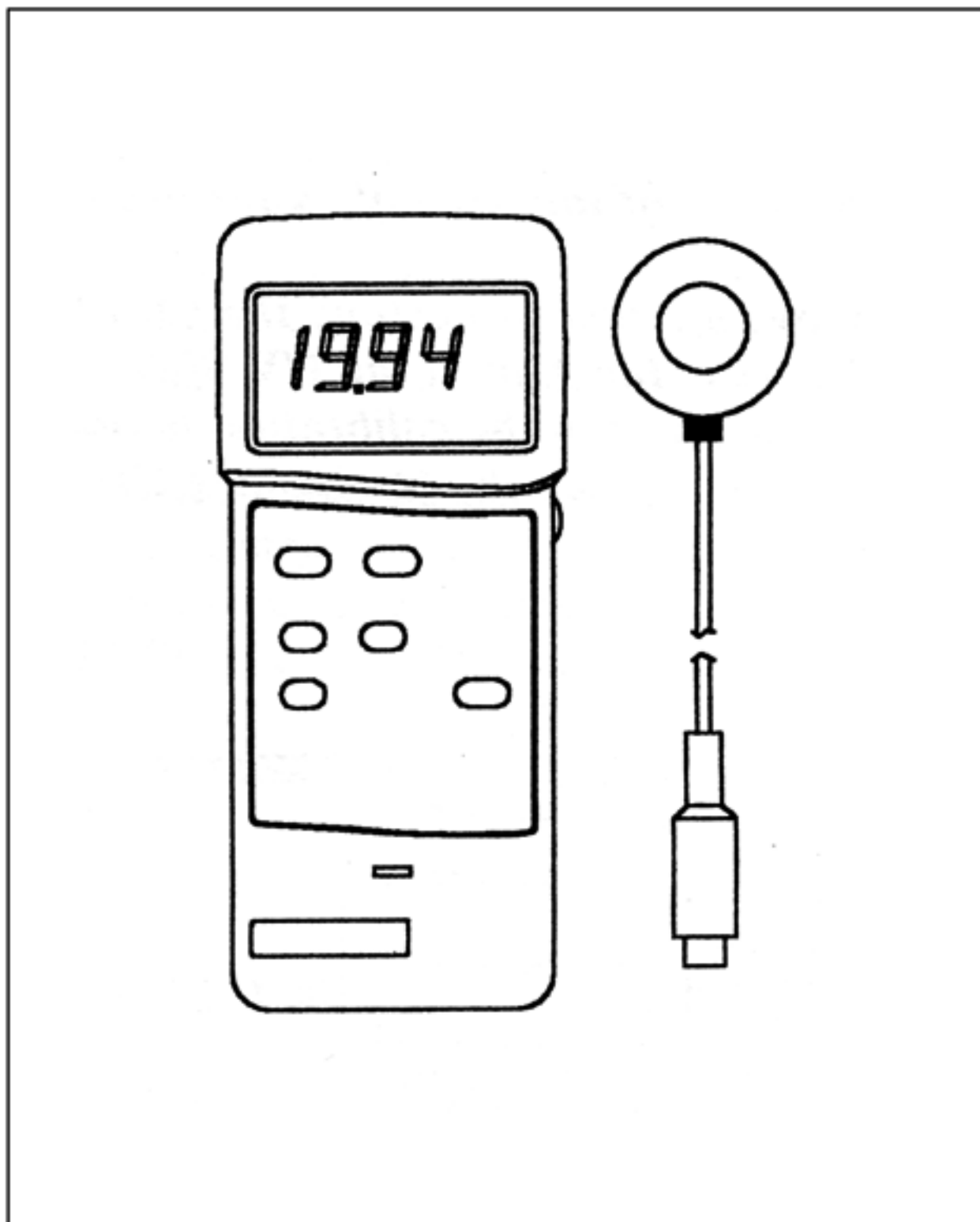


UV LIGHT METER



Storage for the " UV sensor "

UV sensor is with extremely precise structure. Once don't use it , be sure to store it in the dry environment. For example, put the whole 'sensor including Desiccant (Drier) into to the Plastic bag and seal the bag as tightly as possible (refer the following figure).



Take the sensor out of the bag only when use it.

Comply to above method will extend the life of UV sensor. Otherwise, the gain of the UV SENSOR may be decreased and shorten the calibration period. It is also necessary to replace the Desiccant (Drier) periodically.

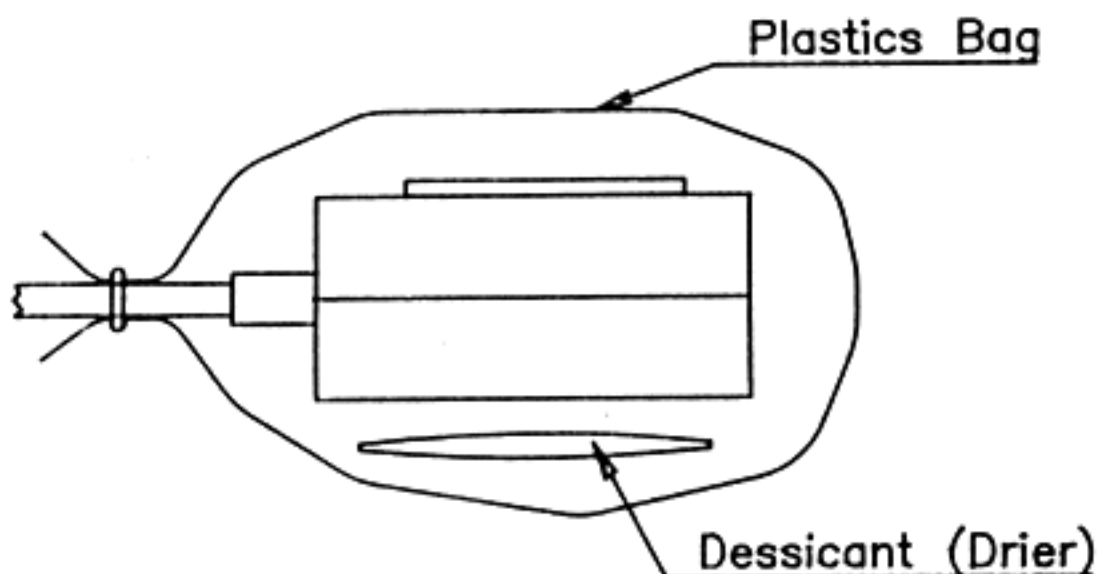


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1. FEATURES

- * Long wave 365 nm ultra –violet irradiance measurement.
- * Professional, high quality UV meter.
- * Wide measurement range, 199.9 uW/cm², 1.999 mW/cm², and 19.99 mW/cm².
- * Microprocessor circuit assures maximum possible accuracy, provided special functions and features.
- * Exclusive UV sensor with correction filter.
- * Super large LCD display with contrast adjustment for best viewing angle.
- * Heavy duty & compact housing case.
- * Records Maximum, Minimum with recall.
- * Data hold.
- * Auto power off saves battery life.
- * Operates from 9V battery.
- * RS 232 PC serial interface.
- * Zero adjustment by push button.

2. SPECIFICATIONS

2–1 General Specifications

Circuit	Custom one –chip microprocessor LSI circuit.	
Display	13 mm (0.5") Super large LCD display with contrast adjustment for best viewing angle, dual function display.	
Spectral response range of sensor	Point	365 nm.
	Band pass	320 – 390 nm.

Measurement & ranges	199.9 $\mu\text{W}/\text{cm}^2$ x 0.1 $\mu\text{W}/\text{cm}^2$ 1.999 mW/cm^2 x 0.001 mW/cm^2 19.99 mW/cm^2 x 0.01 mW/cm^2
Linearity	$\pm 1\%$.
Sensor	The exclusive photo diode & UV color correction filter.
Memory Recall	Records Maximum & Minimum reading with recall.
Zero Adj.	By push button.
Sample Time	Approx. 0.4 sec.
Power off	Manual off by push button, or Auto shut off after 10 minutes.
Data Output	RS 232 PC serial interface.
Over Range Indication	Indication of "— — — —"
Operating Temperature	0 °C to 50 °C(32 °F to 122 °F).
Operating Humidity	Max. 80% RH.
Power Supply	DC 9V 006P, MN1604 (PP3) or equivalent. (Alkaline or Heavy duty type).
Power Current.	Approx. DC 5.3 mA.
Weight	355 g/0.77 LB (included batteries)
Size	Main instrument: 180 x 72 x 32 mm (7.1 x 2.8 x 1.3 inch).
	Sensor probe: 38 mm DIA. x 25 mm.
Accessories	Instruction manual..... 1 PC. UV sensor probe..... 1 PC. Hard carrying case..... 1 PC.

2-2 Electrical Specifications (23 ± 5 °C)

Range	Resolution	Accuracy
199.9 $\mu\text{W}/\text{cm}^2$	0.1 $\mu\text{W}/\text{cm}^2$	$\pm(2\% \text{ FS} + 2 \text{ dgt})$ FS : full scale
1.999 mW/cm^2	0.001 mW/cm^2	
19.99 mW/cm^2	0.01 mW/cm^2	
* Spec. tested under the environment RF Field Strength less than 3 V/M & frequency less than the 30 MHz only.		

3. FRONT PANEL DESCRIPTION

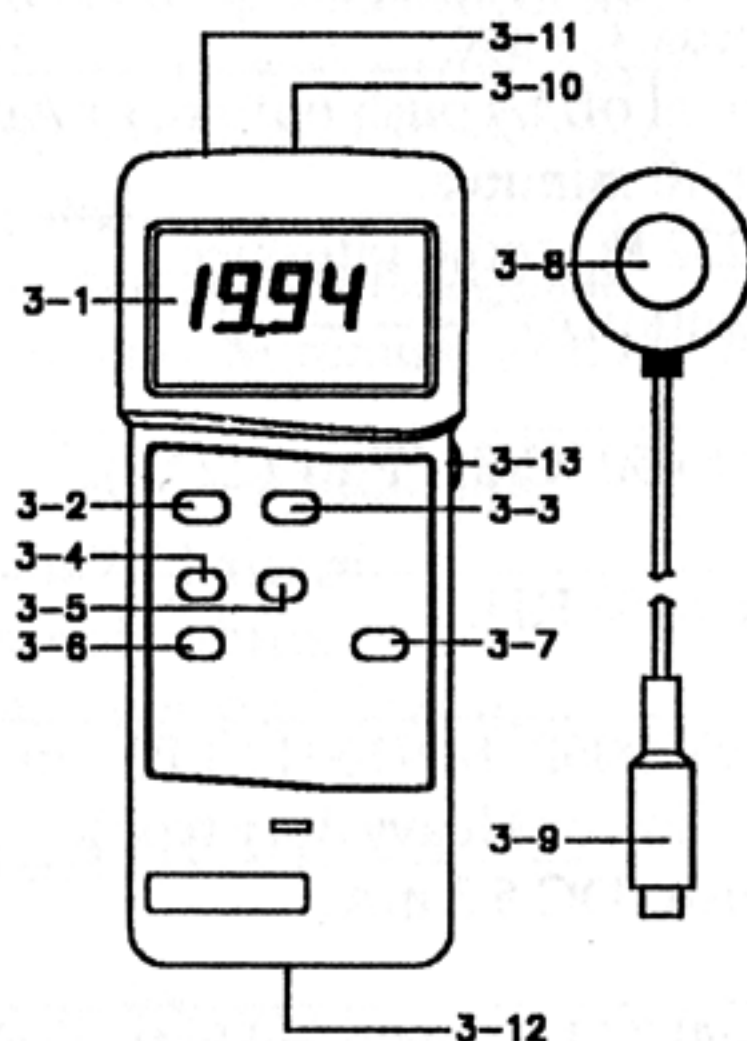


Fig. 1

- | | |
|----------------------------|--------------------------------|
| 3-1 Display | 3-6 Zero Button |
| 3-2 Power Off/On Button | 3-7 Range Switch |
| 3-3 Data Hold Button | 3-8 UV Sensor |
| 3-4 Memory "Record" Button | 3-9 Sensor Plug |
| 3-5 Memory "Recall" Button | 3-10 Sensor Input Socket |
| | 3-11 RS-232 Output |
| | 3-12 Battery Compartment/Cover |
| | 3-13 LCD Contrast Adjust VR |

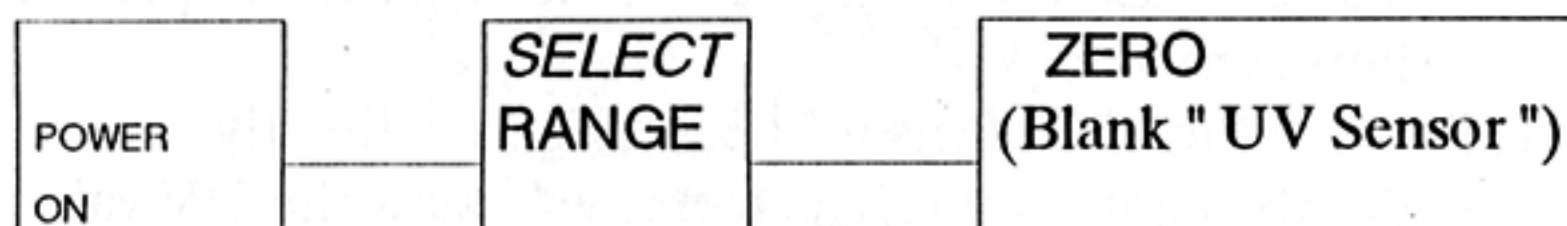
4. MEASURING PROCEDURE

- 1) Push the " Power Off/On Button " (3-2, Fig. 1) to switch the instrument on.
- 2) Select the max. range using the " Range Switch " (3-7, Fig. 1).
 - * *If the display shows " - - - - ", it indicates an overload condition, select the next higher range.*
- 3) **Zero Adjust Procedures**
Set " Range Switch " (3-7, Fig. 1) to " 199.9 uW/cm² ".
 - * Reverse and blank the " UV Sensor " (3-8, Fig. 1) by desktop or any other flat surface.
 - * Push the " Zero Button " (3-6, Fig. 1), then display will show zero values.
- 4) Position the " UV Sensor " (3-8, Fig. 1) directly under the light source. The meter will show the UV value.
- 5) **Data Hold :**
 - * During measurement, pushing the " Data Hold Button " (3-3, Fig. 1) will hold the display values & the LCD will show the " D.H " symbol.
 - * If intend to cancel the Data Hold function, Press the Data Hold Button, once more.
- 6) **Data Record(Max., Min. reading)**
 - * The DATA RECORD function displays the maximum and minimum readings. To start the DATA RECORD function, press the " Record Button " (3-4, Fig. 1) once. "REC" marker will appear on the LCD display.
 - * ***With the "REC" symbol indicated on the display***
 - a) Push the " Recall Button " (3-5, Fig. 1) once, then the " Max " symbol with the maximum values recorded will appear on the LCD display.

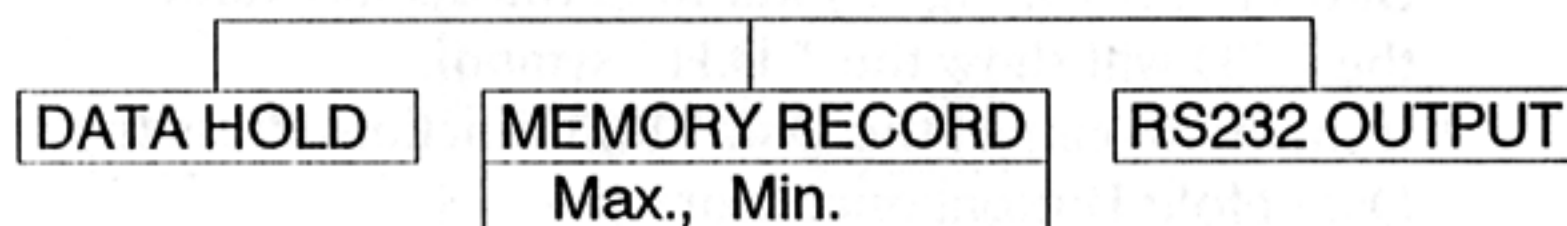
- b) Push the " Recall Button " once again, the " Min " symbol with the minimum values recorded will appear on the LCD display.
- c) To de-activate the Data Record function, Press the " Record Button " (3-4, Fig. 1) once again. All associated display indicator (REC, Max, Min) will disappear from the display.

7) For quick measurement, follow the procedures shown below :

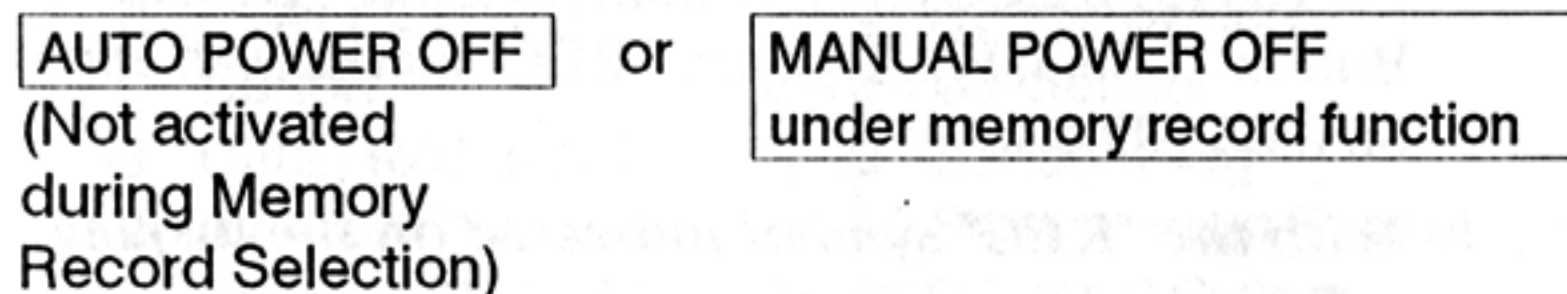
Main procedures :



Optional measuring procedures :



Power management



5. MEASURING CONSIDERATION

- * Due to the structure limitation of the UV sensor, the sensor output value may drift approx. 1% after the first year, it is normal. So the reasonable typical calibration period is one year.
- * The probe (filter) is existing little sensitivity for the humidity, so the storage environment is important. If the meter is not used for a long period, should store the probe under the low humidity environment, for example, store the probe into the plastic bag along the desiccant. If the probe's storage is under the right way, then the calibration period will extend a long period.
- * The UV sensor COS diffuser's 30 degree light angle, the signal input will accord the COS law ($> 95\%$). The 45 degree light angle with the COS law ($> 90\%$). So it is necessary that the effective angle is limited within 45 degree and to be limited within 30 degree is the best. The calibration is executed under the 0 light angle (verticality).
- * **Storage for the " UV sensor "**
UV sensor is with extremely precise structure. Once don't use it , be sure to store it in the dry environment. For example, put the whole sensor including Desiccant (Drier) into to the Plastic bag and seal the bag as tightly as possible. Take the sensor out of the bag only when use it. Comply to above method will extend the life of UV sensor. Otherwise, the gain of the UV SENSOR may be decreased and shorten the calibration period. It is also necessary to replace the Desiccant (Drier) periodically.

6. ADDITIONAL FEATURES

The instrument has built-in "Auto Power Shut-off" in order to prolong battery life. The meter will switch off automatically if none of the buttons are pressed within approx. 10 min.

To de-activate this feature, Select the memory record function during measurement, by pressing the " Record Button " (3-4, Fig.1).

7. RS232 PC INTERFACE

The instrument features an RS232 output via 3.5 mm " Phone Jack " (3-11, Fig. 1).

The connector output is a 16 digit data stream which can be utilized to the user's specific application.

An RS232 lead with the following connection will be required to link the instrument with the PC serial input.

Meter (3.5 mm jack plug)	PC (9W 'D' Connector)
Center Pin.....	Pin 2
Ground/shield.....	Pin 5

The 16 digit data stream will be displayed in the following format :

D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0

Each digit indicate the following status :

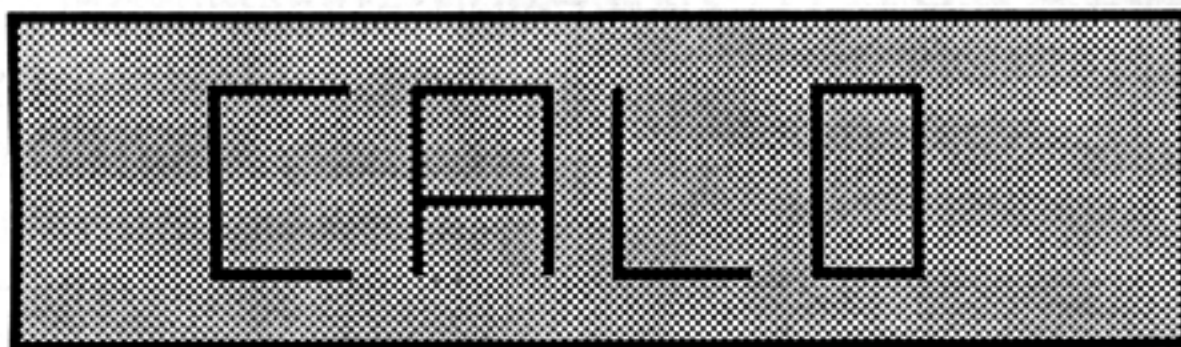
D0	End Word
D1 to D4	Upper Display reading, D1=LSD, D4=MSD
D5 to D8	Lower Display reading, D5=LSD, D8=MSD

D9	Decimal Point(DP) for Upper display. 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP		
D10	Decimal Point (DP) for lower display 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP		
D11 & D12	Anunuciator for Upper Display		
	00 =No Symbol	07 =mg/L	14 =mS
	01 =° C	08 =m/s	15 =Lux
	02 =° F	09 =Knots	16 =Ft-cd
	03 = %	10 =Km/h	17 =dB
	04 = % RH	11 =Ft/min	18 =mV
	05 = % PH	12 =mile/h	
	06 = % O ₂	13 =uS	
D13	Anunuciator for Lower Display		
	0 =No Symbol	1 =° C	2 = ° F
D14	Reading Polarity for the Display 0 =Both upper & lower display value are "+". 1 =Upper "-", Lower "+". 2 =Upper "+", Lower "-". 3 =Both upper & lower display value are "-".		
D15	Start Word		

8. HOW TO MAKE THE INTERNAL ZERO ADJUSTMENT (ZERO COARSE ADJUSTMENT)

For Zero Adjustment procedure (section 4-3) just the fine zero adjustment procedure. However the " Zero Button " can execute within 20 counts only.

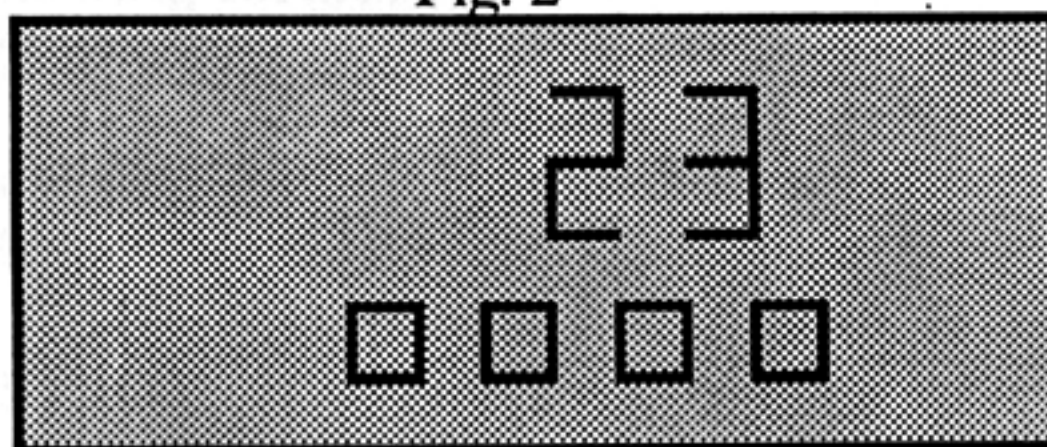
If the internal zero counts drift over 20 counts, the " Zero Button " will not be workable. The display will show :



In this time should make the " Internal Zero Adjustment (Coarse Zero Adjustment), the procedure are :

- 1) Power OFF the meter.
- 2) Push the " Zero Button " (3-6, Fig. 1) continuously. Power ON until the display show Fig. 2 then release the " Zero Button ".

Fig. 2



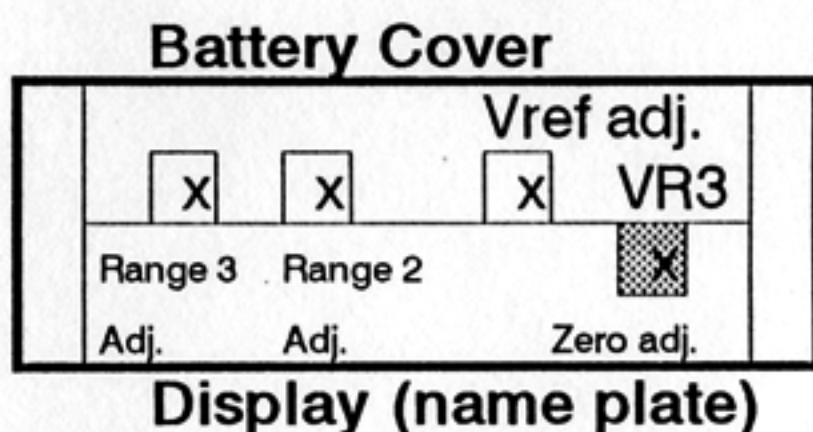
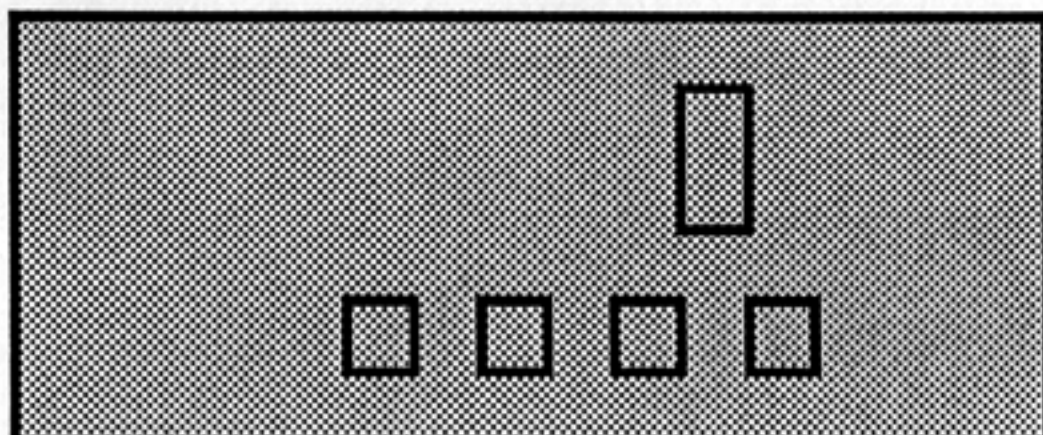
up display

down display

up display : Display the internal zero count.

down display : Always show 0000.

- 2) Adjust the VR3 (single turn VR) , until the up display reach to " Zero " value.



9. BATTERY REPLACEMENT

- 1) When the left corner of LCD display show "LBT", it indicate a normal battery output of less than 6.5 V – 7.5 V. It is necessary to replace the battery. However, in–spec measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
- 2) Slide the " Battery Cover " (3–12, Fig. 1) away from the instrument and remove the battery.
- 3) Install a 9V battery (006P, PP3 type) and replace the cover.