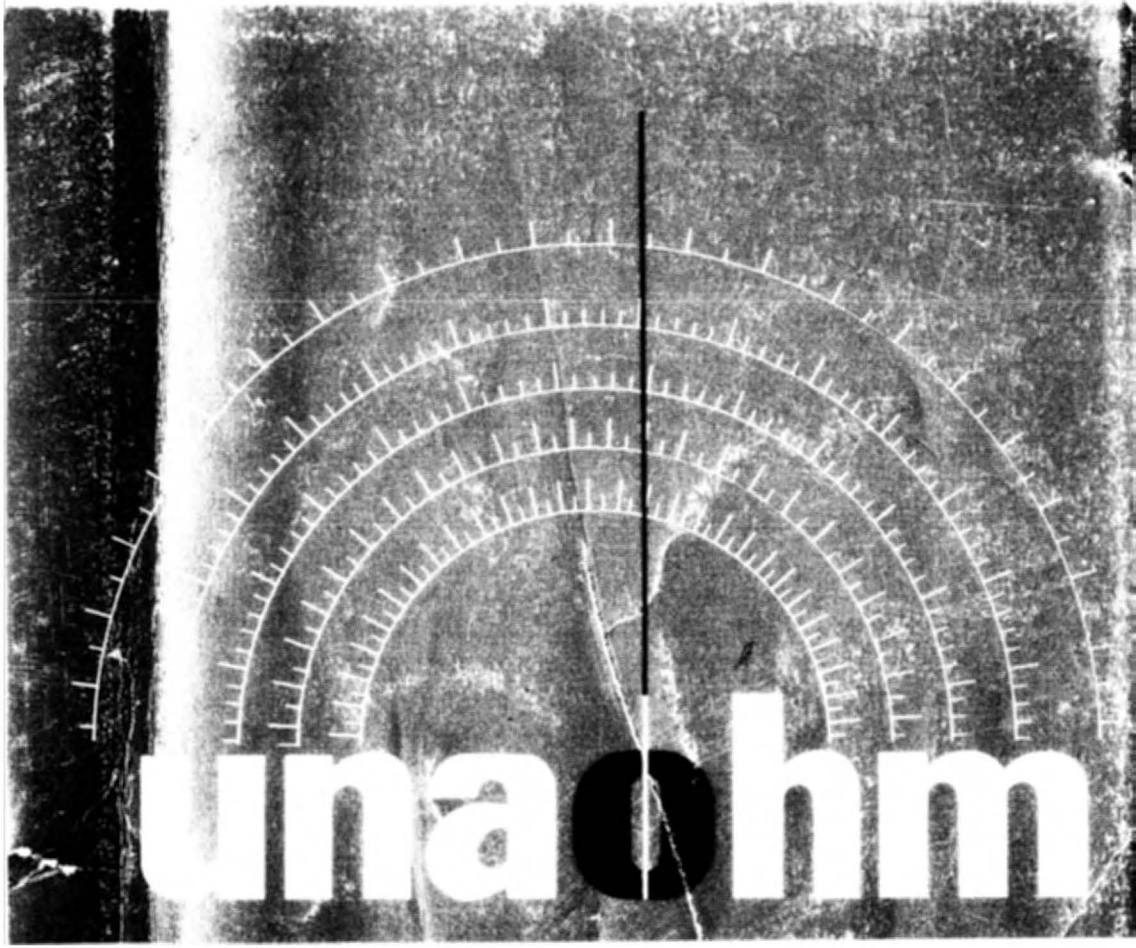


PANORAMIC TV FIELD STRENGTH METER
EP 730 B
EP 730 B FM

IMPORTANT NOTICE

ANY RETURN OR REJECT OF OUR PRODUCTS, WHICHEVERS MAY BE THE REASON, MUST HAVE OUR PREVIOUS APPROVAL ALSO AS REGARDS TO TRANSPORTATION MEANS.
THE SHIPMENT SHALL BE MADE IN ANY CASE CIF MILAN.
CUSTOMS AND CLARING AGENT WILL BE STATED IN OUR APPROVAL.

GUARANTEE

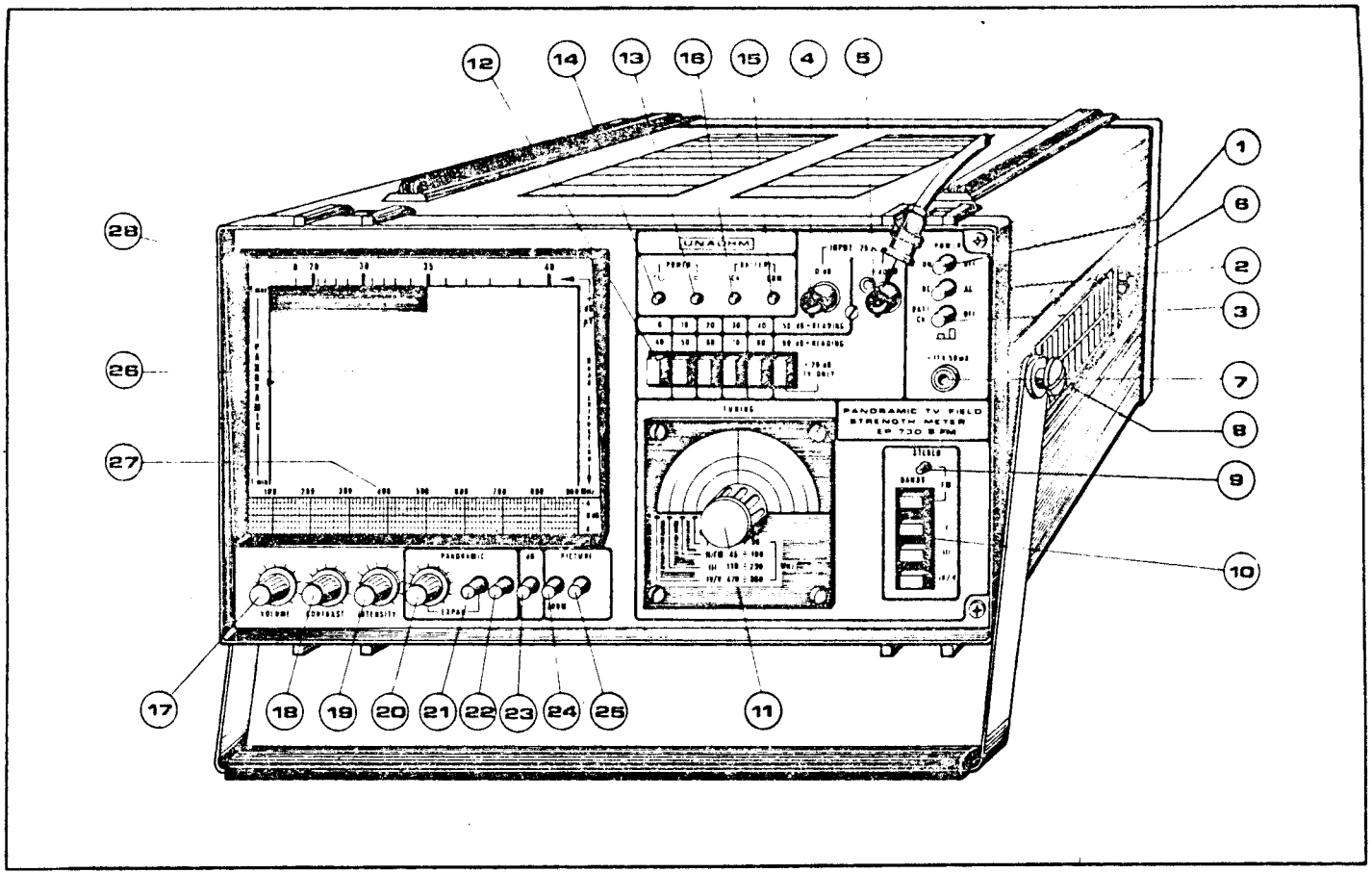
Our instruments are guaranteed for one year time against breakdown or misfunction due to faulty components manufacture.

Any kind of check-over will be performed at our works or at our representative laboratory, or skilled engineer, where the instruments are to be delivered packed into adequate protecting packing.

The guarantee shall expire in case of mishandling, incorrect repair or modification, performed without our approval or instructions.

We reject any responsability of damage to peoole or things, deriving from the use of our instruments.

The electric diagram and other drawings of this manual are given as literature and we claim the right to make any necessary change to the instrument without up-dating the instruction manual


12
14
13
16
15
4
5
1
6
2
3
7
8
9
10
28
26
27
17
18
19
20
21
22
23
24
25
11
UNAOHM
PANORAMIC TV FIELD
STRENGTH METER
EP 730 B FM

CONTROLS & CONNECTIONS

1) POWER ON-OFF Mains switch.

2) AC-DC Power supply selector. AC for mains power. DC for power provided by a rechargeable battery.

3) BATT CH-OFF Battery charge button. The instrument is set for battery charge when the button is engaged. Obviously the meter must be connected to a 220 VAC-50Hz mains outlet. Button 1) must be set to ON and button 2) to AC.

4) INPUT 0dB Input socket, common to all bands, provided that the signal level does not exceed 90dB/uV.

5) INPUT 40dB Input socket for signal levels greater than 90dB/uV. Any low-voltage DC component of the signal is prevented from flowing as the input socket pin is isolated from ground.

6) MAINS SOCKET Three-prong, fuse-protected mains socket fitted with a spare fuse.

7) + 12V +12VDC source output to power any external antenna device, such as a booster, which is designed for such a supply.

8) TIE POST Used for tying the carrying strap spring-hook.

9) FM PILOT LIGHT Indicates that the FM signal is of stereo nature (EP730FM only).

10) BAND Push-button bank for selecting the desired band.

11) TUNING Tuning vernier and frequency scale.

12) ATTENUATOR Push-button bank. Reduces the input signal level applied to either input sockets 4 or 5. Total dB attenuation is given by adding the dB of the button engaged to socket 5).

13) PILOT LIGHT Indicates that the meter is DC powered through the battery.

14) ON Indicates that the meter is AC powered through a mains outlet.

15) BATT LOW Indicates an insufficient charge of the battery.

16) BATT CH Indicates that the accumulator is under charge.

17) VOLUME Volume control

18) CONTRAST Brightness control

19) INTENSITY Brightness control

20) EXPANSION Allows a portion of the spectrum to be variably expanded arounded the tuned carrier when button 21) is engaged. This makes it possible to accurately analyse the spectrum down to almost a single channel.

21) EXPANSION Engaging this button sets the instrument to expansion mode, the amount of the expansion being dependent on control 20) setting.

22) FULL SPECTRUM Shows in a panoramic fashion the full spectrum of the band selected for the evaluation of the number and strength of the carriers available.

23) dB Engaging this button sets the instrument for field strength reading in dB through a stripe located against a calibrated scale 28) on top of the picture tube.

24) ZOOM Magnifies the picture by a 2 to 1 ratio for an accurate evaluation of the definition, reflection and other picture quality parameters.

25) PICTURE Sets the instrument for normal TV receiver operation.

26) PICTURE TUBE A black and white CRT with 13.50 cm, or 5.3", of visible area (V).

27) CORRECTION CHART Allows for the non linearity of the input circuits thus improving field strength reading accuracy.

28) dB/uV SCALE Calibrated in dB for field strength measurement. A brightness stripe is used for reading.
Total field strength measurement is obtained by adding scale reading to total attenuation engaged through bank 12).

OPERATING INSTRUCTIONS

It is beyond our scope to give in this manual all the possibilities obtainable with this instrument. We just describe two measurements and the easier steps to make them just to give the user a track to his personal skill in any other situation.

POWER SUPPLY

Both FSM models can be energized with the 220 ac mains as well with the incorporated accumulator (on request item). In case of autonomous operation switch selector (2) to DC otherwise switch it to AC and make the connection to a line outlet using the line cord C84. In both cases of supply, after switching the instrument on by depressing button (1), wait a few seconds to allow the CRT filament to warm-up and reach working temperature. The instrument is the ready to operate.

TEST OF A VHF SIGNAL AND LEVEL MEASUREMENT

Connect the down-lead to input (4) (using adaptor P80 if necessary) and avoid, to use input (5) in the first attempt.

Depress button picture (25) for monitoring mode.

Depress one of button assembly (10) bands according to the carrier frequency to receive and then adjust knob (11) to tune it .

Adjust now accurately the following controls : Volume (17) Contrast (18) and Intensity (19) in order to obtain an agreable picture and a clear aidition.

When the best result is attained, examine the picture quality (preferably a test card) and observe all the signal quality informations that only a monitor can provide.

Observe accurately the vertical bars to check the bandwidth of the antenna installation and any eventual reflected signal.

This picture analysis is improved by the ZOOM facility (24) control which expands the trace horizontalwise.

Under particular conditions, the reception of direct signals may feature eccessive amplitude and the monitor would not operate properly (monitor saturation). In such case it is necessary to move the antenna down-lead from input (4) to input (5), obtaining a level attenuation of the signal of 40 dBs.

In the unlikely event that the 40 dB attenuation provides the 'snowy picture', replug the down-lead to input (4) and depress button 20 dB-TV of attenuator (12). The signal is now attenuated by 20 dBs only.

It is worthwhile to note that every button of attenuator (12) becomes efficient in the measure mode only, with the ecception of button 20 dB-TV which provides a 20 dB attenuation on monitor mode.

Once the signal quality has been checked, it is necessary to measure the signal level in dBuV. Depress button dB (23). The picture is replaced by a luminous strip on top of the screen. its length varies horizontalwise against the (28) graduated scale.

To perform level measurements, some operations are to be performed in the following sequence :

- depress the attenuator (12) button corresponding to 0 dB (first one on the left). If the strip does not appear with its indicating end within the screen limits, depress the next button at its left or also the next ones, if necessary, with a total 50 dBs attenuation facility.
- If the strip does not reduce still within the screen, it is necessary to use an attenuated input. Remove the input cable from socket (4) and connect it to socket (5).

Obviously it is necessary to release the attenuator buttons and repeat the attenuating sequence.

Having found the correct input (4 or 5) and having switched the necessary buttons of assembly (12), re-adjust the tuning trying to increase, if possible, the signal amplitude (strip length).

The signal level is given by adding the scale indication (28) of dBuV to the ones of Attenuator (12) assembly according to the input socket used and add or deduct the correction value given in pattern (27).

ANALYSIS OF A BAND SPECTRUM

This facility is of utmost help to technicians nowadays, on account of the continuous growth of TV transmitters. The user is enabled through the panoramic display of horizontal carrier-peaks, to make at a glance a choice of the best receivable carriers in that spot.

The next first drawing gives a typical example : on top the audio carrier and very near to it the chrominace carrier if it is a color transmission, on the center, very ample, the video-carrier.

The second drawing gives a typical example of a whole of audio and video carriers which makes difficult to make distinction from each other .

Proceed as follows : kepp the down-lead into socket (4) marked 0 dB and depress buttons 0 dB (12) and Panoramic (22)

The screen shows horizontal patterns which amplitudes are proportional to the respective signal levels.

Obviously some bard amplitude could be greater that scale (28) and it is then necessary to depress accordingly some buttons of Attenuator (12).

The user has now the entire display of the carriers comprised in the selected band of assembly (10) and is in the position of making a prompt estimate of amplitudes and eventual interaction etc.

The frequency can be established by referring to the left screen-side, frequency-calibrated scale. It is necessary to make coincide the carrier with the marker (which appears as a blanking) and this by moving the tuned carrier over the marker by means of the tuning knob (11). It is now necessary to read the frequency value on scale (11).

It is worthwhile to note that if Band I (approx. 40 MHz) is the selected one, no problem arises as it comprises a few carriers in 10 centimeters scale and each is easily identifiable. If instead the chosen Band is the UHF (470 to 860 MHz) with an overall capacity of 40 channels the identification may result rather troublesome.

Moreover the provided raster features 625 lines which is not a help to make a reliable identification, and the latter could also appear amplitude-fluctuating or not visible at all.

This is the moment of using controls EXPAN (20 and 21).

Depress button (21) and adjust knob (20). A portion of the band (10) indicated against the screen left-side scale is easily surveyable.

The frequencies are symmetrically distributed around the reference poit-mark which frequency coincides with the one pointed on scel (11).

With the above operations the user is enabled to display any portion of frequencies, as wide as to permit the choice of carriers and at the same time make comparisons of amplitude which are now of effective figures.

We wish to draw the user attention on the dual origin of the carrier pattern-fluctuation.

The first origin is the scarse resolving power, already mentioned, which is easily eliminated by reducing with control EXPAN (21) the portion of the examined spectrum. The second origin is the carrier nature itself because of the varying amplitude modulation (AM), and this does not result with the audio carrier which is frequency modulated.

It is only under the above conditions that it is possible to compare signals with each other as a certain proportionality is respected between the real amplitude in dBuV and the length of each carrier-trace.

NOTES ON ACCUMULATORS

Accumulator charge : connect the instrument to the mains by means of line cord C84 - switch selector BATT.CH-OFF (3) to BATT CH. A full charge varies from 10 to 20 hours and this according to accumulators condition.

Fully charged accumulators provide the instrument with and autonomy of 2 to 3 hours, in ideal conditions (i.e. insuring the performance of the voltage stabilizing circuits).

At the beginning of the discharge, before the unit becomes unusable, the pilot light BATT LOW (15) announces scarce battery power. It is then advisable to turn the instrument off and begin a battery full charge.

Keep in mind that low ambient temperatures reduce the accumulator efficiency. For instance at -15° Celsius the efficiency is reduced to 50%.

NB Avoid discharging the accumulator too much because, besides plate sulphation (and make the accumulator no longer chargeable) the charging operation may become too laborious.

INACTIVITY

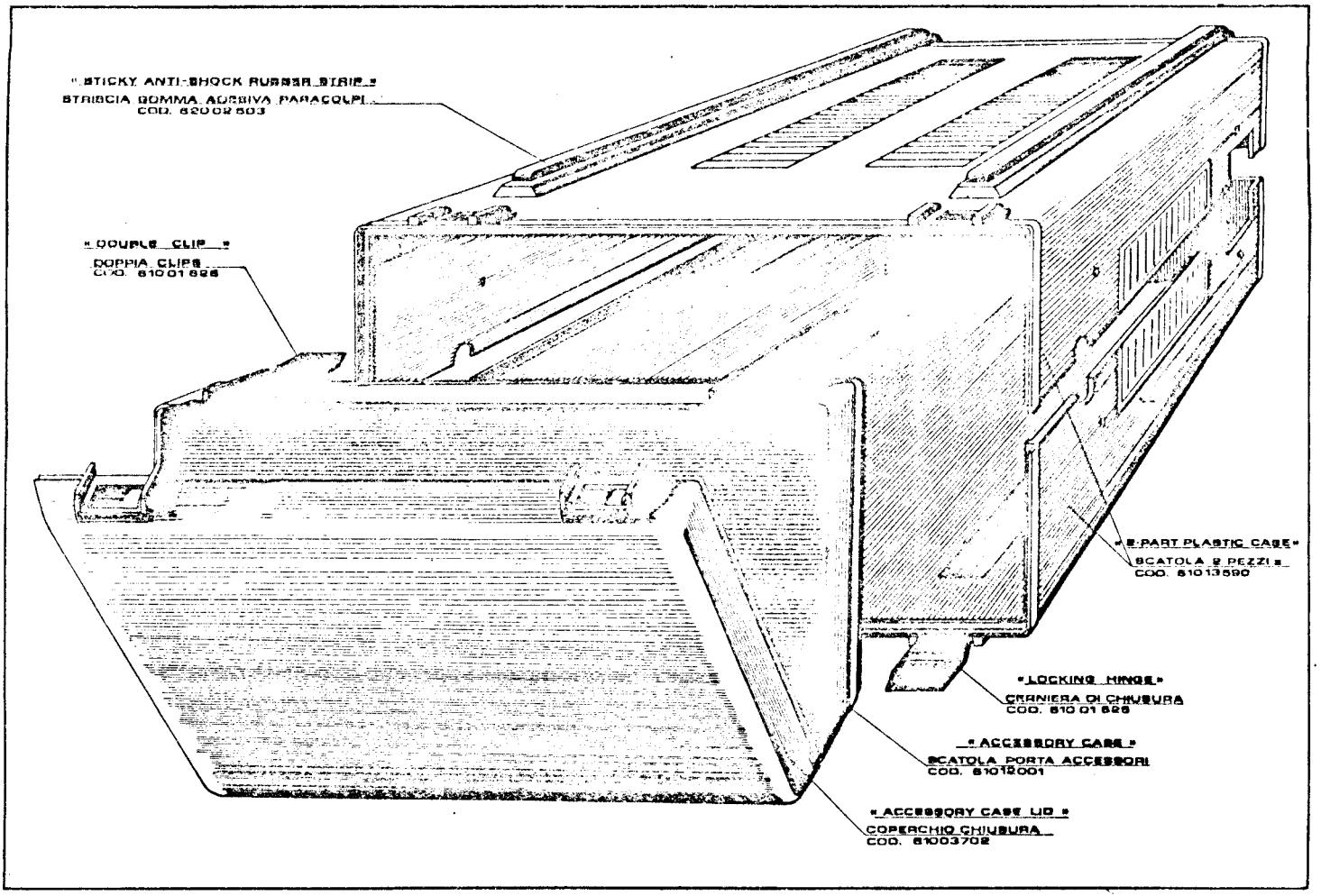
When the Field Strength Meter is kept for a long time inactive, it is imperative to charge the accumulator once a month just to compensate the natural self-discharge.

NB : We suggest to proceed to a charge operation before using the meter although it leaves our laboratories in perfect order. The reason is that stocking and transportation times are variable factors.

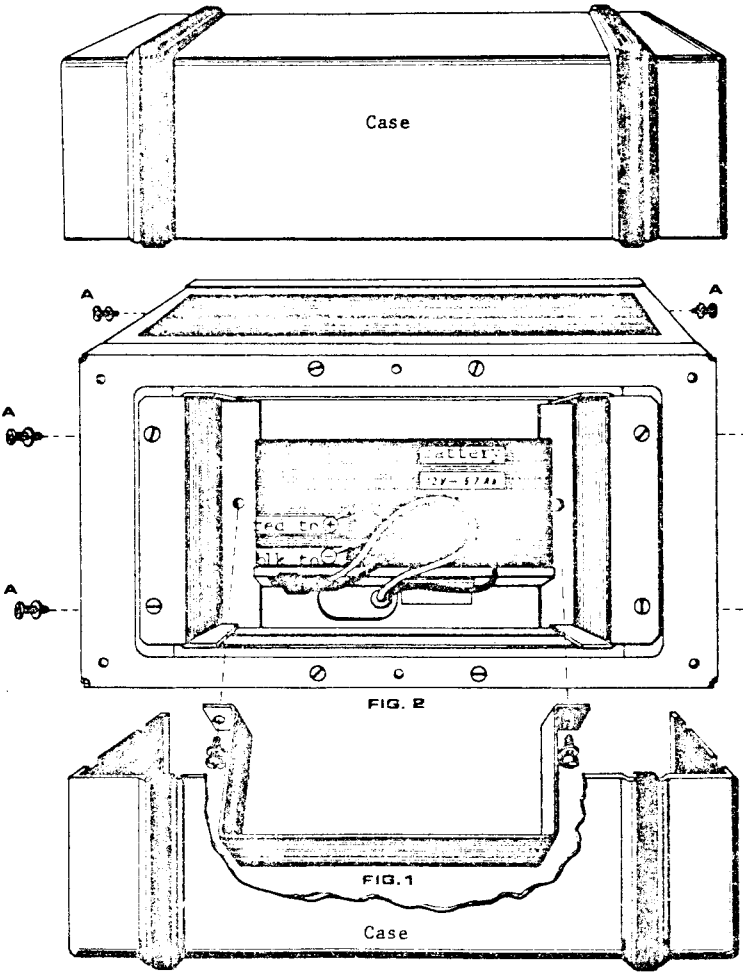
DC APPLICATION BY MEANS OF P121 ADAPTOR

Plug-in socket 4 or 5 the P121 accessory and plug into the same the down-lead. The device is now in series with the signal. Connect by means of the appropriate jumper the P121 to the banana socket supply +11V (7).

It is now possible to energize, through the axial down-lead any booster or coverter being mounted on the antenna equipment.


" STICKY ANTI-SHOCK RUBBER STRIP "
STRISCIA GOMMA ADESIVA PARACOLPI
COD. 62002503
" DOUPLE CLIP "
DOPPIA CLIPS
COD. 61001626
" 2 PART PLASTIC CASE "
SCATOLA 2 PEZZI
COD. 61013590
" LOCKING HINGE "
CERNIERA DI CHIUSURA
COD. 610 01 626
" ACCESSORY CASE "
SCATOLA PORTA ACCESSORI
COD. 61012001
" ACCESSORY CASE LID "
COPERCHIO CHIUSURA
COD. 61003702

HOW TO FIT THE BATTERY



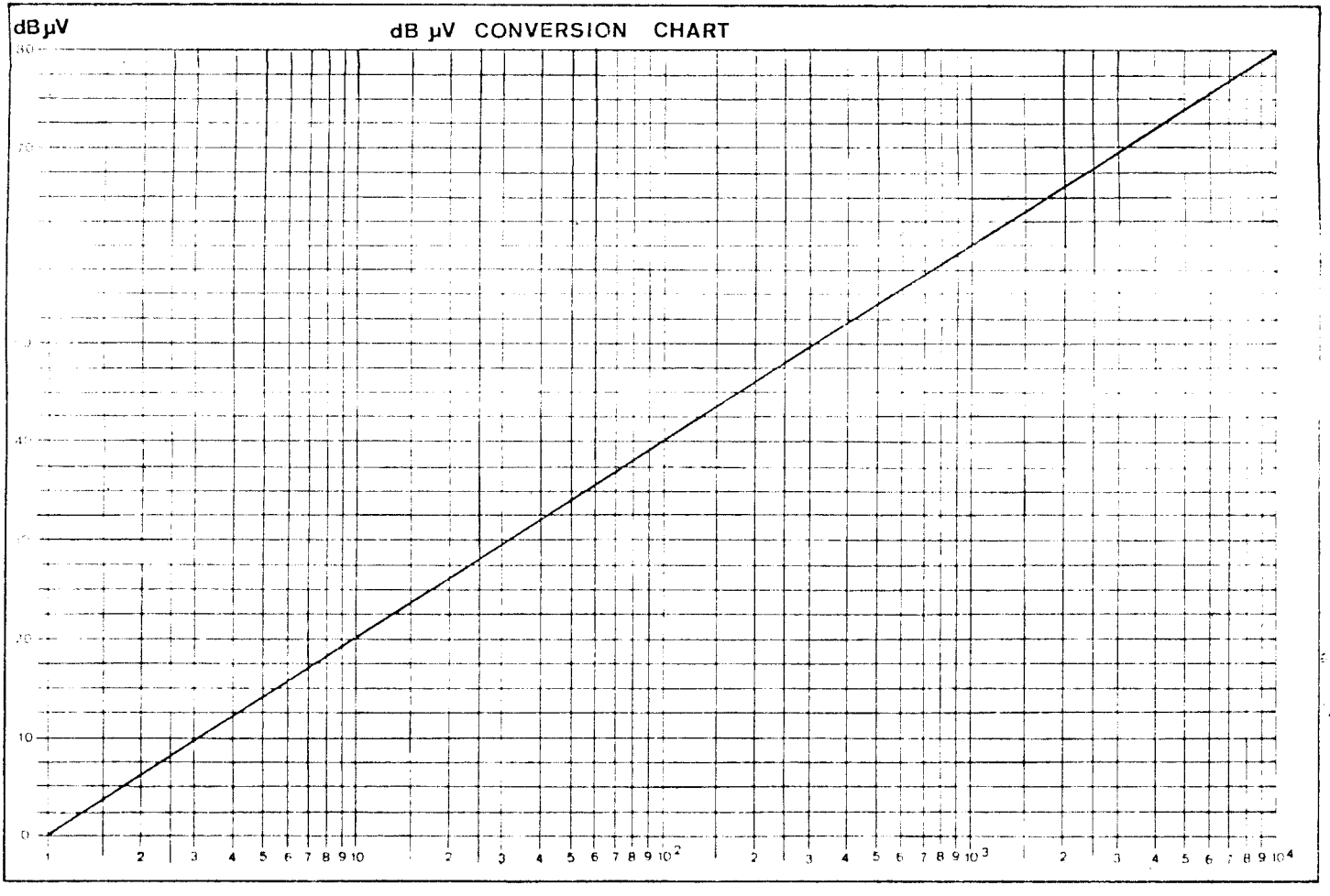
1° Unscrew two halves of case.

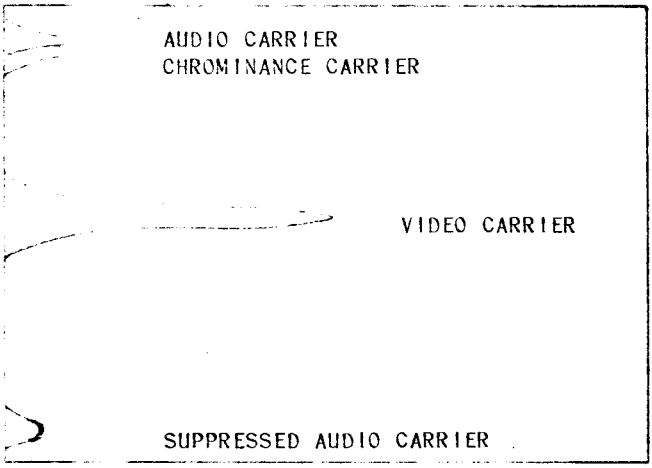
2° Unscrew battery-fixing bracket . (Fig. 1)

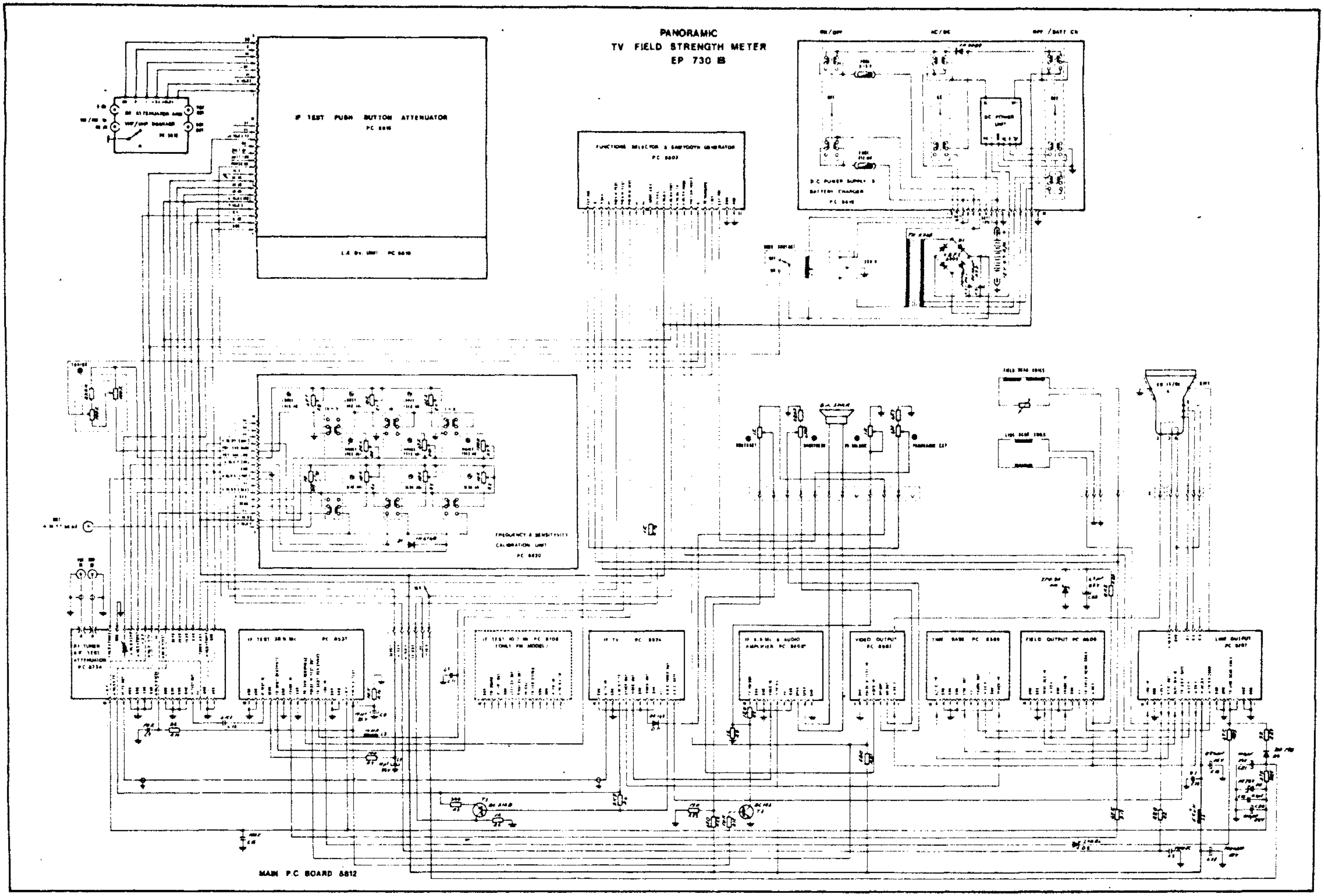
3° Place battery in situ as per Fig. 2
(Connect red wire to + terminal of battery.
Connect black wire to - terminal of battery)

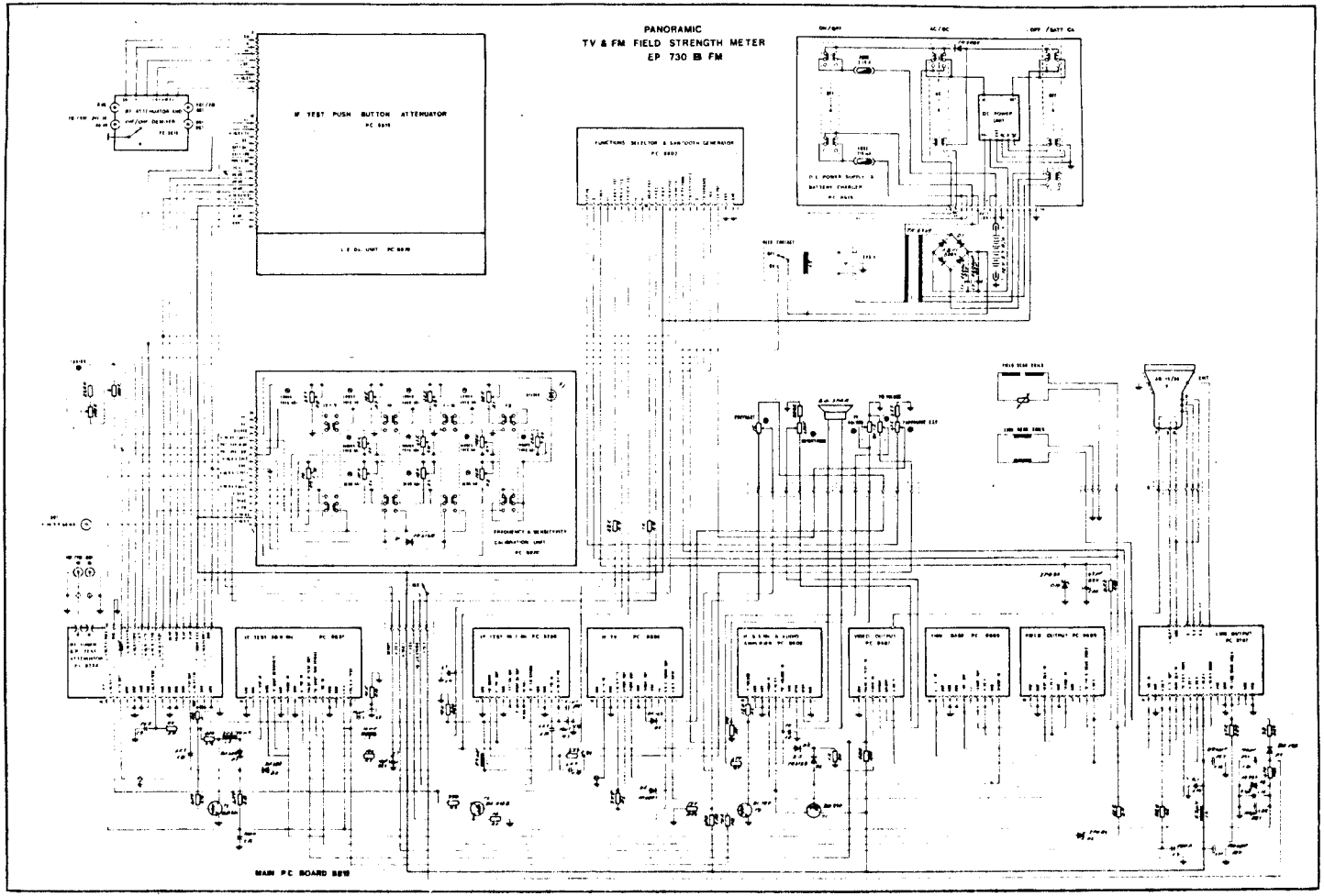
4° Secure battery with bracket.

Secure two halves of case.


dBμV
dB μV CONVERSION CHART
0
10
20
40
60
80
1
2
3
4
5
6
7
8
9
10
10^2
10^3
10^4
VOLTAGE IN μV


AUDIO CARRIER
CHROMINANCE CARRIER
VIDEO CARRIER
SUPPRESSED AUDIO CARRIER


PANORAMIC
TV FIELD STRENGTH METER
EP 730 B
IF TEST PUSH BUTTON ATTENUATOR
FUNCTIONS SELECTOR & SAWTOOTH GENERATOR
FREQUENCY & SENSITIVITY CALIBRATION UNIT
MAIN P.C BOARD 8812


PANORAMIC
TV & FM FIELD STRENGTH METER
EP 730 IB FM
IF TEST PUSH BUTTON ATTENUATOR
MAIN PC BOARD 8818