TV Signal Level Meter
GD300DQ

User Manual (EN)

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Contents

1. General Explanations for TV Field Intensity Meter

1.1 Introduction to the meter

This product is designed for CATV engineering and management technical personnel. It is a hand-held TV Field Intensity which applies to the need of the television and cable television engineering installation and detection. The instrument adopts the all-number display and micro processing unit, the readings on the measuring instrument are clear and precise, and the large screen figure monitor is very convenient to measure the main technical targets of CATV system. It has the functions such as the single-channel, multi-channel, all-band scanning, difference-carrying measurement, signal-to-noise ratio (SNR, S/N) measurement, FM demodulation output and spectrum analysis frequency analysis etc.

1.2 Introduction to the panel

(1) Radio Frequency Input Terminal

This terminal is changeable. User can change its type to type BNC or F according to personal need.

(2) LCD (liquid crystal display) Screen can display multiple

parameters according to the selected function. It has a LED background light. The contrast ratio can be automatically adjusted according to different environments.

(3) Function Keys

Function keys consist of F1, F2, F3 and F4 these four keys, their functions may vary according to content displayed on the screen.

(4) Number Keys

Number keys consist of 0 – 9 these 10 keys, which is convenient for the entry of the channel or frequency. “0” key is a shortcut key for setting the channel under the mode of single-channel level measurement.

(5) Multi-function keys

Multi-function keys are “decimal point” key (.) and “clear” key (C) under number entry mode.

(6) Up and Down keys (7) Channel key

(8) Frequency key (9) Setup key

(10) Power Key (11) Speaker

(12) Accumulator Charging Socket

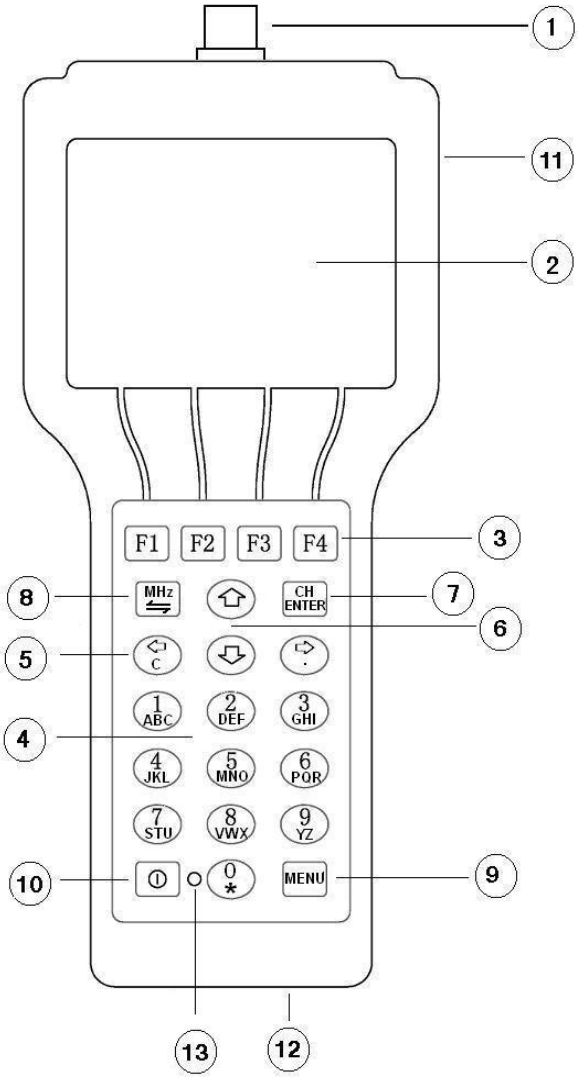
The charging power is supplying working current to the instrument when it is in operation after plugging the accumulator charging socket. When the instrument is not in

operation, the accumulator is charging and the red charging indicator light will be turned on.

(13) Charging indicator light

(14) External interface

The Panel diagram is shown below:



2. Operational Guide to TV Field Intensity Measuring Instrument

2.1 Starting up

Press the power source switch on the instrument panel and set up an electric circuit and start up the instrument, then, the instrument shall send out a transient buzzing sound, the name and ex-factory serial number is shown on the display screen.

2.1.1 Screen display

Now we take the screen showing the single-channel level measurement as an example. Please see the figure 2-1, the four icons in the lower part of this screen are soft keys corresponding to F1 F2 F3 F4, their functions are:
Fl: frequency spectrum measurement

F2: frequency measurement

F3: the measurement of difference value of video and audio carrier level measurement

F4: Menu turndown key

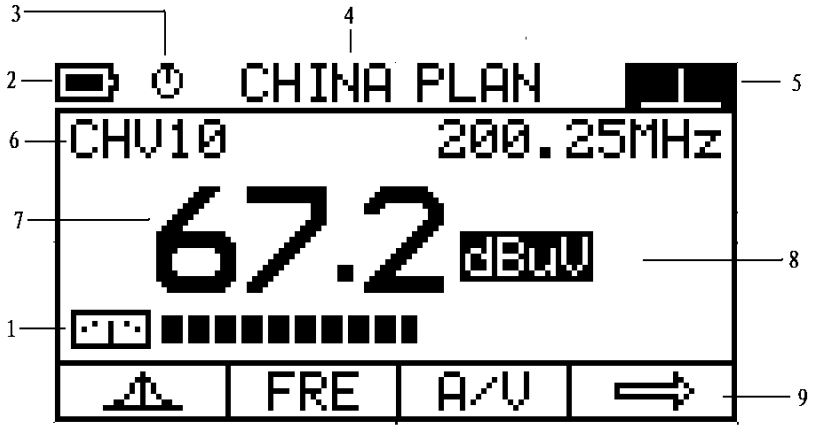


Fig. 2-1

1: The light band visually indicates the Signal Level; press the Up and Down button to adjust its level.

2: Battery icon: the status bar indicates the electric quantity of the battery.

3: This icon shows the timing of non-operational auto-off.

4: This is the channel that is being used by the instrument
5: The current working status of the instrument: In this figure, it is the level measurement mode now.
6: The channel and frequency that are being measured
7: Measured value of the field intensity
8: Corrected value of the field intensity
9: The soft keys corresponding to F1-F4

2.1.2 About the MENU

When pressing the MENU, various measurement modes can be selected as shown in Fig 2-2, including digital channel measurement, analog channel measurement, frequency spectrum scanning, panoramic scanning, tilt measurement, trunk line voltage measurement, carrier-noise ratio measurement and system setting etc.

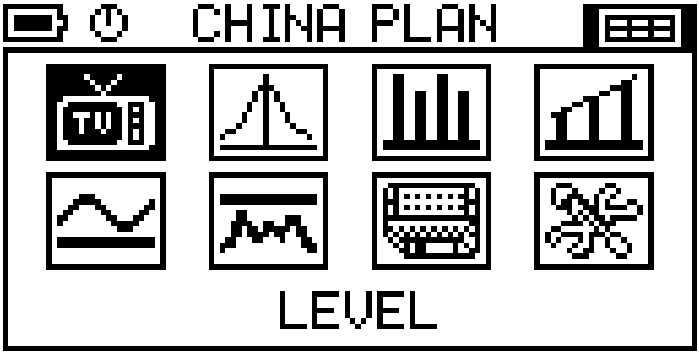


Fig 2-2

2.2 The setting of the instrument

Please properly adjust and set this instrument to the best in accordance with the circumstance of the TV system to be measured before using this instrument. All settings will be saved in the nonvolatile storage of the instrument. User may also adjust these settings in any time.

Under the MENU mode, Press the UP, DOWN, LEFT and RIGHT key to select a function item and press the enter key （CH/ENTER）, and the LCD screen will show as the Fig 2-3 displayed, user can view and set these functions. Functions include:

LCD contrast ratio

Backlight time

Shutdown time

Date & Time

Volume

Selecting a channel plan

Editing a channel plan

Creating a channel plan

Level unit

Probe loss

Correct DB

Reset to factory mode

Fig.2-3

Functional soft keys are:

F1: UP　　F2： DOWN

F3： Enter Key (to save after selection)

F4： Return (return to the MENU)

2.2.1 The setting of backlight time

User can set the automatic turnoff time for the backlight when there is no operation on the screen, so as to save the energy of the instrument. Press F3 to click the time and press F1 or F2 to choose the desired time, push the F3 again to save the setting.

The selection for the backlight time is:

10 seconds

20 seconds

30 seconds

Always Off

Always On

2.2.2 Shutdown time

Fig 2-5

User can set the automatic shutdown time for the instrument in order to save energy of the instrument. Press F3 to click the time and press F1 or F2 to choose the desired time, push the F3 again to save the setting.

There are four selections for this setting:

3 Min

5 Min

10 Min

Always On

2.2.3 Selecting a channel plan

Fig 2-8

Press F3 to click the channel showed below the screen and then press F1 or F2 (or ⇑、⇓)to choose the desired channel plan, push the F3 again to save the setting.

2.2.4 Editing a channel plan

User can freely edit a channel plan, including the name of a channel, valid type, channel type, vision carrier frequency, and sound intermediate frequency; when switching the channel type to the digital channel, user may also edit the center

frequency, bandwidth, modulation mode and symbol rate of the digital channel.

Fig 2-9

Press F3 to enter the channel editing mode, press F1 or F2 （or ↑、↓key）and adjust the cursor to the channel needed to be edited(Fig 2-10), press F3 to set the parameters of this channel(Fig 2-11), press F3 again to save the setting. Press Return key to return to the previous menu (2-10). A "√" indicated at the end of the channel means this channel is under digital channel measurement. User can quickly view the whole channel plan by pressing up and down key under this interface.

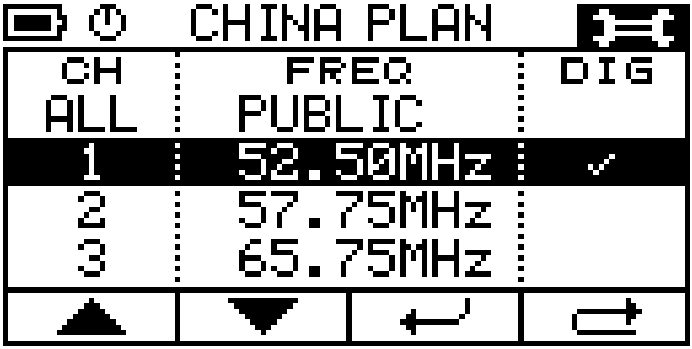


Fig 2-10

Fig 2-11

2.2.5 Creating a user channel plan

Fig 2-12

A user channel plan can be created by following the steps below:

1、Connect the cable of cable TV

2、Select the create a user channel plan as showed in Fig 2-12, press F3 to enter next level.

3、Press up and down key to select the USER PLAN1 or USER PLAN2, and press F3 to create the plan. A progress bar indicates the finished degree of the creation. Press the enter key or return key to save or cancel this setting.

Notes：

The instrument must be connected to the cable TV system when user is creating a user plan.

The instrument will select the channels whose levels are more than 40dBμV in the reference channel plan, the selected channels will be showed in the user plan and will automatically recognize the digital analog signal. Owing to the complexity of the actual signal, user's editing is required.

User can edit the user plan in the channel editing menu.

2.2.6 The selection of measurement unit

A level unit is selected as showed in Fig 3-9-1

Fig 2-13

Press F3 to select the measurement unit and then press F1 or F2 (or up and down key) to choose the desired unit, press F3 again to save the setting.
Measurement units are dBuv dBmv dBm

2.2.7 Probe loss

In the system setting, select the “probe loss” as shown in Fig 2-14

Fig 2-14
Press F3 to select the measurement unit and then press F1 or F2 or up and down key to adjust the value, press F3 again to

save the setting.
Press F4 to return to the setting screen.

2.2.8 Correct DB for Calibrating:

This product has been closely tested before leaving factory. It has gone through restrict digital modification and already been saved in the memory unit. But some measurement deviations will probably appear due to long-time use or component aging. This product enable user to adjust this measurement deviation. Only with a standard instrument or standard signal source, user can correct this product and make its measurement result more accurate.
This function also is suitable for user's special measurement requirement.
In the system setting, select the "correct DB" as shown in Fig 2-15

Fig 2-15

Select the characters showed at the bottom of the screen, and press F3 to enter next interface, see Fig 2-16.

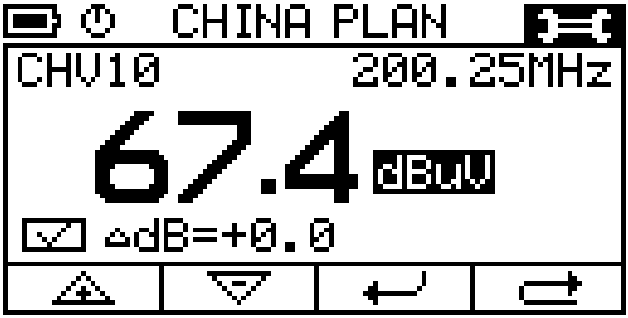


Fig 2-16

Above the screen show the channel needed to correct and its

corresponding frequency. At the center of the screen is the signal level. At the bottom of the screen indicate the current modification level and operation status. ↑ and ↓ represent plus or minus of signal level modification. The box at front shows whether the current modification level is saved. Press up or down button to change the channel or directly key in figure and press CH or FREQUENCY button to make it happen.。

Under this situation, press **F1** and **F2** button to adjust modification level. The modification level at the bottom of the screen and measurement level at the center of confirm the modification level and save in the memory unit.

Continue to adjust the channel to be corrected to modify it until completed.

2.2.9 Reset to factory mode

In the system setting, select the “Reset to factory mode” as shown in Fig 2-17

Fig 2-17

If user feels the setting is not ideal, he/she can press “Reset to factory mode” key. Press F3 to enter the “save and cancel” interface, press F1 to save or cancel this setting and press F3 to confirm your choice.

Press F4 to return to the setting screen.

3. Operation instructions

3.1 Signal measurement of digital channel

Press the digital signal measurement soft key and the enter key to enter the digital signal measurement mode as shown in Fig 3.1

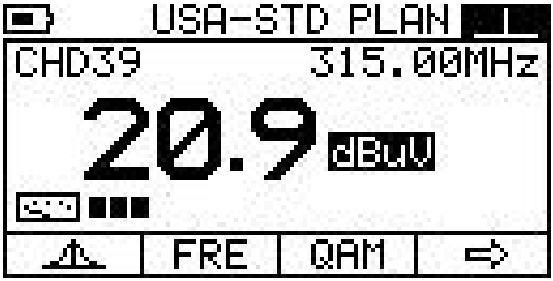


Fig 3.1

Under the digital signal measurement mode, “CHD” showed in the channel means that the channel being measured is a digital signal channel; the value of field intensity showed is average power,

The four icons on the soft keys at the bottom of the screen correspond to Fl, F2, F3 and F4, with the following functions respectively:

: Frequency spectrum

FRE: Frequency measurement

QAM: QAM measurement

⇨ : Next four function keys

: Setup

: File storage

Press the key to enter the set the parameters of this digital channel ; refer to the figure 3.1-1.

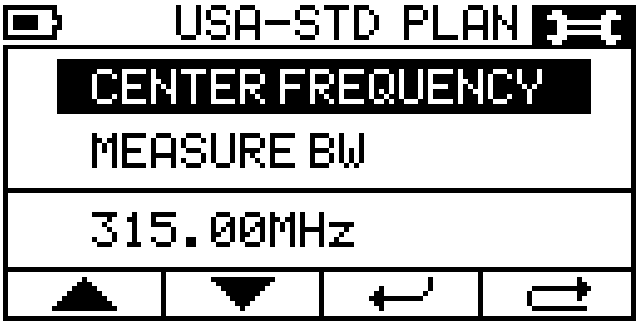


Fig 3.1-1

Press F1(UP) and F2(DOWN) key to set the channal parameters: center frequency and measure BW.

3.1.1 Changing measured channel

1. Press left and right key to change the channel measured in the order on the channel plan.
2. Enter the numerical input mode by directly pressing the numerical key. Then key in the channel number and CH , to change the channel.

Notes: the channel number input must be the channel listed in the user channel plan, otherwise the channel number input shall turn invalid.

Under the channel measurement mode, press the CH to make the measured channel repeatedly switch between the vision carrier frequency and sound carrier frequency.

3.1.2 Changing measured frequency：

1 Enter the numerical input mode by directly pressing the numerical key. Then key in the channel number and (MHz) key to change the frequency.

2 As shown in Fig 3.1, press the soft key F2 and adjust the instrument under the frequency adjustment mode (the

frequency that is being showed is the last measured value before shutting down the instrument), press MHz key，enter the meter in frequency adjustment mode.，Adjust the flashing frequency to the desired progressive interval by pressing MHz key，then press left and right key to change the frequency.

3.1.3 QAM measurement：

Press **QAM** Key to enter the QAM measurement mode as shown in Fig 3.1-2.

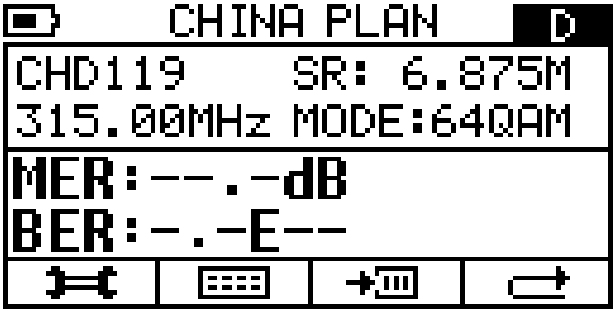


Fig3.1-2

Function Keys definition：

: Setup

: Constellation

: File storage

: Return

Press F1 constantly to choose the parameter which you want to change.

3.1.4 Constellation：

Press key to enter the Constellation mode as shown in Fig 3.1-3.

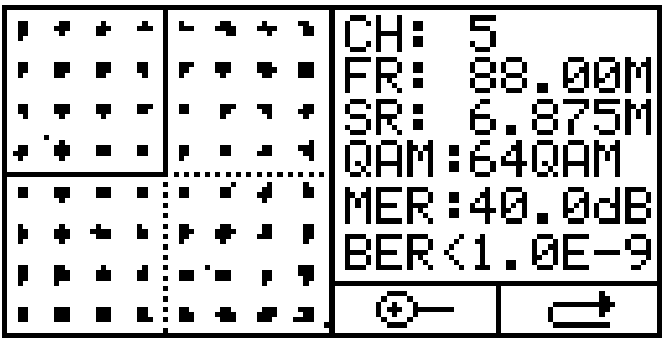


Fig3.1-3

Press Arrow Keys to choose the area need to be zoomed in, and then press F3 to zoom in or out. Press F4 to return.

3.2 Analog channel signal measurement

Select the “analog channel signal measurement” icon and press enter key to enter the interface showed in Fig 3.2

Fig 3.2

The measurement status of the meter can be switched between aural carrier frequency and visual carrier frequency in a channel by pressing CH under the channel mode，being distinguished by CHV and CHA shown at the respective positions, the corresponding frequencies displayed will also change. At the same time, the function corresponding to F3 switches between volume and A/V ratio. When the instrument is under aural carrier frequency measurement, F3 is a volume adjustment key; under visual carrier frequency measurement mode, A/V ratio measurement mode can be entered by

pressing F3, which is shown in Fig 3.2.1. Under this A/V measurement mode, the screen will show the image of the measured channel as well as the frequency and value of field intensity of the aural carrier frequency, which the difference value between image's level and aural carrier frequency level.

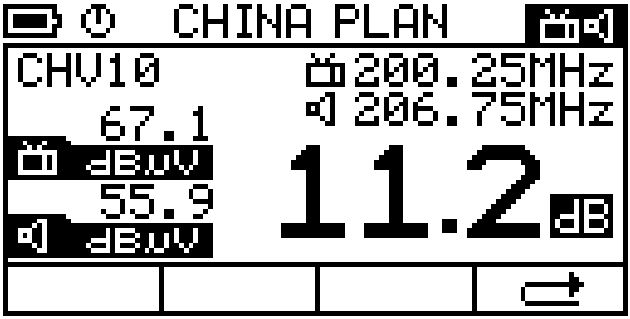


Fig3.2.1

The meter will enter single frequency level measurement status in case the frequency keyed in by the user fails to be included in those listed in the channel plan or the frequency adjusted falls out of the corresponding frequency band. Channel number will be displayed at the upper-left corner of the liquid crystal screen, while the corresponding visual carrier frequency will be displayed at the upper-right comer of the screen; in case the current frequency is not included in the channel plan, "???" will be displayed in the channel position at

the upper-left corner of the screen.

Continually press flashing ~ under frequency measurement mode to change the progressive interval of frequency, the interval will change circularly in the order of 10 KHz, 100KHz, 1MHz 10MHz and 100MHz.

Press the “0” key to set the parameters of this channel.

Press F1 to enter the C/N measurement mode of this channel, user can refer to section 3.7.

3.3 Frequency spectrum measurement

Press the frequency spectrum measurement soft key and the enter key to enter the single point frequency spectrum measurement status as shown in Fig. 3.3.

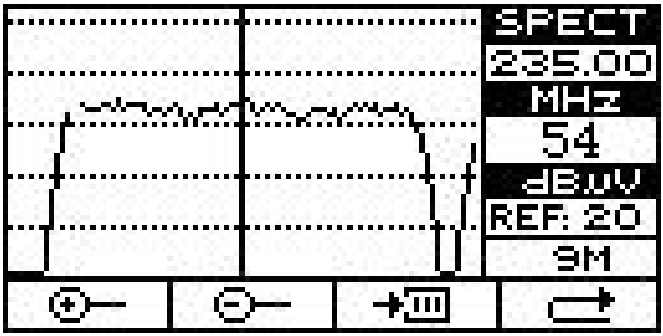


Fig 3.3

The four icons on the soft keys at the bottom of the screen correspond to Fl, F2, F3 and F4, with the following functions respectively:

Fl: enlarging the frequency spectrum

F2: reducing the frequency spectrum

F3: file storage

F4: returning to the previous picture

3.3.1 Screen band width adjustment

Press F1 or F2 to enlarge or reduce the spectrum, that is, to adjust the band width displayed on the screen. Press up and down key to adjust the band width displayed on the screen. The adjustment range is 50 MHz, 100 MHz and 500 MHz.

3.3.2 Central spectrum frequency input

Input the frequency or channel number at the center of the spectrum by the digital keys, then press the channel key or MHz key. In case the channel number is input, the central frequency is automatically confirmed as the visual carrier frequency.

3.4 Panoramic scanning measurement:

Press SCAN key on the keyboard to enter the panoramic scanning mode, refer to Fig 3.4.

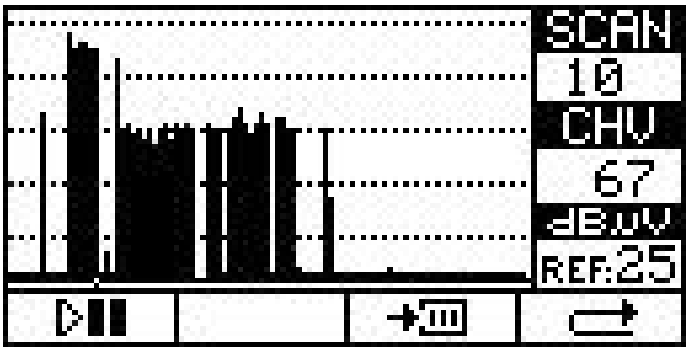


Fig 3.4

Icons on the four soft keys at the bottom of the screen have

the followings functions respectively:

Fl: Scanning stop key

F3: The key for storing the measured results

F4: Returning to previous picture

3.4.1 Reference level adjustment

Directly press up and down key to adjust the reference level. Remark: the adjustment progressive interval of reference level is 5dB.

3.4.2 Mark adjustment

Press the up and down key, the frequency mark can be moved rightwards or leftwards, meanwhile the frequency pointed out by the mark can be and the level measured at this point will be displayed.

3.5 Tilt measurement

Select the icon of tilt measurement of the menu to enter the tilt measurement status, as shown in Fig. 3.5

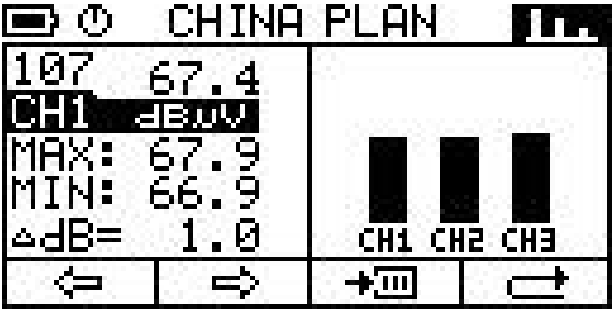


Fig 3.5

The 4 icons on the soft keys at the right of tile screen, FI-F4, have the following functions respectively:

F1: Channel selection, Channel selection left key

F2: Channel selection, Channel selection right key

F3: file storage

F4: return key

There are five vertical light bands at the right of the screen, representing respectively the signal level of the five frequency points preset by the user. The user can compare the amplitude frequency response, namely the flit, at the concerned

frequency point by multi-channel measurement method.
The user can preset the desired frequency point arbitrarily, namely the user can decide the channel defined by any measurement channel. The channel number and the Signal Level value will be displayed in the form at the center of the screen. Each time when choosing a group of channel, the frequency of the selected channel as well as the maximum difference value of field intensity between channels （△dB） will be showed in the right-lower part of the screen. Press the Up and Down key for an adjustment（REF）, progressive space:5, range:15～90

The calling of the preset channel is conducted as follows:

Select the channel by pressing Fl and F2. The channel number and value of field intensity of the preset channel will be showed in the left-lower part of the screen in the numerical form.

There are altogether 3 channels on the screen in which the preset channels can be stored. Press up and down key to adjust the channel, and press the channel key again to store the channel when the corresponding channel display place glints. When the tilt measurement mode is entered, the instrument will measure this channel.

The channel will not be stored without pressing the channel key, and directly quitting the tilt measurement mode after adjusting the channel.

3.6 Trunk line voltage measurement

Press voltage measurement soft key to enter the level measurement status.

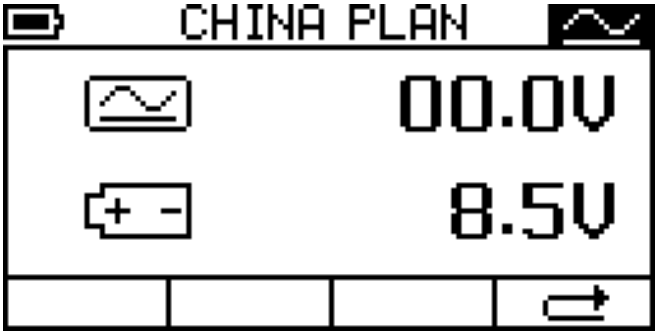


Fig 3.6

When the trunk line is charged with current, the meter will automatically recognize the voltage and distinguish "AC" from "DC" by displaying them on the screen. Refer to Fig.3.6.

Meanwhile, the screen also shows the voltage of the battery.

3.7 Carrier-noise ratio measurement

Select the icon of carrier-noise ratio measurement and enter the carrier-noise ratio measurement mode, refer to Fig.3.7

Fig 3.7

Remarks:

1. This function is valid only when the signal input level is higher than 70dB.

2. The signal-noise ratio is measured online, thus the measured result is used only as reference.

3.8 FILE

Select the icon of File and press to the Enter Key to enter the File mode, refer to Fig.3.8.

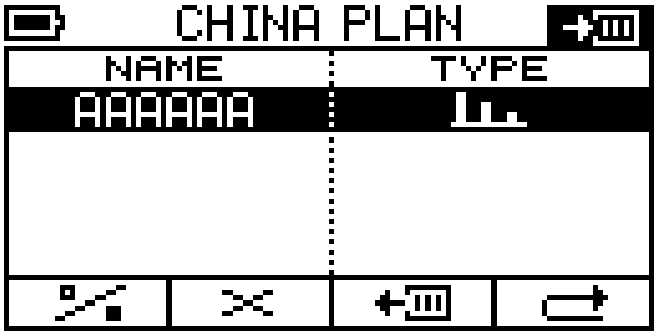


Fig3.8

Function Keys definition:

F1: Select the file

F2: Delete the selected files

F3: read

F4: return

4. Power Supply for the Meter

One high performance rechargeable battery inbuilt (12V nickel-hydrogen battery) provides the power source of the whole instrument, the alternative current can also be provides the power source by the battery charger attached with the instrument. The instrument can continuously work for more than 8 hours when it is fully charged.

Notes: **1.** The instrument is equipped with the automatic electricity-saving device, when there are no keyboard operations over 5 minutes; the instrument shall automatically shutdown the power source.

2. The instrument has the function for testing the battery voltage automatically, press the voltage measurement key, the instrument shall show the battery voltage, and the users can determine the consumption condition of the battery by way of checking the volume of the battery voltage. The

instrument also has the function of the under-voltage alarm, when the internal power source of the instrument needs to be charged, the instrument shall give out the attention sound so as to remind the users of charging timely, otherwise, the instrument shall automatically shut down the power source of the whole instrument.

3. When the instrument is being charged, please use the charger specially designed for the users. When the users charge up the instrument, please insert the battery charger direct current output in the charging socket at the bottom of the instrument; another terminal of the battery charger should be inserted in the alternative current 220V power source socket, there is an indicator light on the instrument panel, if the indicator light turns red, it shows that the battery charger is switched on with the power source and instrument, the instrument is being charged. The users can charge up the instrument under the starting and shutdown state.

4. It takes about 8 hours to charge up the power source of the instrument batteries (and then shutdown), after charging up, please pull out the battery charger plug of the instrument, please properly take care of the battery charger so

as to be in reserve for charging up the batteries.

Because the instrument needs a specially made charger for recharging, user must use the attached charger to charge this instrument. Our company won't be responsible for the maintenance work or compensation for the losses and damage arising from the use of other rechargers.

5. Technical Data

Channel/frequency index

Frequency scope: (5)48MHz~870MHz

Channel scope: Chinese standard channel 1CH ~ 56CH

Additional Channel Z1CH ~ Z43CH

Frequency resolving power: 10KHz

Measurement band width: 280KHz

Level measurement

Measurement scope: 25dBuV ~ 120dBuV

Measurement precision: ±1.5dB

Resolving power: 0.1dB

Detection method: Peak value detection

Input impedance: 75Ω

Carrier-noise ratio (C/N)

Signal input range: ＞ 70dBuV

Measurement precision: ±2 dBuV

Voltage measurement

Input scope: 0~80V (AC/DC)

Measurement precision: ±2V
Resolving power: 0.1V

All the above-mentioned technical indexes wholly represent the indoor temperature (25^0C)

Others

External dimension: 250 X 120 X 50 (mm)
Whole instrument weight: 0.8 Kg
Working temperature: -10^0C~45^0C
Monitor: LCD (Liquid Crystal Display) with 128X128 figure lattice background light warm temperature
Accompanying sound output: inbuilt speaker, numerical control

Power source

Direct current supply: DC7.2V rechargeable battery
Alternative current supply: AC110~220V/50Hz ±10%
Battery work time: continuous work ＞8 hours (with enough charging power)
Charging time: not ＞4 hours (switch off)

Attached fittings:

Special use charging power source: Charger one piece
Radio frequency input change connector: Double F one piece
Instrument bag: one piece
Operating instruction manual: one brochure
Attached cable: one piece
Attached CD: one disc

Technological support

Although we have made our efforts to simplify the operational method of SLM television field intensity instrument, the applied scope of the cable television is very extensive; therefore, the measurement is still one complex work. When you meet with the some questions during the process of your operation, you can get in touch with the technical support department.

P.S.: Table of Portugal TV channel, digital central frequency

CCIR(PAL B/G) Channel List

CH NO	DISPLAYCH NO.	VIDDEO CARRIER	AUDIO CARRIER
E2	CH02	48.25	53.75
E3	CH03	55.25	60.75
E4	CH04	62.25	67.75
X	ZCH01	69.25	74.75
Y	ZCH02	76.25	81.75
Z	ZCH03	83.25	88.75
Z+1	ZCH04	90.25	95.75
Z+2	ZCH05	97.25	102.75
S1	ZCH 1	105.25	110.75
S2	ZCH 2	112.25	117.75
S3	ZCH 3	119.25	124.75
S4	ZCH 4	126.25	131.75
S5	ZCH 5	133.25	138.75
S6	ZCH 6	140.25	145.75
S7	ZCH 7	147.25	152.75
S8	ZCH 8	154.25	159.75
S9	ZCH 9	161.25	166.75
S10	ZCH10	168.25	173.75
E5	CH05	175.25	180.75
E6	CH06	182.25	187.75
E7	CH07	189.25	194.75
E8	CH08	196.25	201.75
E9	CH09	203.25	208.75
E10	CH10	210.25	215.75
E11	CH11	217.25	222.75
E12	CH12	224.25	229.75

S11	ZCH11	231.25	236.75
S12	ZCH12	238.25	243.75
S13	ZCH13	245.25	250.75
S14	ZCH14	252.25	257.75
S15	ZCH15	259.25	264.75
S16	ZCH16	266.25	271.75
S17	ZCH17	273.25	278.75
S18	ZCH18	280.25	285.75
S19	ZCH19	287.25	292.75
S20	ZCH20	294.25	299.75
S21	ZCH21	303.25	308.75
S22	ZCH22	311.25	316.75
S23	ZCH23	319.25	324.75
S24	ZCH24	327.25	332.75
S25	ZCH25	335.25	340.75
S26	ZCH26	343.25	348.75
S27	ZCH27	351.25	356.75
S28	ZCH28	359.25	364.75
S29	ZCH29	367.25	372.75
S30	ZCH30	375.25	380.75
S31	ZCH31	383.25	388.75
S32	ZCH32	391.25	396.75
S33	ZCH33	399.25	404.75
S34	ZCH34	407.25	412.75
S35	ZCH35	415.25	420.75
S36	ZCH36	423.25	428.75
S37	ZCH37	431.25	436.75
S38	ZCH38	439.25	444.75
S39	ZCH39	447.25	452.75
S40	ZCH40	455.25	460.75
S41	ZCH41	463.25	468.75
E21	CH21	471.25	476.75

E22	CH22	479.25	484.75
E 23	CH23	487.25	492.75
E 24	CH24	495.25	500.75
E 25	CH25	503.25	508.75
E 26	CH26	511.25	516.75
E 27	CH27	519.25	524.75
E 28	CH28	527.25	532.75
E29	CH29	535.25	540.75
E30	CH30	543.25	548.75
E31	CH31	551.25	556.75
E32	CH32	559.25	564.75
E33	CH33	567.25	572.75
E34	CH34	575.25	580.75
E35	CH35	583.25	588.75
E36	CH36	591.25	596.75
E37	CH37	599.25	604.75
E38	CH38	607.25	612.75
E39	CH39	615.25	620.75
E40	CH40	623.25	628.75
E41	CH41	631.25	636.75
E42	CH42	639.25	644.75
E43	CH43	647.25	652.75
E44	CH44	655.25	660.75
E45	CH45	663.25	668.75
E46	CH46	671.25	676.75
E47	CH47	679.25	684.75
E48	CH48	687.25	692.75
E49	CH49	695.25	700.75
E50	CH50	703.25	708.75
E51	CH51	711.25	716.75
E52	CH52	719.25	724.75
E53	CH53	727.25	732.75
E54	CH54	735.25	740.75

E55	CH55	743.25	748.75
E56	CH56	751.25	756.75
E57	CH57	759.25	764.75
E58	CH58	767.25	772.75
E59	CH59	775.25	780.75
E60	CH60	783.25	788.75
E61	CH61	791.25	796.75
E62	CH62	799.25	804.75
E63	CH63	807.25	812.75
E64	CH64	815.25	820.75
E65	CH65	823.25	828.75
E66	CH66	831.25	836.75
E67	CH67	839.25	844.75
E68	CH68	847.25	852.75
E69	CH69	855.25	860.75