Digital Signal Level Meters

IT-910C Series

User Manual

Revision History

Revision	Description	Date	Author
01	Created	2014-9-18	INOTECH

Content

1. Note

First Operation

Please read this manual carefully before using this product.

Specification Changes

Technical specifications and operation methods included in this manual are subject to changes without notice. In case of any inquires after a period of usage, please consult the manufacturer.

Warranty

Our policy is one year warranty from the date of shipment and lifetime maintenance. In warranty period, the support service is no cost excluding artificial damage. Chargeable batteries, misuse, unauthorized repair or modify the failure occurred, and because of natural disasters or abnormal voltage caused by damage to the machine, not under warranty.

Batteries and Charger

The meter is equipped with a high performance rechargeable Li-On battery. The voltage of battery can be monitored automatically, the meter shall alarm when power is low. A battery indicator is shown on up right corner of LCD.

The meter will power off automatically if there is no operation for setting time or low battery.

Please use only the charger provided with the meter, using any other battery charger may overheat or damage the meter, or cause fire, injury or harm to the environment and will void the warranty. The indicator on the power adaptor will turn red when the instrument is charging. Make sure the meter is powered of for battery charging. It needs around 6 hours for full charged.

Attention

Keep the surface of instrument clean. Make sure to operate under specified environment.

Do not use organic solvent or acid to clean the surface of instrument.

Avoid vibration or shaking. Use force on the LCD window will damage the screen.

Charge equipment every half year when not used for a long time.

2. Product Description

2.1 Introduction

IT-910C is specially designed and manufactured for analogue and digital CATV system installation and testing. This portable instrument is easy to carry and has many functions. It can test CATV signal level at channel and frequency mode. Analog signal measurement functions include CATV TILT, C/N, trunk cable voltage, and digital signal analyses include MER, BER ,average channel power and constellation diagram. IT-910C uses highlight LCD screen and backlight can be set on or off per needed.

2.2 Front panel and description

1. RF input connector: F-female connector
2. LCD screen
3. Function key, F1 to F4, act as different functions in different display interface
4. Numerical key: 0 to 9, decimal point and plus/minus symbols
5. MENU key: direct key to return to main menu
6. C/S key: turn off or turn on channel key
7. DC input port
8. Power slide button
9. Set key: direct key for meter setting
10. B.L key: direct key for scan function
11. Direction key: 4 keys for up, down, left and right

3. Operation Instructions

3.1 Power on/off the meter

Slide power button to left location to turn on the meter. Meter will enter main menu after boot screen, as Fig. 3-1 shows.
Slide power button to right location to turn off the meter.

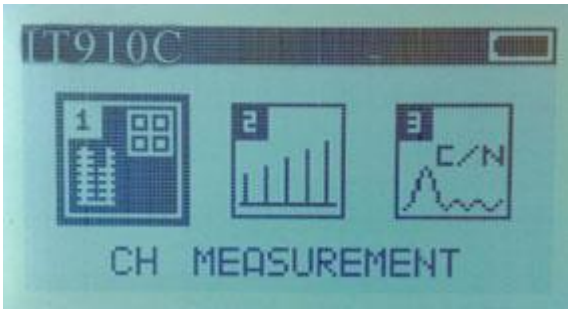

Fig. 3-1

Fig. 3-2

3.2 Single channel/frequency measurement

3.2.1 Analog channel measurement
For single channel/frequency measurement, use directional/enter key to select ‘CH MEASUREMENT’, or press numerical ‘1’ key to enter directly in main menu.
Analog channel measurement results show as Fig. 3-2. Analog video and audio carrier level are displayed in numerical. V/A difference is also shown in this screen.
Press up/down direction key or press F1 key to revise the channel that need test. Press F4 key to return to main menu.

Note1: Channel number input should be within channel plan list, otherwise it’s invalid. Channel plan list is provided by customer and has been written into the equipment’s memory before shipping. Generally, current active channel plan is the first one in the memory. To change channel plan, refer to chapter 3.6.2.
Note2: Press F2 key can change current analog channel to digital channel. Digital center frequency is video frequency plus 2.75MHz.
Note3: Press SET key can modify current channel parameters. After modification, press SET key again to return test screen.

3.2.2 Single frequency measurement
Press F2 key to enter single frequency level measurement mode, as shown in Fig 3-3.If there is FM radio, press F3 key again to open speaker.
Press F4 return to analogue channel measurement interface.

Fig. 3-3

Fig. 3-4

Fig. 3-5

3.2.3 Digital channel measurement
Digital channel measurement results show as Fig. 3-4 and 3-5. Average channel power, MER, BER constellation diagram are shown.
Press up/down direction key or press F1 key to revise the channel that need test.
Press Mute to return to main menu.
Note1: Channel number input should be within channel plan list, otherwise it's invalid. Channel plan list is provided by customer and has been written into the equipment's memory before shipping. Generally, current active channel plan is the first one in the memory. To change channel plan, refer to chapter 3.6.2.
Note2: Press F2 key can change current digital channel to analog channel. Analog video frequency is digital center frequency minus 2.75MHz.
Note3: Press SET key can modify current channel parameters. After modification, press SET key again to return test screen.

3.3 Tilt measurement

For tilt measurement, use directional/enter key to select 'TILT', or press numerical '2' key to enter directly in main menu. As Fig. 3-6 shows.
Press SET key to enter channel set screen (as fig 3-7 shown). Use numerical/enter key to select test channel. Up to 10 channels can be set.
Press F4 key to return to main menu.
Tilt measurement screen will show maximum, minimum level and tilt value on right of screen.
There is a triangle mark on screen, which is for channel power mark. Press direction left/right key to select channel that triangle marks.

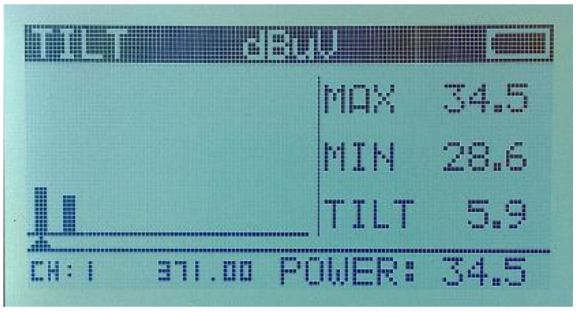

Fig. 3-6

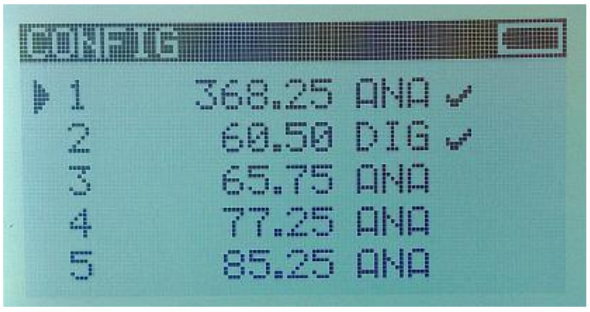

Fig. 3-7

3.4 CNR measurement

Use directional/enter key to select ‘CNR’, or press numerical ‘3’ key to enter directly in main menu, as Fig. 3-8 shows. Use numerical and enter keys or up/right keys to revise measurement channel.
Note: This function is only available when input RF level is higher than 50dBuV.

Fig. 3-8

Fig. 3-9

3.5 Voltage measurement

Use directional/enter key to select ‘VOLTAGE’, or press numerical ‘4’ key to enter directly in main menu, as Fig. 3-9 shows. Press F2 switch to battery voltage display and press F3 switch to internal temperature display of equipment. Press F4 to return to main menu.

3.6 Meter configuration

Use directional/enter key to select ‘CONFIGURATION’, or press numerical ‘5’ key to enter directly in main menu, as Fig. 3-10 shows. Press F4 to return to main menu.
There are three options available: Select channel plan, Edit channel and Options.
3.6.1 Select plan
Use up/down direction key and enter key to select Channel plan, totally 3 maximum plans are available before shipment. As Fig. 3-11 shows.

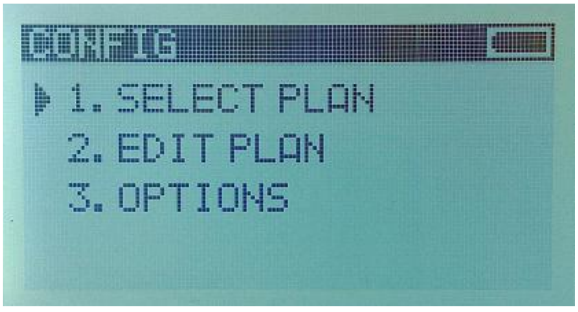

Fig. 3-10 Fig. 3-11

3.6.2 Edit Channel

Use up/down direction key and enter key to enter Edit Channel screen. Also use up/down direction key and enter key to select channel that need edit, as Fig. 3-12 and Fig. 3-13 show.

Analog channel edit screen as Fig. 3-12.

Channel number: Press direction keys up/down to select ‘CH’, then press enter key to confirm. Press number keys to input channel number and press enter key to confirm. If the input channel number exists, channel number will remain unmodified.

Channel type: Press direction keys up/down to select ‘TYPE’, then press enter key to switch between analog and digital.

Video frequency: Press direction keys up/down to select ‘Video’, then press enter key to confirm. Press number keys to input video frequency, and press enter key to confirm.

Sound frequency: Press direction keys up/down to select ‘Audio’, then press enter key to switch audio frequency.

Modify: Press direction keys up/down to select ‘Modify’, then press enter key to confirm. Press number keys to input correct level value (range from -9.9dB to 9.9dB). This function is used to fine tune measurement value.

Fig. 3-12

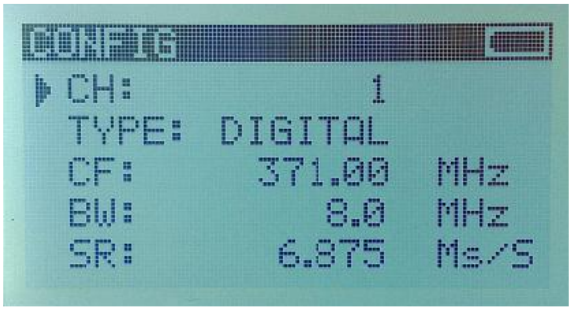

Fig. 3-13

Fig. 3-14

Digital channel edit screen as Fig. 3-13 and 3-14.
Channel number: Press direction keys up/down to select ‘CH’, then press enter key to confirm. Press number keys to input channel number and press enter key to confirm. If the input channel number exists, channel number will remain unmodified.
Channel type: Press direction keys up/down to select ‘TYPE’, then press enter key to switch between analog and digital.
Frequency: Press direction keys up/down to select ‘CF’, then press enter key to confirm. Press number keys to input digital frequency, and press enter key to confirm.
Bandwidth: bandwidth is fixed to 8MHz for DVB-C meter.
Symbol rate: Press direction keys up/down to select ‘SR’, then press enter key to confirm. Press number keys to input symbol rate, and press enter key to confirm.
QAM mode: Press direction keys up/down to select ‘Mode’, then press enter key to switch between 64QAM, 128QAM and 256QAM.
Modify: Press direction keys up/down to select ‘Modify’, then press enter key to confirm. Press number keys to input correct level value (range from -9.9dB to 9.9dB). This function is used to fine tune measurement value.

3.6.3 Options
Use up/down direction key and enter key to enter Option screen. As Fig. 3-15 shows. Options are available as below.
Unit: Press direction keys up/down to select “Unit”, then press enter key continuously to switch between dBuV and dBmV.
Auto shutdown time: Press direction keys up/down to select “Shutdown”, then press enter key continuously to switch between 15 minutes and always on.

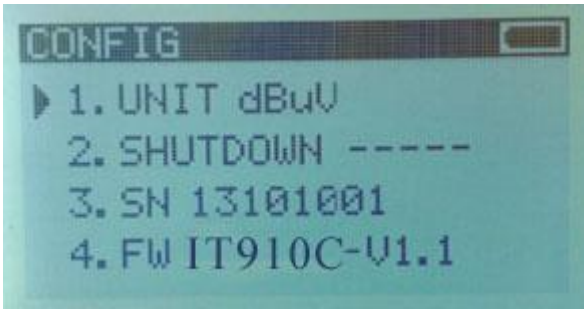

Fig. 3-15

4. Technical Specifications

Analog Channels Measurement	
Frequency range	48~870MHz
Frequency resolution ratio	50KHz
Bandwidth	280KHz
RF Level Measurement	
RF input range	20~120dBuV
Accuracy	+/-1.5dB(25+/-5 degree C)
Resolution	0.1dB
Detection	Peak
C/N Measurement	
RF input range	> 50dBuV
Accuracy	+/-2dB
Resolution	0.1dB
Tilt Measurement	
Maximum channels supported	10
Resolution	0.1dB
Voltage Measurement	
Input range	0~100VAC
Accuracy	+/-2V
Resolution	0.1V
Digital Channels Measurement	
Frequency range	48~870MHz
Standard	DVB-C/ITU-T J.83 A/C
Demodulation	16/32/64/128/256QAM
Digital power range	35~120dBuV
Accuracy	+/-2dB(25+/-5 degree C)
Symbol rate	4 ~ 7 Ms/s
MER	19~40dB
BER	10E-3 ~ 10E-9
Power	
Battery	chargeable Li-On
Adaptor	100~240VAC
Battery operation time	4 hours full charged
Charge time	6 hours (power off)
General	
Dimensions	190x105x50mm
Weight	1.0Kg, battery included
Audio output	Built in speaker
Operation temperature	0 ~ +40 degree C