Signal meter Spacetronik STC-33 Combo

User manual
EN

Please refer to the following notes before use.

• Please read this user manual carefully to be able to safely use and maintain your meter.

•The technical specifications and operation guides in this manual are subject to changes
without notice.

• Before using the first time, please charge the battery for 3 hours.

•Please use the special adapter for charging attached with the meter, do not use it for

other product

• In case of any technical questions, please contact your local dealer.

1. MAIN FEATURES

- Support DVBS/DVBS2/DVBT/DVBT2/DVBC/DVBC2/MCNS
- LNB short-circuit protection and indicator.
- Extremely fast and accurate with high sensitivity.
- 320*240 color LCD display with controllable back light.
- Database editable by user easily.
- Signal lock audible notification.
- All DiSEqC protocol monitor based on 22KHz signal.
- Firmware can be upgraded by USB port.
- Database can be edited on PC and downloaded by USB port.
- Power-supply100-240V/50/60Hz 12V@1A.
- Ultra-long standby, low power consumption.
- Fast charging Li-ion battery can last around 3 hours

DVB-S/S2

- Real time Spectrum-Analyzer and transponder message detected
- Angle calculation of azimuth and elevation.
- Azimuth and elevation measurement.
- Satellite alignment system.
- Power, CNR, CBER, VBER(DVBS), LBER(DVBS2) Modulation mode display.
- DiSEqC1.0, DiSEqC1.2, USALS,SCD and SCD2 supported.
- Auto DiSEqC identification for DiSEqC1.0
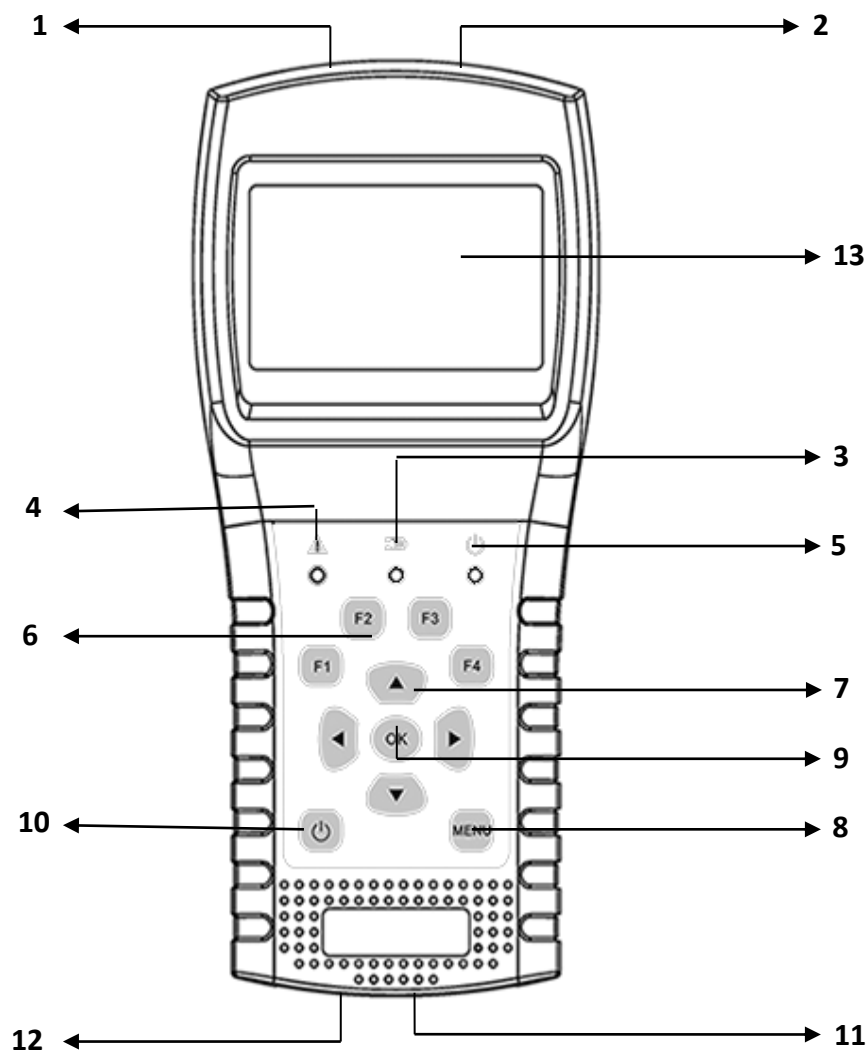- Cable identification for Quattro LNB easily

DVB-T/T2

- Power, VBER(DVBT), LBER(DVBT2) SNR and CBER display.
- Spectrum analyzer
- SCOPE Display
- Channel Auto Scan

DVB-C/C2/MCNS

- Power, BER, PER(DVBC/MCNS), LBER(DVBC2), SNR and Symbol Rate display
- Spectrum analyzer
- Channel Auto Scan
- Trunk voltage measurement (AC&DC)
- Tilt Display

2. BUTTONS AND INDICATORS

1. LNB Input: Signal input port for DVB-S. Connects directly to LNB using coaxial cable.

2. Antenna Input: Signal input port for DVB-T and DVB-C. Connect directly to Antenna using coaxial cable.

3. Charge Light:

          Red: the battery is being charged.

          Blue: the battery is full.

4. Warn Light: Flash if LNB is short connected

5. Working Light: Green: the meter is in working status

6. Function Keys:

F1**:** Turn on/off the screen display

F2**:** Enable/disable deep when pressing keys

F3**:** Enter to TP control menu in Satellite Measure menu

F4**:** Enter to Auto DiSEqC function in Satellite Measure menu

Note: Press ⏻ to display help bar on menus to get more information.

7. **Navigation Keys:**

◀ **/** ▶ **:** Move focus or change value**.**

▲ **/** ▼ **:** Move focus or change value

8. **MENU:** Go into main menu or exit from the current menu

9. **OK:** Confirm

10 . ⏻ **:** **1.** Turn the meter on/off, press and hold for 2 seconds to power on the meter.

2. Press to show help bar on each menu.

11. **Charging:** Connect with the charger cord for charging the equipment.

12. **Reset:** Reset the meter

13. **Screen Display**: Show menus and parameters.

3. HOW TO MEASURE

Power on the meter, select the system to measure or select system setting to set parameters for the device in the HOME menu.

In all menus, press [▲/▼] button to navigate, press [◀/▶] button to change the value of focused item, press [OK] button to confirm your select, edit value or enter a list to select a wanted item, press [MENU] button to enter or exit menus.

How to measure satellite signal:

1. Connect the signal cable to F-Type, Female jack.
2. Enter Satellite submenu.
3. Calculate the elevation and azimuth according to your local position in Calculate Angels menu. Set or adjust your dish to the right position.
4. Set the LNB parameters according to your field environment in LNB Setting menu. Make sure all the things are correct.
5. Enter to Satellite Measure menu, select the correct satellite and a normal transponder to check the signal is locked or not.

According to all the output values, such as strength, quality, CNR and power level, you can accurate your dish to get the best quality signal. And also you can analyzer the signal in Spectrum Chart menu

to help you to learn the locked signal well. User can edit the satellite position and transponder in Satellite Edit menu.

How to measure terrestrial signal:

1.   Connect the signal cable to IEC-Type, Female jack first.
2.   Make sure set Antenna Power to ON in System Setting menu if your antenna needs power supply.
3.   Analyze the signal in Terrestrial Measure menu.
4.   Analyze the scope in Scope menu and the spectrum in Spectrum Chart menu.

How to measure cable signal:

1.   Connect the signal cable to IEC-Type, Female jack first.

2.   Analyze the signal in cable Measure menu.

3.   Analyze the TILT in TILT menu and the spectrum in Spectrum Chart menu.

Please refer below descriptions if you want to learn all functions.

4. HOME MENU

The meter will enter this menu first during power on. Press

[▲ / ▼] to switch items or [OK] to enter submenus.

DVB-S/S2:   Submenu for DVB-S/S2 system.

DVB-T/T2:   Submenu for DVB-T/T2 system.

DVB-C: Submenu for DVB-C system.

System Setting: Submenu for system parameters setting. Such as language, auto
   power off and so on.

5. DVB-S/S2

The submenu for DVB-S/S2 functions. User can read the parameters of the live signal, analyze the spectrum chart, calculate the angles for a special satellite, edit the parameters of satellites and monitor DiSEqC command for other DVB-S/S2 device.

5.1 SATELLITE FINDER

The device will show the strength and quality of the live signal. And also CBER,VBER,LBER,CNR, modulator type, FEC and power level
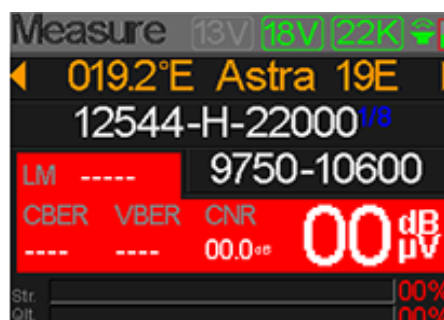
- **019.2°E Astra 19E:** The current satellite. Press [◀ / ▶] to switch between satellites and press [OK] to enter satellite list to select satellite. Press [OK] button to select the focused satellite and press [MENU] to exit from edit menu. All the other parameters on the menu will be refreshed according to the selected satellite.

- **12544-H-22000:** The current transponder. Press [◀ / ▶] to switch between transponders and press [OK] to enter edit. Press [◀ / ▶] to move curse and [▲ / ▼] to change value of each focused item in edit menu.

- **9750-10600:** The LNB type. Press [◀ / ▶] to switch between LNB types and press [OK] to enter list to select type.

- **22K:**   The 22k output status

- **13V:**   The 13V antenna power supply status

- **18V:**   The 18V antenna power supply status

- **LM :**   The link margin value.

- **CNR:**   The CNR value of signal.

- **00 dBuV:**   The power level of signal.

- **CBER:**   The BER before FEC value of signal.

- **VBER:**   The BER before viterbi value of signal.

- **Str:**   The strength of signal.

- **Qlt:**   The quality value of signal.

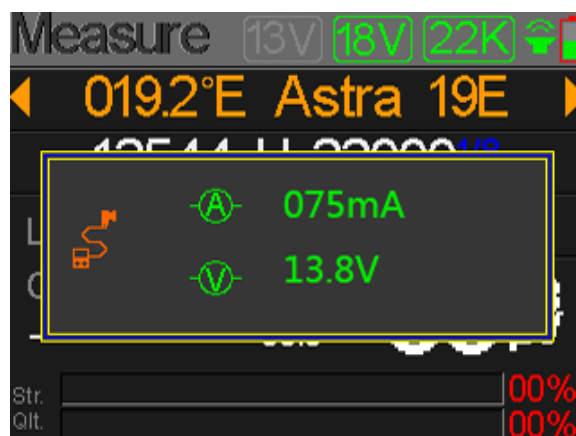   The read background will change to green once the antenna input signal is locking.

5.1.1 ZOOM

Press F1 to enter into the signal results zoom menu as below screenshot.
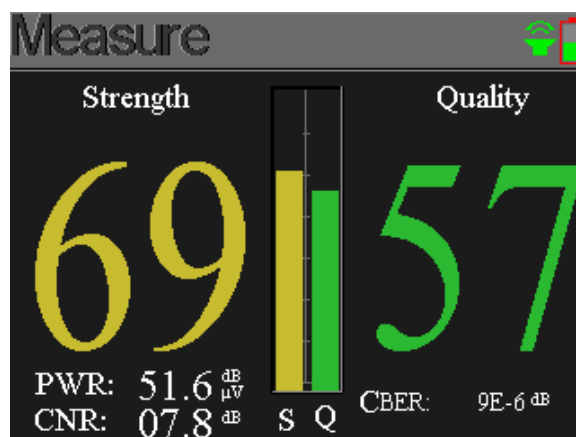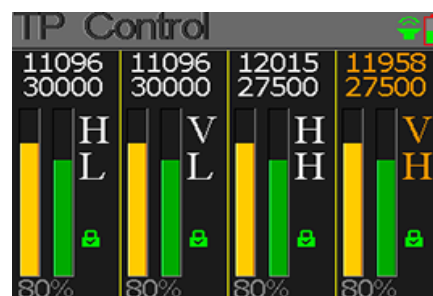
5.1.2 LNB Measurement

Press F2 to enter into feed current and voltage of LNB measurement menu as below.

5.1.3 TP CONTROL

TP Control is short for transponder control. Press [F3] in Satellite Measure menu to enter this menu. It is very easy and useful to check the output status of each port of Quattro LNB . Press [MENU] to exit to Finder menu. Please see the figure on the right side:
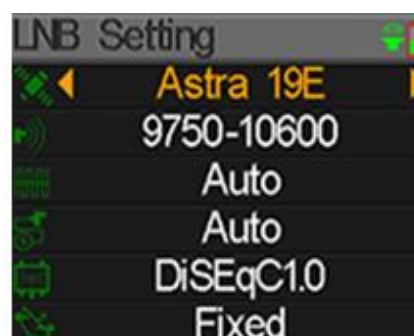

5.1.4 AUTO DISEQC

Press F4 to enter into DiSEqC 1.0 detection menu as below.
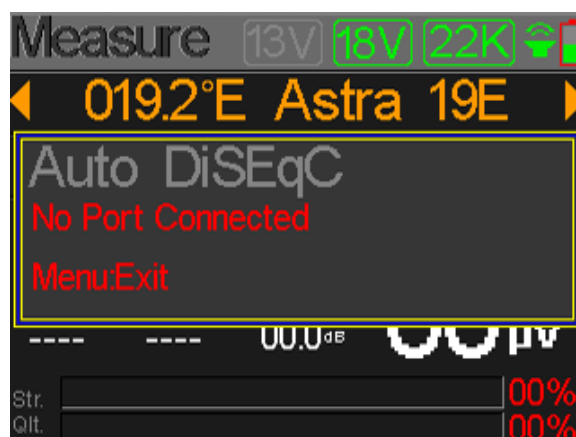
5.2 LNB SETTING

All the LNB parameters are set in this menu. Such as LNB type, LNB power, 22k, Diseqc type and motor type.

- **Astra 19E:** The current satellite. Press [◀ / ▶] to switch between satellites and press [OK] to enter satellite list to select satellite. Press [OK] button to select the focused satellite and press [MENU] to exit from edit menu. All the other parameters on the menu will be refreshed according to the selected satellite.

- **9750-10600:** The LNB type. Press [◀ / ▶] to switch between LNB types and press [OK] to enter list to select type.

- **Auto:** The 22k parameter. Press [◀ / ▶] button to switch between Auto, Off and On.

- **Auto:** The power parameter of the LNB. Press [◀ / ▶] button to switch between Auto, Off, 13v and 18v.

- **DiSEqC 1.0:** The DiSEqC port setting for DiSEqC 1.0 and 1.1. Press [◀ / ▶] button to switch between ports or press [OK] button to select port in the list.

- **Fixed:** Set the motor type. Press [◀ / ▶] to switch between Fixed, USALS and DiSEqC 1.2.

5.2.1 USALS Setting:

Press [OK] to enter USALS SETUP menu on Position Type if the type sets to USALS parameters

- **019.2°E Astra 19E:** The current satellite. Press [◀ / ▶] to switch between satellites and press [OK] to enter satellite list to select satellite. Press [OK] button to select the focused satellite and press [MENU] to exit from edit menu. All the other parameters on the menu will be refreshed according to the selected satellite.

- **Customized:** Select longitude and latitude by position name. Press [OK] to list all the positions. Please select Customized if you want to set the longitude and the latitude manually.

- **041.0°E / 02.8°N:** Show the selected longitude and latitude. And you can edit the value if Customized is selected.

- **Move to center:** Press [OK] to move the dish to central position.

- **Move to position:** Press [OK] to confirm to move to setting position

5.2.2 Diseqc 1.2 Setting:

Press [OK] to enter Diseqc 1.2 setting menu on Position Type if the type sets to Diseqc 1.2
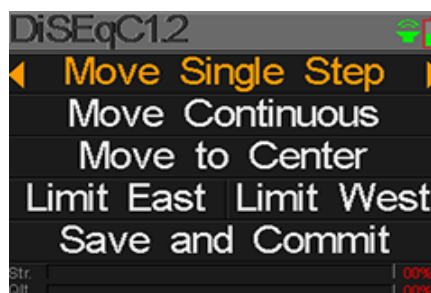
- **Move single step:** Move the motor by step. Press [◀ / ▶] to move to west or east

- **Move incessantly:** Move the motor incessantly. Press [◀ / ▶] to move to west or east

- **Move to centre:** Press [OK] to move to centre point

- **Limit east:** Set the move limit to east

- **Limit west:** Set the move limit to west

- **Save and Commit:** Press [OK] to save current position

- **Str.:** The strength of signal

- **Qlt.:** The quality of signal

5.3 EDIT SATELLITE

The parameters of satellite, such as Orbit Position and Transponder can be edit in this menu. All the satellites will be listed in this menu.

Press [▲/▼] buttons to move curse in list.

Press [F2] button to edit the name or the orbit position of current satellite in the dialog. And then press [◀/▶] to move curse and [▲/▼] to change value of each focused item in edit menu.

Press [F3] to add new satellite. Press [F4] to enter delete satellite dialog, and then press [OK] to confirm to delete or press [MENU] to cancel.

Press [OK] to enter transponder list of current satellite.

On transponder list menu, press [OK] or [F2] to edit transponder. Press [F3] to add new transponder. Press [F4] to enter delete dialog, press [OK] to confirm to delete or press [MENU] to cancel. And press [OK] button to edit selected transponder. And then press [◀/▶] to move curse and [▲/▼] to change value of each focused item in edit menu.

5.4. SPECTRUM CHART

This menu will show the spectrum chart of setting frequency range on current cable line. Press [▲/▼] to switch curser focus between Start Frequency, LNB Type, End Frequency, LNB Power/22K and Current Frequency Mark.
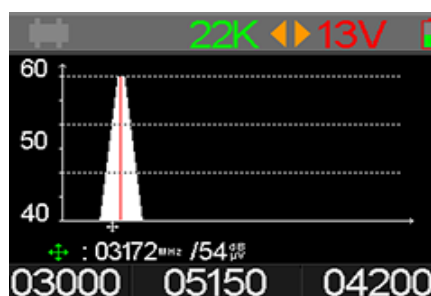
- **22K:** Show the 22k status. -—K: 22k off; 22k: 22k on

- **13V:** Show the RF power output status. The values are: 13V, 18V and OFF(--V)

- **40~50~60:**   The range of power level. Press [F3] to switch the display range between 40~60, 40~80 and 40~ 100.

- **03172 MHz/54 dBuV :**   The current frequency curse and power level, press [◀ / ▶] to set the current frequency.

- **0300:**   The start frequency of the spectrum chart. Press [OK] to edit it.

- **04000:**   The end frequency of the spectrum chart. Press [OK] to edit it.

- **05150:**   The current LNB type mode.

Press [◀ / ▶] to switch between LNB types.

Press [OK] button to check whether the current frequency can be locked or not. A dialog will show the locked transponder once it locks.

5.5 ANGLE CALCULATION

The elevation and azimuth of the antenna will be calculated according to the customized longitude and latitude or the selected city. Press [OK] to enter edit mode on My Longitude or My Latitude if Customized is selected. And press [◀ / ▶] to switch the focused item and press [▲ / ▼] to change values for each item under edit mode.
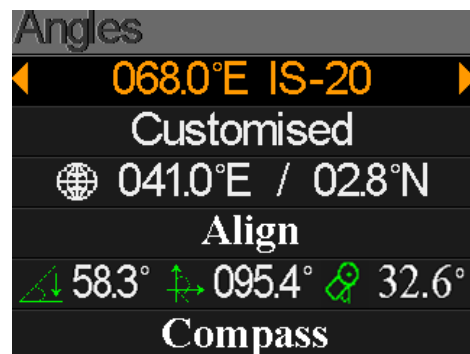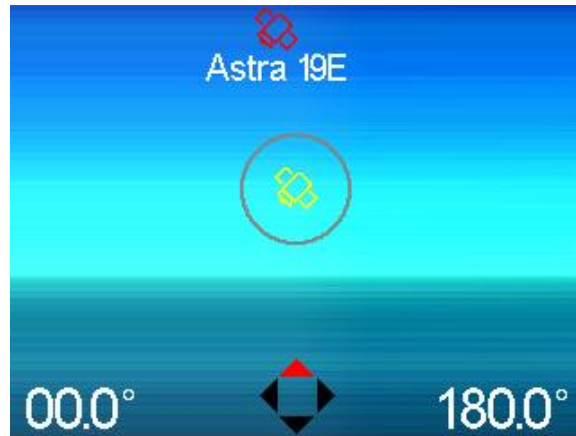
041.0°E: The location of local area

02.8°N: The hemisphere of local area

**58.3°:**   The elevation calculated by meter

095.4°: The azimuth calculated by meter

32.6°:   The polarization of the LNB

Select Align and press [OK] to goto alignation menu. User can simulate the antenna right position more directly on this menu. And the menu as folowing screen shot.

User need to adjust the attitude of the meter according to the simulated results until the current simulated values very close to the right ones. As close as possible. Then the BLUE lines will turn GREEN. Belowing is the graph for meter during adjust.
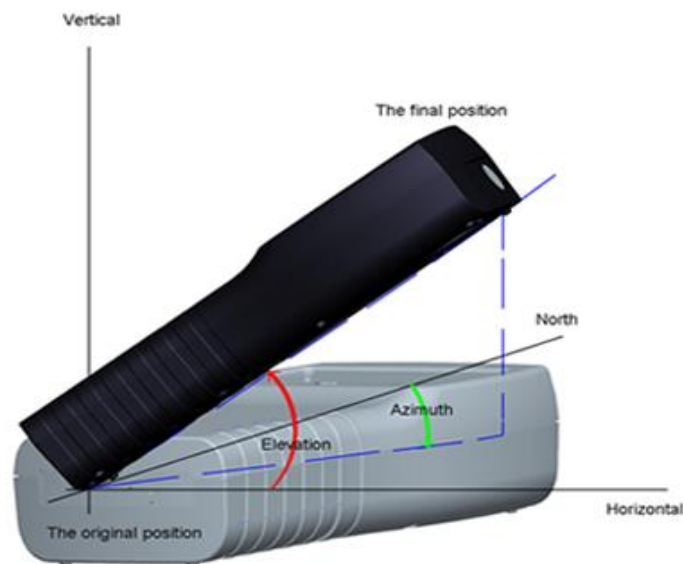

The meter must face to the satellite in the sky that user is plan to find.Belowing is the figure of aligment on this menu.
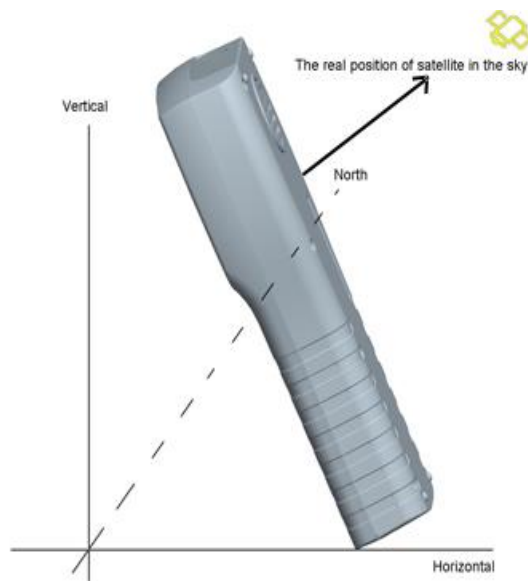
User need to adjust the attitude of the meter according BLUE arraw on the screen. The meter will deep and the RED icon turns to GREEN if the RED icon closes to the YELLOW one. It is better to make the two icon overlapping. And also values of azimuth and elevation will refresh on time according to the current position during the whole process.

Select Compass and press [OK] to go to compass submenu. And the menu as bellowing figure.
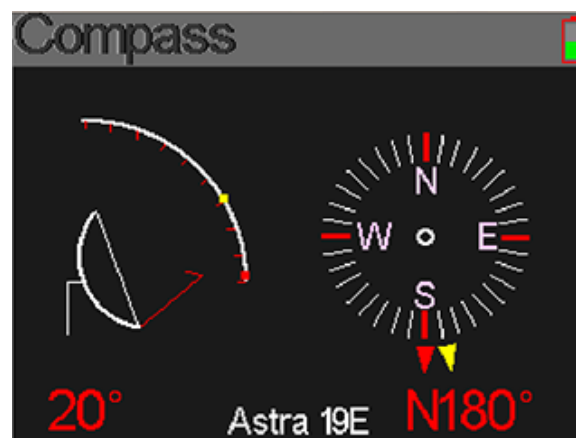
5.6 DISEQC MONITOR

Connect other device, such as STB(DVB-S/S2 receiver), by the cable line to the LNB input port . Then the meter analyzes all input commands for DiSEqC or switch on this menu, and also shows the power supply and 22K status. The menu displays the last two commands. Please refer to below screenshot.

Pow: The power supply of the input cable line.

22KHz: The 22k status of the input cable line.

E03F20D1:   The command data of the input cable line. The pre-command.

**Move centre:** The behavior of dish for command E03F20D1.

E13F21D6: The command data of the input cable line. The current command.

Move west one step: The behavior of dish for command E13F21D6.

**DiSEqC1.2/USALS:** The command protocol type.

6. DVB-T/T2

User can measure the live DVB-T/T2 signal, analyze the spectrum, the scope between transponders , auto scan all the saved frequencies and list all the locked ones. There are six submenus: Measure, Auto Scan, RF Channel List , Scope, Spectrum chart and ANT power.
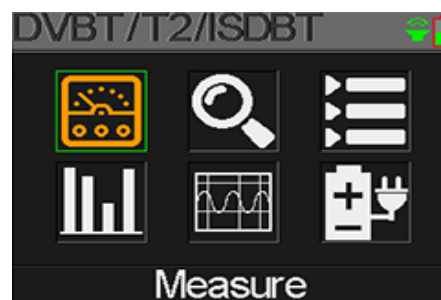
6. 1 TERRESTRIAL MEASURE

The device will show SNR, CBER, VBER, power value, strength and quality of the connected live signal. Please see below for detail.
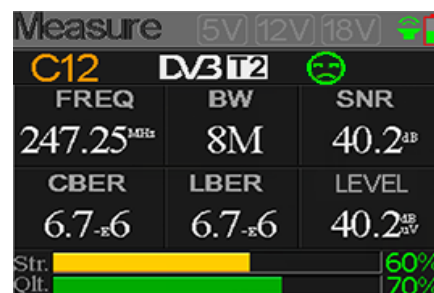
- ● **:** The lock status. The signal is locking if the icon is green otherwise the color of the icon is red.

- ● **C12:** The channel name.

- ● **5V, 12V,18V:** The antenna output voltage. The color of icon will be green once the voltage is outputting or the color is gray.

- ● **DVB T2:** The terrestrial system. The values are DVB T and DVB T2. Press [◀ / ▶] to switch them.

- ● **FREQ:** The current frequency. Press [◀ / ▶] to change the frequency or [OK] to edit it.

- ● **BW:** The bandwidth of the live signal. Press [◀ / ▶] to switch between 6M, 7M and 8M.

- ● **SNR:** The signal noise rate value of the live signal.

- ● **CBER:** The CBER(BER before FEC) value of the live signal.

- ● **LBER:** The LBER(BER after LDPC) value of the live signal.

- ● **LEVEL:** The power level value of the live signal.

- ● **Str:** The strength of the live signal in percent.

- ● **Qlt:** The quality of the live signal in percent.

6.2 AUTO SCAN

The meter will scan all the saved frequencies and show the lock status one by one and will then return to the main menu once scanning is finished. Press [MENU] to abort a scan in progress and return to the main menu.
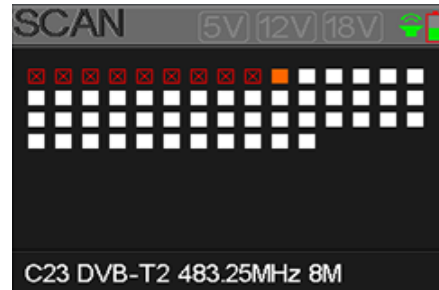
6.3 RF CHANNEL LIST

This menu shows all the locked frequencies during Auto Scan.

6.4 SCOPE

This screen show 6 channels level (dBuV) in one page, use [◀ / ▶] to move focus on channel number and press [OK] change channel number.

6. 5 SPECTRUM CHART

This menu shows the spectrum chart of the setting frequency range. Please see below screenshot.

Press [▲ / ▼] to switch between current frequency, start frequency   and end frequency:
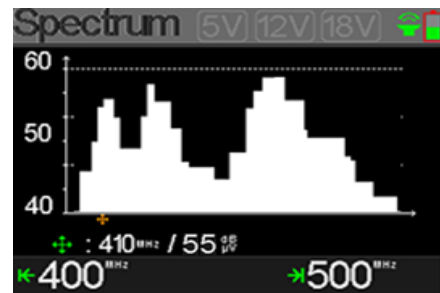
- **40~50~60:**   The range of the level value. Press [F3] to switch range between 40~60, 40~80 and 40~100.

- **410MHz/55 dBuV:** The curse of the current frequency and power level. Press [◀ / ▶] to change the value.

- **400:**   The start frequency of the spectrum chart. Press [OK] to edit start frequency dialog if it is focused.

- **500:**   The end frequency of the spectrum chart. Press [OK] to edit dialog if it is focused.

6.6 ANT POWER

User can enable/disable the power supply for antenna. 5V and 12V output are supported.
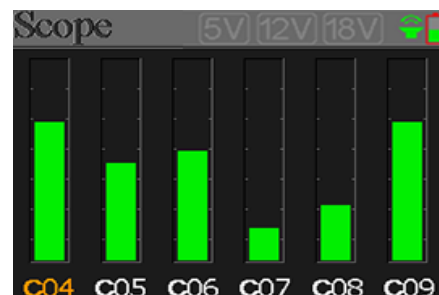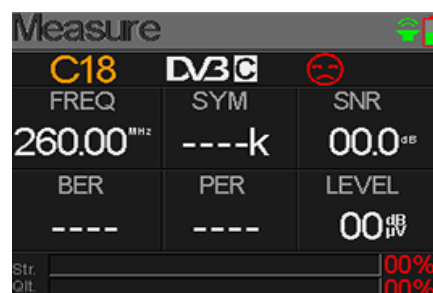
7. DVB-C

User can measure DVB-C live signal in this submenu. There are total six submenus: Cable Measure, Auto scan, RF channel list, Tilt , Spectrum chart and Trunk voltage.

7.1 CABLE MEASURE

User can read SNR, BER, PER, level, strength and quality of the live signal.

- : The lock status. The signal is locking if the icon is green otherwise the color of the icon is red.

- **C18:** The frequency channel name.

- **DVB C:** The cable system. The values are DVB C ,DVB C2 and MCNS. Press [◀ / ▶] to switch them.

- **FREQ:** The current frequency. Press [◀ / ▶] to change the value or press [OK] to edit it.

- **SYM:** The symbol rate of the current signal. The device will get it automatically once the signal is locking.

- **SNR:** The signal noise rate value of the live signal.

- **BER:** The bit error rate of the live signal.

- **PER:** The packet error rate of the live signal.

- **LEVEL:** The power level value of the live signal.

- **Str:** The strength value of the connected signal.

- **Qlt:** The quality value of the connected signal.

7.2 AUTO SCAN

The meter will scan all the saved frequencies and show the lock status one by one and will then return to the main menu once scanning is finished. Press [MENU] to abort a scan in progress and return to the main menu.
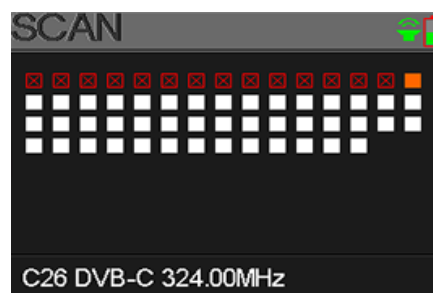
7.3 RF CHANNEL LIST

This menu shows all the locked frequencies during Auto Scan.

7.4 TILT

This menu shows tilt of three channels` power level.

- **C16,C17, C18:** The channel number. Press [▲/▼] to switch between them. Press [▲/▼] to change the   channel number and press [OK] to pop out the channel list to select.
- **FREQ:** The frequency of each channel
- **LEVEL:** The power level of the first channel
- **DELTA1:** The delta of power level to the first channel
- **DELTA 2:** The delta of power level to the first channel

7.5 SPECTRUM CHART
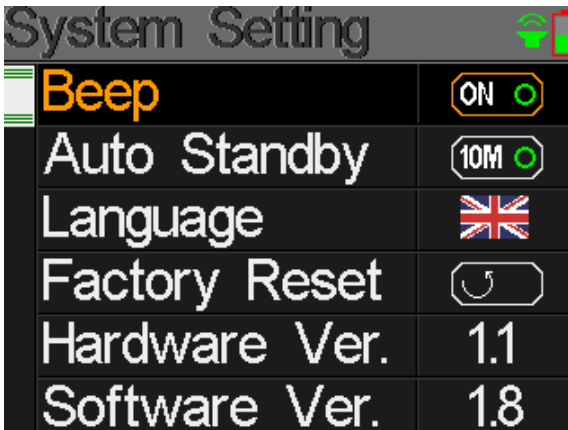
Please refer 6.3 Spectrum Chart.

7.6 TRUNK VOLTAGE

This menu measures the trunk voltage. Press [OK] to switch alternating current and direct current.
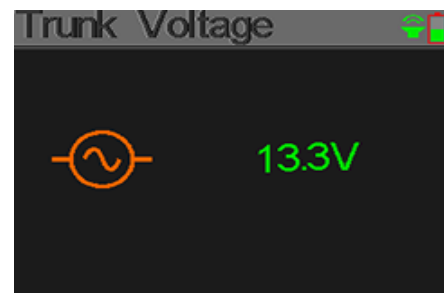
8. SYSTEM SETTING

- **Beep:** The beep status during pressing keys or when the signal is locking. Press [◄/►] to turn on or turn off beep.

- **Auto Standby:**   Set the time for meter to enter standby mode automatically. Press [◄/►] to switch between Off, 10 min, 20 min, 30 min and 60 min.

- **Language:**   The language of UI. Press [◄/►] to switch between available languages

- **Factory Reset:**   Press [OK] to display a confirm dialog. Then select YES to do a factory reset or select NO to cancel.

- **Hardware Ver:**   The version number of hardware.

- **Software Ver:**   The version number of software.

9. ACCESSORIES

Power adapter, 2 RF connector, 1 CD for user manual.

10. TROUBLE SHOOTING

1. **Unable to power on:** Charge the meter about 3 hours until the charge light turn blue.

2. **Warning LED flashing:**   Antenna overload, power off the meter and check the signal cable. After that please power on again.

3. **Hung up:**   Press the reset button to reset the meter.

4. **Can't lock signal:**   Please confirm the signal cable is connected correctly and make sure the antenna power is been set to ON if the antenna needs power supply.

5. **Other questions:**   please contact your dealer

11. TECHNICAL SPECIFICATION

DVB-T	
Bit Error Rate (BER)	CBER (before Viterbi): 1E-7 – 1E-3 VBER (before Reed Solomon): 1E-7 – 1E-3
Frequency range	44-862MHz
Power level	30-100 dBμV, +/-2dB
SNR	5 - 35dB, +/-0.5dB
Bandwidth	6MHz, 7 MHz, 8 MHz
FFT type	2k, 8k
Constellation	QPSK, 16QAM, 64QAM
Viterbi rate	1/2, 2/3, 3/4, 5/6, 7/8
Guard interval	auto
Spectrum inversion	auto
DVB-T2 / T2 Lite	
Bit Error Rate (BER)	CBER (before LDPC): 1E-7 – 1E-3 LBER (before BCH): 1E-9 – 1E-5
Frequency range	44-862MHz
Power level	30-100 dBμV, +/-2dB
Modulation Error Rate(MER)	5 - 35dB, +/-0.5dB
Bandwidth	1.7MHz, 5MHz, 6MHz, 7 MHz, 8 MHz
Mode	SISO, MISO, PLP single or multiple
FFT type	1k, 2k, 4k, 8k, 16k, 32k + extended bandwidth
Constellation	QPSK, 16QAM, 64QAM, 256QAM
Viterbi rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 1/3, 2/5
Guard Interval	auto
Spectrum inversion	auto
DVB-C J83A	
Bit Error Rate (BER)	BER (before Reed Solomon): 1E-7 – 1E-3 PER (Packet Error Rate): 1E-6 – 1E-2
Frequency range	44-862MHz
Power level	35-100 dBμV, +/-2dB
SNR	20 - 40dB, +/-0.5dB
Symbol Rate	1.7 to 7.2 Msym/s
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Spectrum inversion	auto
MCNS J83B	

Bit Error Rate (BER)	BER (before Reed Solomon): 1E-7 – 1E-3
	PER (Packet Error Rate): 1E-6 – 1E-2
Frequency range	44-862MHz
Power level	35-100 dBμV, +/-2dB
SNR	20 - 40dB, +/-0.5dB
Symbol Rate	5.6 Msym/s
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Spectrum inversion	auto
DVB-C2	
Bit Error Rate (BER)	CBER (before LDPC): 1E-7 – 1E-3
	LBER (before BCH): 1E-9 – 1E-5
Frequency range	44-862MHz
Power level	30-100 dBμV, +/-2dB
SNR	5 - 35dB, +/-0.5dB
Bandwidth	6MHz, 8 MHz
FFT type	4k
Constellation	16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM
Viterbi rate	2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Guard interval	auto
Spectrum inversion	auto
DVB-S	
Bit Error Rate (BER)	CBER (before Viterbi): 1E-7 – 1E-3
Frequency range	950-2150MHz
Power level	35-100 dBμV, +/-3dB
CNR	0 - 20dB, +/-0.5dB
Symbole rate	333 Ksym/s to 45 Msym/s
Constellation	QPSK
Viterbi rate	1/2, 2/3, 3/4, 5/6, 6/7, 7/8
Spectrum inversion	auto
DVB-S2	
Bit Error Rate (BER)	CBER (before LDPC): 1E-7 – 1E-3
Frequency range	950-2150MHz
Power level	35-100 dBμV, +/-3dB
CNR	0 - 20dB, +/-0.5dB
Symbol rate	333 Ksym/s to 45 Msym/s
Constellation	QPSK, 8PSK, 16APSK, 32APSK
Viterbi rate	2/5, 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Spectrum inversion	auto
Remote supply	**Terrestrial**	**Satellite**

Voltage	5V/12V/18 V 200 mA max	13/18 V 400 mA max
DiSEqC	-	DiSEqC 1.2 control of dish motor switches committed & uncommitted
Mini DiSEqC (22kHz)	-	22 kHz, Tone Burst
SCD EN 50494	-	8 slots max switch committed
SCD2 EN 50607	-	32 slots max
Inputs / Outputs		
RF input	75 Ohms, F (with adaptor)	
Interfaces	Mini USB for power input 12V@1A	
Display	2.4 Inch, LCD	
Battery	Batterie Li-ion 1400mAH@7,.4V	