大红点 REDOT

Digital Standing Wave Meter User Guide

(A)

1—RF input connector

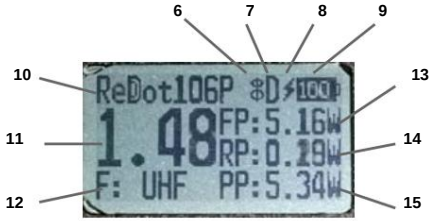
2—LCD display 3—

Big red dot button

4—TYPE C charging

port 5—RF output connector

(B)



(C)

6—Serial port connection indication 11—Standing wave ratio 7—Digital modulation indication 12—Signal frequency band 8—Charging status indication 13—Forward power 9—Battery power 14—Reverse power 10—Standing wave meter model 15—Peak power

Connecting

equipment: Connect the IN end of the standing wave meter to the radio transmitter port (transmitter), and connect the OUT end of the standing wave meter to the antenna feeder (load). The standing wave meter measures the forward power and reverse power at the access location, and then calculates the standing wave ratio. Connected to the antenna side, you can see the matching status of the antenna. Connected to the side of the transmitter, what is measured is the antenna feeder system, which can determine whether the feeder is normal. With a dummy load or a well-matched antenna, the transmitter power can be measured.

Power-on

measurement: Press the big red dot button to power on, and after a "beep" sound, you can start measurement. Press the radio transmitter button, and various measurement data will be displayed as shown in

Figure (C). The large characters show the standing wave ratio.

FP (Forward Power): That is forward power, also called incident power, the unit is W (Watt).

RP (Reverse Power): Reverse power, also called reflected power, the unit is W (Watt).

PP (Peak Power): Peak power, tracking and displaying the maximum value of rapid changes in signal amplitude, in W (Watts).

F (Frequency): Displays the frequency band of the radio frequency signal. When there is no transmission, it displays: Auto, which is automatic frequency test. For fixed frequency testing, please refer to the advanced operations of the standing wave table.

FMB:80~109MHz

VHF:110~299MHz

UHF:300~999MHz

This machine can automatically detect the edge of the digital modulation signal and use it to sample the burst signal. If there is no burst signal for 100mS, it will return to the continuous sampling mode. When transmitting a

signal, the position of 7 on the screen displays A, which means analog modulation, and D, which means digital modulation. After stopping transmitting signals, the measurement data will be kept for one minute. If there is transmission within one minute, the real-time display will be restored. If there is no transmission, the measurement data will be displayed in real time. Return to zero after minutes.

Sleep wake-up: If

there is no operation or no transmission signal, it will enter sleep for more than 3 minutes and turn off the display and other power-consuming parts to save power. When a transmission signal is detected, it wakes up immediately and returns to the measurement state before sleep. The sleep state can also be manually awakened by pressing the big red dot to return to the measurement state before sleep.

Switch the

backlight: Press the big red dot for about 0.2 seconds, then lift it up after a short beep to turn the backlight on or off. The display screen of this machine can be displayed clearly under natural light, and the stronger the light, the clearer it will be. Backlight assistance is only needed when the ambient light is insufficient.

Turn off the

power: press the big red dot for about 1 second, "beep -, beep -" for a short time

There will be a long beep and the word "Shutdown" will be displayed at the battery position on the screen. Release the button to turn off the

power. Charging

operation: Any compatible USB charger can be used for charging, including a 5V DC power supply that can output more than 200mA. There is a charging indicator when turning on the battery. It does not sleep during charging and will sleep after it is fully charged. Shutting down can speed up charging, and it has charging protection and stops when full. When the power is less than 30%, the backlight will be forced to turn off to extend the use time. At this time, it should

be charged in

time. Note: The standing wave meter uses a broadband detector, which detects the comprehensive result of the signal spectrum, such as multi-carriers, harmonics, etc., which will have an impact. When the standing wave of the load under test (antenna) is large, the power measurement error will also be large. At this time, the load needs to be matched first before the measured power has practical significance. Generally, the load standing wave must be <1.2. For HAM applications, standing wave <1.5 is sufficient. In actual use, please be careful not to screw the M head to the N seat of the standing wave meter. This will damage the center conductor of the N seat, which is not covered by the free warranty. Pay attention to moisture-proof, dust-proof, and waterproof, and do not store or use it together with corrosive gases or liquids such as organic solvents, acids, and alkalis. Otherwise, it may cause contact problems with interfaces or buttons and other unknown faults. The charger included in the accompanying accessories is only for charging the standing wave meter and cannot be used to charge other devices (such as mobile phones, etc.). If the standing wave meter is not used for a long time, it needs to be fully charged and stored. It is

recommended to

replenish it every 3 months. Warranty and service: 1. The host has a free warranty for 1 year, after which only spare parts will be charged. 2. Random accessories are guaranteed to be replaced due to non-human damage within 7 days. 3. Calibration is free, and software upgrades are free if conditions are met. 4. Damage to the center conductor of the liquid crystal screen (LCD) and RF socket is not covered by the free warranty. 5. The bumps and discoloration of the instrument shell are not covered by the free warranty. within the range and is not covered by the paid warranty.

6. Free warranty, repair, calibration, upgrade, product replacement, etc. Freight charges incurred will be charged as actually incurred.

7. Repairs, calibrations, and software upgrades are only valid for the products described in this description.

Main

performance: Frequency range: 80MHz~999MHz

Standing wave ratio display: 1.00~99.9

Maximum power: <120W Power

error: <10% Continuous sampling:

100 times/second Burst sampling: Signal

leading edge trigger sampling, burst/continuous sampling

automatically Convert. Frequency

compensation: Automatically measure signal frequency

and perform frequency compensation for

power conversion. Sleep and wake-up: It will sleep after 3 minutes

without any operation, and can

Display: wake up by radio frequency or manually.

128×64 dot matrix reflective LCD

screen with backlight or natural light

illumination. Button operation: Big red dot

single button. RF interface: N-KF (50 ohms) TYPE C interface: USB cable chargin

A dedicated line can be used

to connect to the host computer. Lithium-ion

battery: 3.7V/350mAH. Overall dimensions: 95×35×26

(mm) Net weight of single machine: about 120g

Model function comparison:

Model	106B 106A 106E 106P			
Analog frequency compensation	•	•	•	•
Digital frequency compensation	•	•	•	•
Manual frequency compensation	•	•	•	•
Digital modulation measurement	•	•	•	•
Analog modulation measurement	•	•	•	•
Sleep key wake-up	•	•	•	Sleep radio frequency wake-up • • •
Sleep serial port wake-up	•	•	•	

Note: •Has this function. •This function is not available.

This guide is just a simple usage instruction. If you need detailed technical information, please visit the Taobao store or request it by email. **http://shop34415785.taobao.com/ E-mail: ceeliu@163.com**

Big Red Dot Digital Standing Wave Meter Advanced

Guide The main feature of

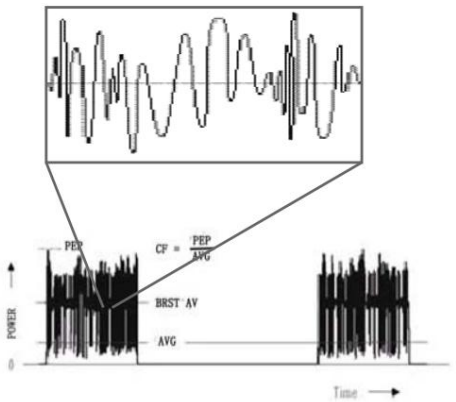
the Big Red Dot series of standing wave meters is that they are simple and convenient to operate. For general applications, you can measure directly as soon as you turn on the power, and all measurements are automatically realized. Below is an introduction to

some of the technologies used in the Big Red Dot Standing Wave Meter:

technical principles in order to use this standing wave table better and more flexibly.

Peak power and digital modulation:

Modern communications use a large number of digital modulation modes. The characteristics of digital modulation signals are that the symmetry, frequency, amplitude and peak/average power ratio of the signal waveform will change randomly. Such waveforms are more like noise than conventionally modulated signals and can undermine the conditions under which continuous wave power meters can be accurately calibrated and used. In addition, the large dynamic range of digitally modulated waveforms can extend the diode detection circuitry of a continuous wave power meter beyond the square rate (linear) operating range. This causes large test errors when traditional power meters test digital modulated signals. This standing wave table uses large signal detection plus software nonlinear compensation algorithm, a combination of burst and continuous sampling, and peak tracking to solve the problem.



In the time domain waveform of the digitally modulated radio frequency signal shown in the figure above, The relevant meanings are as follows:

Average power (AVG): The average value of carrier frequency power (thermal equivalent power, equivalent to the true effective value in voltage measurement). It is used for measurements under constant amplitude continuous waves, and can well measure forward power, reverse power, and standing wave ratio. At this time, the peak power and average power are consistent. Burst average power (BRST

AV): each burst carrier frequency signal average power during the period. For intermittent and discontinuous signals, the average power will be very small and cannot be measured. At this time, using the burst average power can well reflect the energy of the carrier frequency signal. The peak power at this time reflects the instantaneous carrier wave. maximum value. Peak Envelope Power (PEP): The peak value of carrier frequency power. For

amplitude modulated waves, single sideband, digital modulation, etc., the average power changes at any time, making it difficult to obtain stable readings. At this time, the peak power displays the instantaneous maximum value of the carrier signal and can be tracked and displayed for 2.5 seconds for stable reading.

Frequency compensation and frequency

meter: The frequency characteristics of the standing wave table based on the microstrip directional coupler completely depend on the microstrip coupler. Usually the frequency band of the microstrip coupler is not wide and cannot cover ten octaves. Therefore, in addition to frequency compensation in hardware, the Big Red Dot also adds the function of detecting signal frequency, so that compensation can be performed from a software algorithm. There are no high requirements for frequency detection, so a high-precision time base is not used. In addition, the software timing also has jitter. The overall frequency error is less than 1%, which is sufficient for frequency compensation. Ten frequency points were selected for calibration in the entire frequency range, and frequency compensation was performed on the coupler. Due to the shortage of digital frequency meter chips, an alternative method was designed - an analog

frequency meter, which is implemented by analog circuits and corresponding software algorithms. The advantage is that it is not limited by the chip and does not increase power consumption. The disadvantage is that the dynamic range is narrow and the error is large, about 5%, but it is still ok for compensation only for power measurement. In actual use, due to different modulation modes, digital frequency meters may also have large errors. However, no matter which frequency meter is used, if the deviation is found to be large, the actual signal center frequency can be set, so that the power and Standing wave ratio.

Automatic frequency: The internal frequency meter automatically detects the signal frequency band. When there is no transmitting signal, Auto is displayed. When there is a transmitting signal, the corresponding frequency band is displayed, FMB/VHF/UHF. Fixed

frequency: The internal frequency meter is turned off, and a fixed frequency value is displayed regardless of whether there is a transmitted signal. The fixed frequency value is retained when the device is turned off, and the saved frequency value is restored after the next time the device is turned on.

Big red dot single-key operation: Big

red dot single-key operation uses only a single key to achieve multiple

One method of key function is to realize different functions by pressing the big red dot key for a long time. Each function is executed after the key is released. Power on and wake up from sleep: Press the big red dot button (referred

to as the big red dot), the screen will

light up and display as shown below, until you release the big red dot, it will enter the measurement state. Device model maximum power frequency range developer email If the standing

wave meter is in sleep state, click the big red dot to directly return to the measurement state.

Key functions in measurement state:

Short press - press the big red dot briefly and release after a short beep.

Turn the screen backlight on or off.

Slightly longer - press the big red dot for a little longer, one short and one long prompt.

There is a sound, and "Shutdown" is displayed at the battery position on the screen.

Once released, it will shut down.

Extra long - press the big red dot for an extremely long time, one short and one long prompt.

There is a sound, and "Shutdown" is displayed at the battery position on the screen.

Without releasing the button, continue to hold it for about 4 seconds, and then hear another

A long beep sounds, and the "Shutdown" prompt changes to "Setup"

"Setting", release the button to enter the frequency setting state.

Key function in setting state:

Short press - press the big red dot briefly and release after a short beep.

To change the current value, the cursor digits cycle from 0 to 9.

Slightly longer - press the big red dot for a little longer, two short beeps will sound

and then release, defined as moving the cursor, and the cursor circulates to the right

Move one position.

No matter how long - press the big red dot for longer, two short and one long prompts

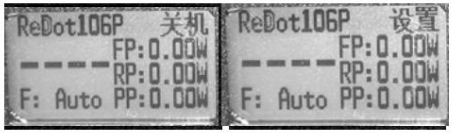
tone, and the "Settings" prompt on the screen changes to "Save".

Release the button to save and exit, and the cursor will disappear.

Setting frequency: In

order to reduce misoperation, frequency setting is implemented after extremely long operation. During normal use, press the big red dot to hear a short and one long beep, and release the button to turn off the phone. When you need to enter the frequency setting, press the big red dot to hear a short and one long prompt tone, and the screen

The word "Shutdown" is displayed at the battery position on the screen. Do not release it at this time. Continue to press and hold it for about 4 seconds. Then you will hear a long beep. At the same time, the "Shutdown" prompt changes to "Settings". Release the button to enter the frequency setting. status, as shown below.



1. After entering the frequency setting, the frequency cursor flashes.

Short press once, the number at the cursor position will be +1, and cycle from 0 to 9.

2. Press slightly longer to move the cursor one position to the right, to the end of the right

It will return to the far left, and so on. 3. Use short

press and long press together to enter the required frequency value.

4. Press and hold again, and the screen prompt changes to "Save". If the input value is valid, it will return to the fixed frequency state based on the set frequency value. If the input value is invalid (<80MHZ), it will return to the automatic frequency state. 5. During the frequency setting

process, if there is no operation for more than 10 seconds, the setting will

be abandoned and returned to the previous state regardless of whether the entered frequency value is valid or not. 6. If you need to return to the automatic frequency state from the fixed frequency state,

Then you need to set an invalid frequency value (frequency less than 80MHZ) according to the previous steps to return to the automatic frequency state.

Serial port connection:

This machine has a serial port communication function, which can send the measured data in real time, and can also set the test frequency, user ID, etc. Use the TYPE C charging port for physical connection. The electrical interface is RS232-TTL level and requires a dedicated line for connection. After connecting, there will be a serial port connection prompt on the screen. If necessary, please visit the Taobao store or contact the developer via email.

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