hapter I Overview and Technical Conditions

One Overview

This instrument is a multi-function intelligent counter in 10 Hz-2400MHz.

Feature: Crystal oscillator with highlighted LED display with 8 digits of seven sections, low power consumption line design, compactness, lightness and high stability ensures testing accuracy and overall input signal checking.

Main function: Frequency, accumulation and crystal testing

All function is accomplished by an integrated circuit of all-in-one computer. Instrument switch position, indicator, contact board and all documents are all provided in this manual. Before using this instrument, it is recommended to read through and understand these information and details for correct operation and the best effect.

Two Technical Conditions

Technical conditions are listed as follows:

I. Testing

Frequency: Range: Grade 2 position 10 Hz – 1 MHz direct counting Input through Pass A
Grade 1 position 200K Hz – 100 MHz proportion counting Input through Pass A
Grade 0 position 30M Hz – 2400 MHz proportion counting Input through Pass B

Resolution: Grade 2 position 0.1 Hz, 1Hz, 10 Hz optional
Grade 1 position 1Hz, 10 Hz, 100Hz optional
Grade 0 position 10 Hz, 100Hz, 1000Hz optional

Switch time: 0.1S, 1S, 10S optional
Accuracy: 1 count value ± standard time error x frequency

Accumulation testing: Grade 3 position 10 Hz – 1 MHz direct counting Input through Pass A
Resolution: ± input count value
Crystal testing: Grade 4 position 2M Hz – 20 MHz Input through Pass C

II. Input feature

Pass A Input sensitivity: 25 mVrms
Impedance: about 1 MΩ (less than 35 pF)
Maximum safe voltage: 30V
Pass B Input sensitivity: 30 mVrms
Impedance: about 75 MΩ
Maximum safe voltage: 3V

III. Time base

Short-time stability: $\pm 3 \times 10^{-9}$ / second
Long-time stability: $\pm 2 \times 10^{-5}$ / second
Temperature: $\pm 1 \times 10^{-5}$, 0℃-40℃
Line voltage: each change of 10% $\pm 1 \times 10^{-7}$

IV: Normal condition

Display: Red LED 8 digit display with KHz, MHz, crystal testing, Pass B input and counting displa

Check: Count with 10 MHz time base oscillator frequency

Power supply requirements: amplitude AC 220 ± 10% frequency 50 Hz

Start time: it is 20 minutes under 25℃.

Temperature: regulated using range is -5℃ - + 50℃

Storage and transportation: -40℃ - + 60℃

Humidity: for working is 10-90% RH for Storage is 5-95%

Size: width is 198mm, height is 70mm, length is 175mm and weight 1kg

V: Appendix: Operation manual, one testing cable

Chapter II Operation

I: Introduction

In this chapter, we provide the overall and necessary operation process for multi-function counter, including the control,
connection, display, operation training and user maintenance of the front panel.

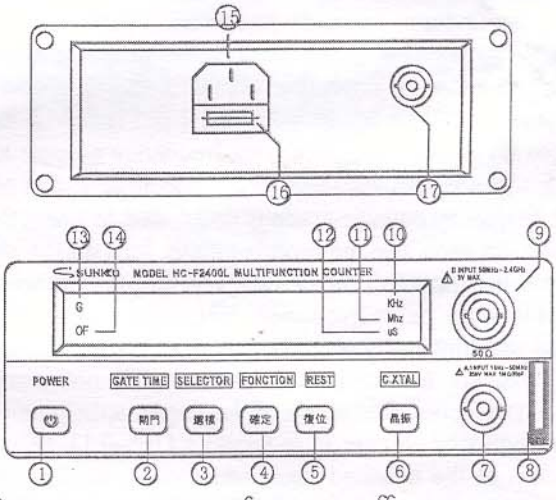
II: Before use

1) ower supply requirements: AC 220V± 10%, 50 Hz single phase, the maximum power consumption of 5 Watt.

2) Pre-heat for 20 minutes before testing to ensure frequency stability of the crystal oscillator.

III: Front panel feature

IV: Back panel feature



1) **Power switch:** press the button for power-on or press for power-off.
2) **Gate selector:** It is used for selecting different resolution and counter reset in frequency testing.
3) **Grade selection:** It is used to select different range and counter testing in frequency testing.

0 position: ≥ 30 MHz 30 MHz-2400MHz Range selection, G, MHz indication light on.

(For type B frequency counter this grade is for test display 1000, 000 KHz)

Grade 1 position: 200 KHz- 100 MHz (Type B 160 MHz) Range selection, MHz indication light on.

Grade 2 position: 10 Hz- 1 MHz Range selection, KHz indication light on

Grade 3 position: count testing, OF indication light on.

Grade 4 position: crystal testing selection, u S indication light on.
Each time you press the gate switch or grade selection, this device will show the indication for 4 seconds in the display, i.e., [1ch 0.1] 1ch shows Grade 1 position, 0.1 shows gate 0.1.
[3ch 10] 3ch shows Grade 3 position, 10 shows gate 10.

4) 4 Function: After selection the grade and gate, press this button to enter testing status.

5) 5 Reset: press it to stop the testing and keep the previous testing data for reading.

6) Crystal oscillator: you can selection crystal oscillator testing function

7) A. INPUT: Pass A input end.

8) Pass C input end, crystal testing input end. 9) B. INPUT: Pass B input end, Type B frequency counter has no such input end.

10) KHz frequency part and gate status indication light, also shows the grade selected is in Grade 2.

11) MHz: frequency part and gate status indication light, G indication light is off, it shows that grade selected is in Grade 1 position.

12) uS: crystal testing indication light, it also shows the grade selected is in Grade 4 position, the crystal testing grade.
Break: When unusual case appears, press it for the instrument to recover normal work.

13) G: Pass B: Frequency testing indication light also shows that grade selected is in Grade 3 position, count testing grade.

14) OF: Pass A count testing indication light, it also shows the grade selected is in Grade 3 position, count testing grade.

15) Power socket: 220V 50 Hz 16) Safe tube stand: 1A 17) Signal output

V. Applications

1.)Plug in the 220V AC power socket, then the power status indication light is on, it shows that the instrument is normally power on. Press the power switch, connect the attached cable to signal input socket in the panel, select proper grade and gate time to test signal frequency. If the gate has short time, the frequency testing speed is quick with low resolution. If the gate time is long, the frequency testing speed is slow with high resolution.
2.)Raise an example with 2.4 GHz frequency counter to illustrate the testing method for all kinds of modern communication tool. Example 1, test analogue mobile phone sending frequency: the frequency counter grade is positioned to grade 0 [0ch-0.1], fix the red clamp to the mobile phone antenna, use the mobile phone, turn on the phone and input the phone NO.. Once the phone is connected, the counter will display the sending frequency. Example 2, test 30MHz, the two-way radio frequency: frequency counter is in Grade 1 [1ch-0.1], press the two-way radio sending key, gradually get close to the counter till the normal display of frequency. (If the two are too close, the counter will not work normally due to over strong signals). Example 3, test frequency of the pager, split phone with a movable handset, two-way radio, the frequency counter is in Grade 1 [1ch-0.1], take one capacitor of 5P, wind one wire to the middle of the attached cable red fixture, another wire as the exploring pin, contact directly frequency test point to get the frequency value.

3) Crystal oscillator testing function, insert the crystal oscillator to corresponding hole, select crystal oscillator testing function, press for confirmation to test the frequency for the oscillator.

4) ter the test, take out the power plug.

VI . Notes

1) When test high voltage, strong radiation signal frequency. If in wired way, you shall serially connect big resistance. If in wireless way, the counter shall be far away from the signal source. After the signal attenuation, handle the test to avoid damage to the instrument.
2) When testing signal above 100MHz, the cable for test shall be as short as possible.
3) Sometimes, the instrument will show as follows: