

Q 1536 OPERATING INSTRUCTIONS

INTRODUCTION

The instrument is a multi-function and equal accuracy counter.

Features

Eight digits, bright seven-segment LED display, four function performance, low power dissipation circuit design, small size, light weight, high stability crystal oscillators ensure accuracy of measurement and full input signals conditioning.

Four functions

Frequency, period, totaling and self-checking. All functions are accomplished by a monolithic large-scale micro-processor. The input signals can be conditioned by attenuation. The position of switches, indicators, wiring terminals and all specifications are provided in this booklet. Before operating this unit, please refer to this instruction manual thoroughly for better use.

SPECIFICATIONS

1. Methods of Measurement

■ Frequency Measurement

CHANNEL 1

- Range: 10Hz ~10MHz direct counter
10MHz ~100MHz scale by proportion
- Resolution: direct counter: 10Hz, 100Hz
scale by proportion: 10Hz, 100Hz, 1000Hz
- Sampling time: 0.01s, 0.1s, 1s
- Accuracy: \pm Timebase error \pm Trigger error
 \times Measured frequency \pm LED
LED = 100ns/ Sampling time \times Measured
frequency (or Measured period)

CHANNEL 2

- Measurement range:
100MHz ~2700MHz scale by proportion
- Resolution:
Scale by proportion: 100Hz、1KHz、10KHz
Sampling time: 0.01s, 0.1s, 1s
Accuracy: \pm Timebase error \pm Trigger error
 \times Measured frequency \pm LED

■ Period Measurement

Input: Channel 1 Range: 10Hz ~10MHz
Resolution: 10^{-7} S, 10^{-8} S, 10^{-9} S
Accuracy: \pm Timebase error \pm Trigger error
 \times Measured frequency \pm LED

■ Totaling Measurement

Input: Channel 1 Range: 10Hz ~10MHz
Resolution: 1 count pulse

■ Self-Checking

Display: 8 bits LED, 0-9 repeatedly display

2. Input Characteristic

CHANNEL 1

- Input Sensibility:
10MHz range: 10Hz ~8MHz 70mVrms
 8MHz ~10MHz 30mVrms
100MHz range: 10MHz ~80MHz 30mVrms
 80MHz ~100MHz 30mVrms
- Attenuation: ×1, 1/20
- Filtering: Lowpass, 100KHz, -3dB
- Impedance: approx. 1MΩ (less than 35pF)
- Maximum Safety Voltage: 250V (DC+ACrms)
(set ATT on 1/20)

CHANNEL 2

- Input Sensibility: 100MHz ~2400MHz 30mVrms
2400MHz ~2700MHz 75mVrms
- Impedance: approx. 50Ω
- Maximum Safety Voltage: 3V

3. Timebase

- Timebase Frequency: 13MHz
- Short-term Stability: $\pm 3 \times 10^{-9}/S$
- Long-term Stability: $\pm 2 \times 10^{-5}/\text{month}$
- Temperature Coefficient: $\pm 1 \times 10^{-5}$, $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$
- Line Voltage: every $\pm 10\%$ vary based on every $\pm 1 \times 10^{-7}$ vary of timebase frequency

4. General Conditions

- Display: 8 digits, 0.39 inch red bright LED display with decimal point, sampling, overflow, KHz, MHz, μ s indication.
- Power Requirement: AC $240 \pm 10\%$ 50Hz
- Starting Time: 20 minutes when temperature

below 25°C

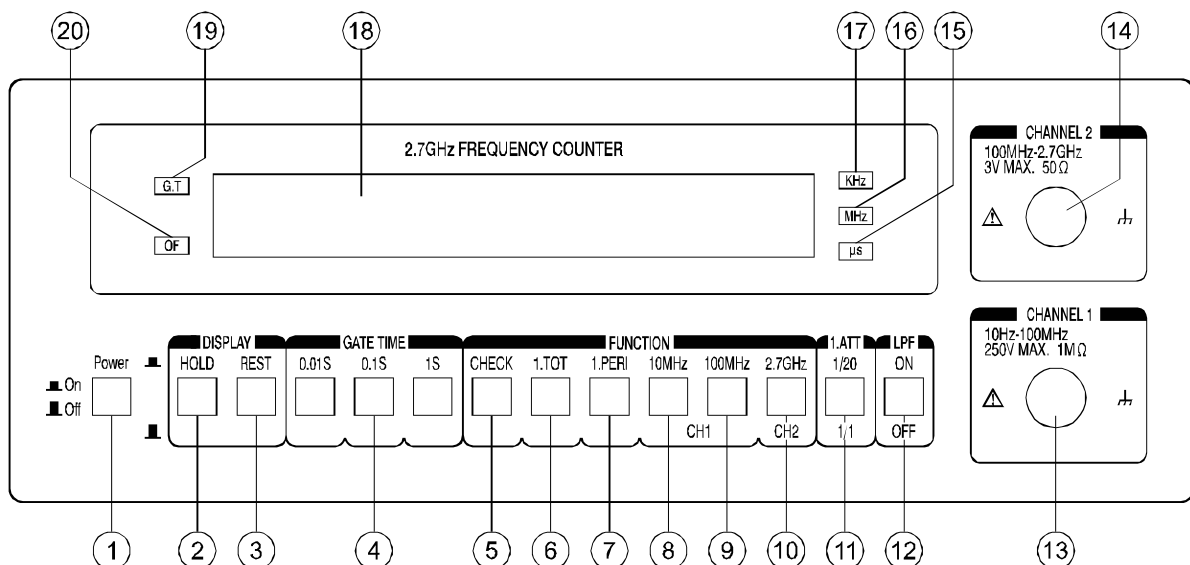
- Temperature: Operating: -5°C ~ +50°C
Storage and Transportation: - 40°C ~ +60°C
- Humidity: Operating: 10 ~ 90%RH
Storage: 5 ~ 95%RH

OPERATION

1. Before Operation

- Power Requirement:
AC 240±10%, 50Hz Single-phase, maximum power consumption is 10W.
- The unit must be pre-heated 20 minutes before operation to ensure frequency stability in the crystal oscillator.

2. Features of Front Panel:



- 1) **POWER** Press down to switch on, displays "2000-L" in two seconds
- 2) **HOLD** Press down to pause measuring and holding the current data.
- 3) **REST** Press down to immediately reset the counter and start a new period of measurement.
- 4) **GATE TIME** Select different resolutions and counting periods when measuring frequency and period.
- 5) **CHECK** This is a system self check. It will also check the 7 segment displays when this button is selected.

- 6) **1.TOT** Total measurement.(Channel 1 available)
- 7) **1.PERI** Period measurement.(Channel 1 available)
- 8) **CH1 10MHz** 10Hz ~10MHz range selectable. (Channel 1 input)
- 9) **CH1 100MHz** 10MHz ~100MHz range selectable. (Channel 1 input)
- 10) **CH2** 2.7GHz: 100 MHz ~2.7GHz range selectable. (Channel 2 input)
- 11) **1.ATT** Switch of input signal attenuator. Input sensibility is attenuated by 20 times when press down. (only Channel 1)
- 12) **LPF** Low Pass Filter, AC100KHz, -3dB.
- 13) **CHANNEL1** Input of Channel 1. Press "1.ATT" to lower the input signal when the input signal exceed 300mV, can improve accuracy of measured value.
- 14) **CHANNEL2** Input of Channel 2

- 15) **μs** Unit of period.
- 16) **Mhz** Unit of frequency.
- 17) **KHz** Unit of frequency.
- 18) **Display**
- 19) **GT** Sampling status, indicator lights means sampling.
- 20) **OF** Overflow, indicator lights means exceed 8 digits.

Note: When all the function keys are released, unit displays "2700-L".