

INSTRUCTION MANUAL FOR

FREQUENCY COUNTER

MODEL 252

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### 1. GENERAL DESCRIPTION

The Model 252 is a full-automatic frequency counter with a measuring range of 10 Hz to 1.9999 MHz. It employs an autorange system and requires no manual switching operations for gate time and measuring unit. Provided the input is 100 mV rms or over (sinusoidal wave), measurement can be made irrespective of amplitude. It employs automatic operation features, is highly accurate and stable, and is compact, light and easily portable.

## 2. SPECIFICATIONS

Frequency measuring range: 10 Hz - 1.9999 MHz

Measuring accuracy:  $\pm$  (time base accuracy + 1 digit)

Gate time: AUTO (autoranging for 10 msec, 100 ms, and 1 sec)

Readout display: 1 binary column and 4 decimal columns with memory display; overflow indication

Measuring unit display: Hz or kHz, automatic switching

Input sensitivity: 100 mV rms or over (sinusoidal wave)

Maximum input voltage: 30 V rms (100 V DC)

Input impedance: 1 M $\Omega$ , parallel capacitance 20 pF or less

Time base

    Crystal frequency: 100 kHz

    Frequency accuracy:  $\pm 5 \times 10^{-5}$  (ambient temperature 5°C - 35°C)

Power supply: 100 V  $\pm 10\%$ , 50/60 Hz AC, approx. 16 VA  
(110 V and 117 V with internal selection)

Dimensions: 200 (W) x 64 (H) x 180 (D) mm  
230 (W) x 75 (H) x 210 (D) mm (maximum sections)

Weight: 2.1 kg

### 3. OPERATION METHOD

#### 3.1 Explanation of Panel (Refer to Fig. 3-1.)

- (1) POWER ON: When this main power pushbutton switch is pushed and locked, the power is turned on and the display tubes light. The power is turned off when the button is pushed again.
- (2) INPUT: BNC terminal for connection of the input signal.
- (3) CHECK: For checking the counter operation. When this button is depressed and locked, the Counter should display 100 kHz.
- (4) GATE: This LED lights during the gate time to indicate that the gate is open.
- (5) OVER: This LED lights to indicate the counted number has exceeded the counting capacity (1.9999 MHz).

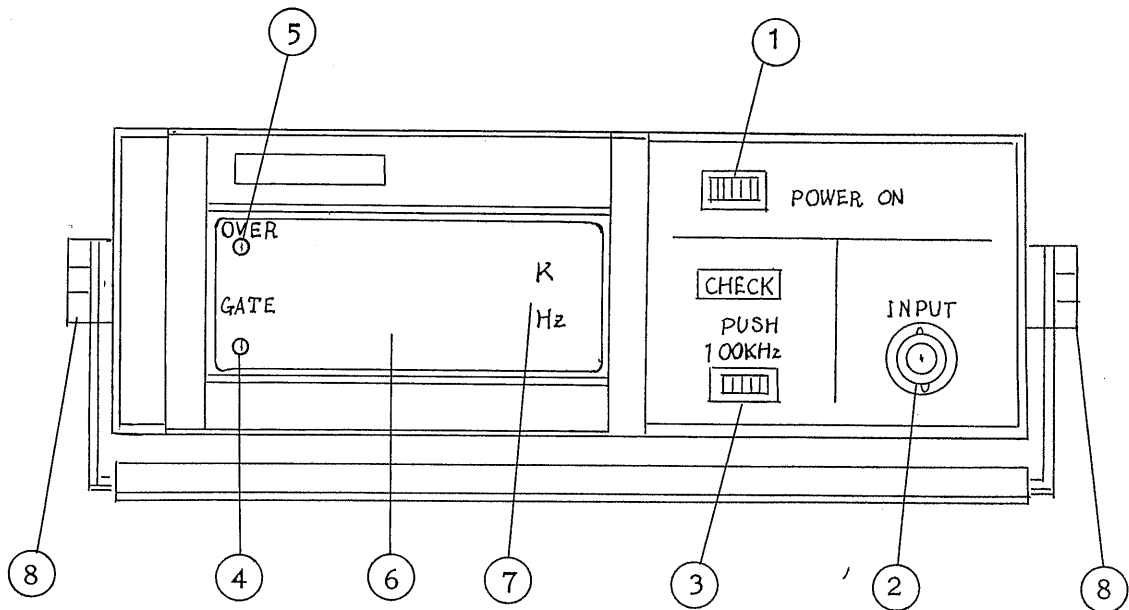


Fig. 3-1

- (6) Readout display: When frequency is below 999.9 kHz or less, display is in 4 decimal columns. When frequency is 1 MHz - 1.9999 MHz, display is in 1 binary column and 4 decimal columns.
- (7) k - Hz: Measuring unit "Hz" is always turned on. Factor "k" is off when the gate time is 1 sec (0 - 9999 Hz) but is on when it is 100 msec (10.00 - 99.99 kHz) or 10 msec (100.0 - 1999.9 kHz). The decimal point is automatically set.
- (8) Stand clamping-knobs: These knobs are fixed as they are turned clockwise.

### 3.2 AUTO GATE

Gate time selection is fully automatic. In within approximately  $\pm 0.3\%$  of 10 kHz and 100 kHz at which gate time is switched, 1 sec or 100 msec is selected for 10 kHz and 100 msec or 10 msec for 100 kHz.

#### 4. MAINTENANCE

Remove the top cover after undoing the four clamping-screws on the side panels.

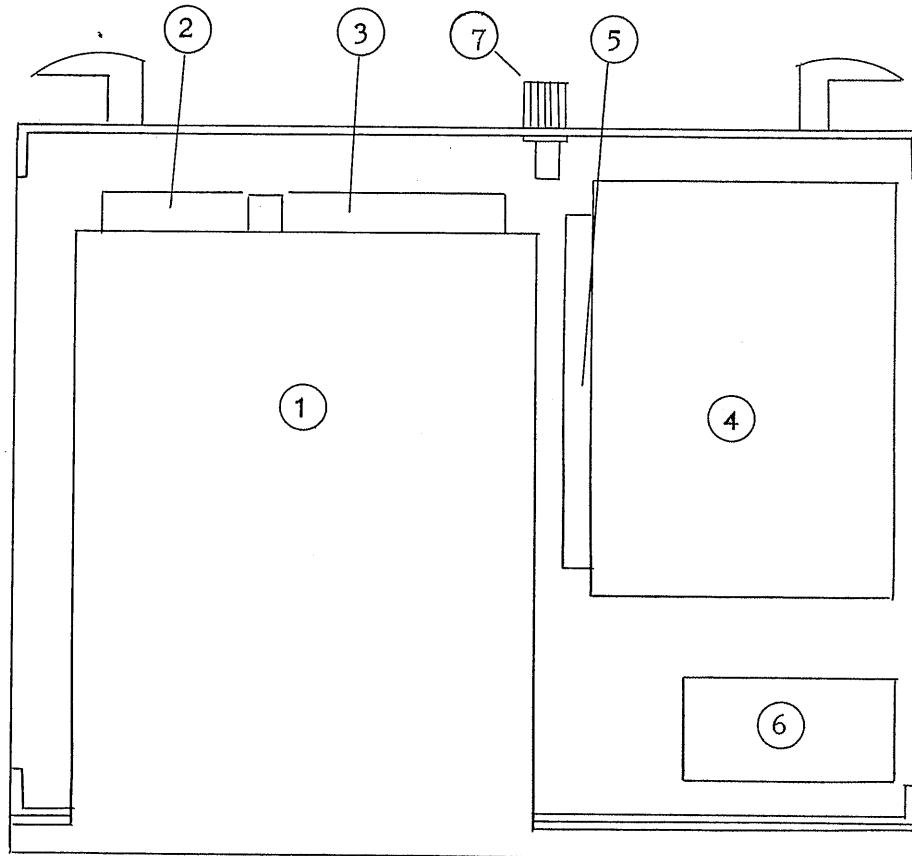


Fig. 4-1

- (1) Counter main unit
- (2) Counter power connector
- (3) Counter signal connector
- (4) Power supply
- (5) Power terminal block
- (6) Impedance converter
- (7) GND Terminal : For grounding of this instrument chassis.

#### 4.1 Explanation of Power Terminal Block

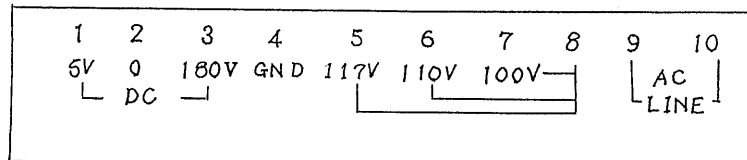


Fig. 4-2

- "1" "2" "3": DC power supply terminals for the main unit, through power connector (2). In connecting the connector, observe the position of the key indent.
- "4": For grounding of the AC line. It is floated from terminal "2".
- "5" "6" "7" "8": AC line voltage selection terminals. The Counter will be shipped being connected for 100 V at the factory.
- "9" "10": The input AC line power is connected to these terminals through the power switch.

Note: The power fuse is located in the power supply unit (4). The fuse is a lead type, 1 A.

## 4.2 Calibration of Time Base

The crystal oscillator is fabricated on the A-1 printed board in the main unit (1). To calibrate the crystal oscillator, allow more than 30 minutes of stabilization period after turning on the power.

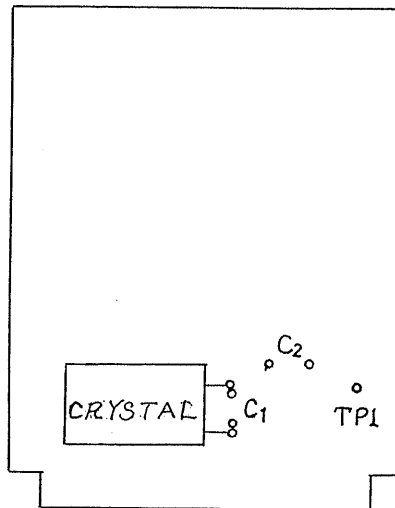


Fig. 4-3

- (1) Connect the output of a standard counter (accuracy better than  $5 \times 10^{-7}$ ) to TP1 and measured the frequency. The oscillating frequency of the crystal oscillator depends upon the crystal resonator and its external capacitance as viewed into the oscillator circuit from the crystal. The oscillating frequency becomes higher when series capacitor (C2) is connected to the crystal or it becomes lower when parallel capacitor (C1) is connected.
- (2) Other than the above method, calibration may be made by employing a calibrated reference oscillator. A further method is to employ a broadcast standard frequency wave (JJY in Japan for example).

When the instrument requires calibration, please contact our representative in your area.