

OPTOELECTRONICS INC.

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MODEL 2400H MICROWAVE FREQUENCY COUNTER HAND HELD FREQUENCY COUNTER SERIES USER INFORMATION

FEATURES

MODEL 2400H FEATURES 10MHz TO OVER 2.4 GHz FREQUENCY COVERAGE IN A SMALL POCKET SIZE INSTRUMENT! 2400H FEATURES INCLUDE HAND HELD PORTABILITY WITH INTERNAL NiCad BATTERIES. LOW INPUT SENSITIVITY IS ACHIEVED BY THE USE OF SURFACE MOUNT MINIATURE INTEGRATED WIDE BAND RF AMPLIFIERS. THIS COUNTER WILL OUT PERFORM MANY HIGHER PRICED BENCH MODELS IN THE 1 TO 2.4 GHz RANGE. VARIOUS ANTENNAS OR PICK UP PROBES MOUNT DIRECTLY ON THE BNC INPUT CONNECTOR. OPTIONS INCLUDE A CARRYING CASE, TELESCOPING WHIP ANTENNA, AND VARIOUS PROBES.

THE MODEL 2400 IS A BREAK-THROUGH HIGH TECHNOLOGY PRODUCT THAT MAKES MICROWAVE FREQUENCY MEASUREMENTS A LOW COST OPTION. THE SENSITIVITY CHART SHOWS THAT THE 2400H SENSITIVITY STAYS LOW WHERE MOST COUNTERS ARE STARTING TO DROP OFF. THE SENSITIVITY REMAINS BELOW 10 MILLIVOLTS FROM 27 MHz TO 2100 MHz AND BELOW 5 MILLIVOLTS FROM 60 MHz TO OVER 1800. THIS WIDE BANDWIDTH HIGH SENSITIVITY COUNTER CAN NOT BEAT FOR RF PERFORMANCE.

SPECIFICATIONS

RANGE: FREQUENCY COUNTER; 10MHz TO 2.4 GHz

TYPICAL SENSITIVITY: SEE GRAPH

SIZE: 3.9" HIGH x 3.5" WIDE x 1" DEEP

WEIGHT: 9 Oz

DISPLAY: 8 LED DIGITS, .28"

ACCURACY: +/- 1 PART PER MILLION

AGING: 10 PPM PER YEAR

GATE PERIOD: .25 OR 2.5 SECONDS, SELECTABLE

RESOLUTION: 100 Hz/2.5 SECOND GATE, 1KHz .25 SECOND GATE

POWER: INTERNAL NiCad BATTERIES, 2 HOUR DISCHARGE CYCLE WITH
OVERNIGHT RECHARGE USING 9 VOLT DC 300 MA PLUG
TRANSFORMER.

CONSTRUCTION: ALUMINUM CABINET WITH DURABLE FINISH. NICAD BATTERIES ARE SOLDERED IN AND NOT FIELD CHANGEABLE. MANUFACTURED IN U.S.

OPERATOR CONTROLS

PWR

BATT: COUNTER IS POWERED "ON" BY INTERNAL BATTERIES.

AC-CHG: WITH NO DC POWER TO COUNTER, USE THIS SWITCH POSITION FOR
BATTERY "ON".

WHEN DC POWER INPUT LINE IS CONNECTED, THIS SWITCH POSITION WILL
CHARGE BATTERIES AND POWER "ON" COUNTER. NOTE: COUNTER IS "ON" AND
WILL OPERATE DURING BATTERY CHARGING.

GATE

SELECTS A FAST (SHORT) OR SLOW (LONG) SIGNAL SAMPLE PERIOD.

FAST: .25 SECONDS SAMPLE TIME, WILL DISPLAY 1000Hz RESOLUTION.

SLOW: 2.5 SECONDS SAMPLE TIME, WILL DISPLAY 100Hz RESOLUTION.

PERIOD. THIS INDICATOR WILL TURN OFF FOR A FRACTION OF A SECOND BETWEEN SAMPLE PERIODS.

RECHARGEABLE BATTERY OPERATION

THE COUNTER CAN OPERATE SEVERAL HOURS FROM FULLY CHARGED INTERNAL Ni-Cad BATTERIES WHEN THE "PWR" SWITCH IS IN THE "BATT" POSITION. THE BATTERIES ARE CHARGED WHEN THE UNIT IS POWERED BY THE AC ADAPTER/CHARGER AND THE "PWR" SWITCH IS IN THE "AC-CHG" POSITION. THE COUNTER IS ON AND USABLE WHILE THE BATTERIES ARE BEING CHARGED. THE COUNTER MAY BE OPERATED OVER PROLONGED PERIODS BY AC ADAPTER OPERATION WITH NO HARM TO BATTERIES AS THE CHARGE CURRENT IS REGULATED. IT SHOULD TAKE ABOUT 16 HOURS TO FULL CHARGE A DISCHARGED BATTERY PACK.

THE BATTERIES SHOULD BE DEEP CYCLED OCCASIONALLY BY ALLOWING THE BATTERIES TO COMPLETELY DISCHARGE AND FULLY CHARGE SEVERAL TIMES TO MAINTAIN MAXIMUM BATTERY CAPACITY. THE Ni-Cad BATTERIES SHOULD LAST OVER 3 YEARS, HOWEVER, IT IS RECOMMENDED THAT THE COUNTER BE CHECKED INSIDE FOR ANY SIGN OF BATTERY LEAKAGE OR CORROSION. REPLACE ALL BATTERIES IF ANY VISIBLE DAMAGE IS OBSERVED.

110V AC OPERATION

A 110V AC TO 9V DC ADAPTER WITH 300-500 MA OUTPUT RATING IS SPECIFIED FOR USE WITH THE COUNTER. THESE ADAPTERS ARE NOT VOLTAGE REGULATED WHICH ALLOWS VOLTAGE OUTPUT TO VARY DEPENDANT ON LOAD. FOR EXAMPLE, THE MODEL 2400H COUNTER WILL DRAW APPROXIMATELY 200 MA DEPENDING ON INTERNAL BATTERY CHARGE LEVEL, ETC. AT THAT LOAD CONDITION THE 9VDC ADAPTER WILL ACTUALLY PROVIDE 10.5 TO 13.0VDC AT THE COUNTER POWER JACK INPUT. DO NOT OVERVOLTAGE THE DC POWER INPUT. INPUT VOLTAGE SHOULD BE 9-12, 13VDC MAXIMUM. OVERVOLTAGE COULD SEVERELY DAMAGE BATTERIES OR COUNTER.

USAGE

THE FOLLOWING INFORMATION IS GENERAL IN NATURE AND APPLIES TO ANY MODERN FREQUENCY COUNTER.

INPUT SIGNALS WOULD NOT BE DIRECTLY CONNECTED BY COUPLED THROUGH A SMALL RF CAPACITOR (1-20 PF DISC OR MONOLYCHIC) OR PICKED UP BY ANTENNA OR SNIFFER PROBE. A SNIFFER PROBE CAN BE MADE USING 50 OHM COAX WITH A TWO OR THREE TURN LOOP ABOUT ONE INCH IN DIAMETER AT ONE END.

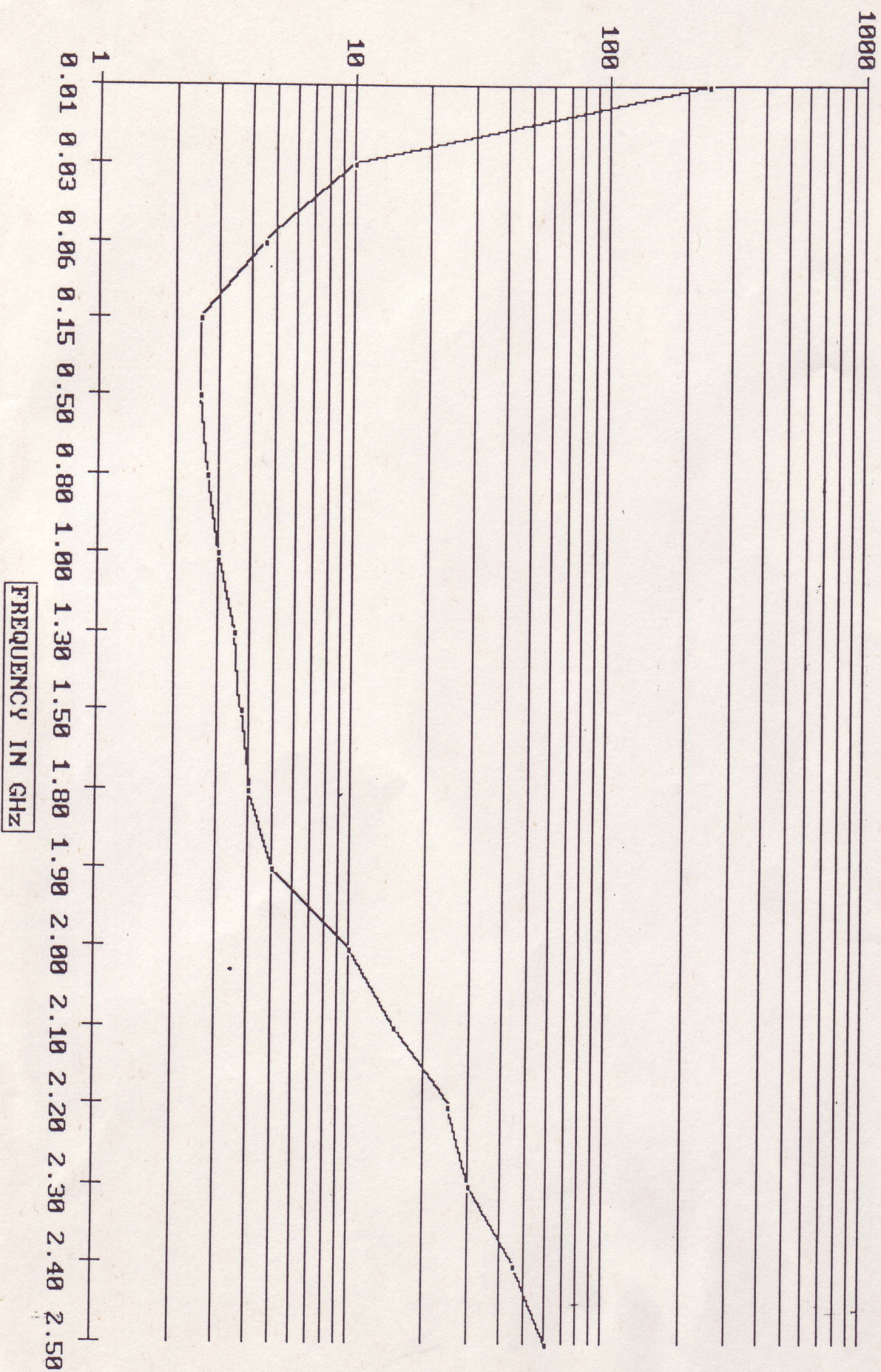
BE CERTAIN TO INDIRECTLY COUPLE, USING CAPACITOR ISOLATION, SIGNALS WITH AMPLITUDES GREATER THAN 5V PEAK TO PEAK.

THE 2400H HAS EXCELLENT SENSITIVITY COMPARED WITH MOST OTHER COUNTERS. THE USER SHOULD ATTEMPT TO INDIRECTLY COUPLE SIGNALS TO THE INPUT WHEN EVER POSSIBLE.

CALIBRATION

CALIBRATION ADJUSTMENT OPENING IN THE INSTRUMENT TOP COVER IS LABELED "CAL ADJ". THIS HOLE PERMITS ACCESS TO THE TRIMMER CAPACITOR WHICH PROVIDES ABOUT A 30 PARTS PER MILLION ADJUSTMENT RANGE OF THE TIME BASE OSCILLATOR. USE THE SLOW GATE TIME FOR MAXIMUM RESOLUTION AND READ A STABLE SIGNAL OF KNOWN FREQUENCY ADJUSTING THE TRIMMER FOR CORRECT FREQUENCY DISPLAY. CALIBRATE AT 10 MHz OR HIGHER. THE HIGHER THE CALIBRATION FREQUENCY, THE MORE ACCURATELY THE INSTRUMENT CAN BE CALIBRATED.

2400H SENSITIVITY IN mV



FREQUENCY IN GHz

