

WATSON

FC-130 Frequency Counter

INTRODUCTION

The Watson FC-130 hand-held frequency counter is our most popular counter. Even advanced features such as field strength measurement are incorporated. It is a compact, true pocket size, test instrument designed for ease of use and dependable performance. Supplied as a complete package with internal NiCd pack, AC wall charger and 7 section telescopic antenna.

SPECIFICATIONS

Frequency range :	1MHz-3GHz
Weight :	210g
Size:	80(H) (excluding antenna) x 68(W) x 31(D) mm
Impedance :	50 Ohms (BNC socket)
Case :	Stamped aluminium with black anodized finish
Battery :	Internal 4 x AA 600mAH NiCd pack
Power :	9 VDC 300mA
Timebase :	<1 PPM typical at room temperature

FEATURES

- * 10 digit Liquid Crystal Display
- * Low power consumption (Average 6 hour battery life)
- * Supplied with NiCd pack, AC wall charger and telescopic whip antenna.
- * Hold button to lock display
- * Low battery indicator
- * Ultra sensitive synchronous detector 16 section bargraph to show RF signal strength
- * High speed 300MHz direct counter with 0.1Hz resolution
- * 4 selectable gate speeds

CONTROLS

- 1) POWER SWITCH - This slide switch turns the counter on and initiates a 2 second test of all LCD segments.
- 2) RANGE SWITCH - This should be switched to the 300MHz position for frequencies between 1MHz and 300MHz and switched to the 3GHz position for frequencies between 10MHz and 3GHz.
- 3) HOLD BUTTON - This will stop the counter from counting and hold the current display.
- 4) GATE BUTTON - This has four positions and selects the gate or measurement time. A longer gate time means counting for a longer period and results in higher accuracy.
- 5) CALIBRATION - A calibration adjustment opening, marked "CAL" is located on the front panel of the counter. This opening permits access to the trimmer capacitor that provides about a 10 PPM adjustment range of the time base oscillator. When calibrating, use the slow gate time for maximum resolution and read a stable signal of known frequency before adjusting the trimmer for correct frequency display. Calibrate at 4.1943MHz or higher as the higher the calibration frequency the more accurate the counter will be.

WARRANTY

Watson guarantees the counter and accessories for one year against defects in manufacture. This warranty does not cover items that have been modified, subject to unauthorised repairs, misuse or abuse. This warranty does not cover damage caused by excessive power levels applied to signal input. Never make a direct connection between the counter and a transmitter.

HINTS AND TIPS

a - NiCd OPERATION

This frequency counter can operate up to six hours from the fully charged internal NiCd batteries. The batteries are charged when the unit is powered by the supplied AC/DC adaptor. Full recharge will occur in 12 to 16 hours. The batteries should be deep cycled occasionally by allowing them to completely discharge to maintain maximum battery capacity. The NiCd batteries should last several years. However, it is recommended that the batteries be checked annually for any sign of leakage or corrosion. Replace all batteries if any damage is visible.

b - SIGNAL INPUT

When using the counter with an antenna for signal pick-up, random counts may appear. This is normal and is due to the high gain 10 - 16 dB amplifier circuitry amplifying weak signals and noise in the absence of a strong, readable signal. Never exceed the maximum signal input level as internal damage will occur.

c - ANTENNA SELECTION

The supplied telescopic antenna is the best for general purpose use. This is because its length can be adjusted to suit the frequency. As a rough guide collapse the antenna to its minimum length for UHF and fully extend it for HF and VHF. An alternative resonant antenna may offer better results in some cases.

d - RECEPTION DISTANCE FROM TRANSMITTER

The distance from a transmitter at which a frequency counter can read the signal depends on many factors, such as type and location of transmitting antenna, transmitter output power, type of receive antenna and any obstacles in the way of signals.

SOME TYPICAL DISTANCES

Transmitter Type	Typical Distance In Metres
Cordless Phone	0.3
Cellular Phone	3 - 20
CB Radio	2 - 8
VHF Two Way Radio	3 - 30
UHF Two Way Radio	3 - 30

RF SIGNAL STRENGTH BARGRAPH

Frequency	1st Segment	Full Scale
27MHz	7mV	100mV
150MHz	5mV	90mV
800MHz	10mV	200mV

INPUT SENSITIVITY (TYPICAL)

Amplifier :	50 Ohm
Impedance :	50 Ohm VSWR <2:1
Range :	1 MHz - 3 GHz
Sensitivity :	<0.8mV at 100 MHz
	<6.0mV at 300 MHz
	<7.0mV at 1.0 GHz
	<100mV at 2.4 GHz
Maximum Input :	15dBm

FREQUENCY DISPLAY RESOLUTION

Range	Gate Time (Seconds)	LSD	Sample Display
300 MHz	0.0625	10Hz	300.00000 MHz
	0.25	1Hz	300.000000 MHz
	1.0	1Hz	300.000000 MHz
	4.0	0.1Hz	300.000000 MHz
3 GHz	0.0625	1000Hz	3000.000 MHz
	0.25	100Hz	3000.0000 MHz

