

ACECO FC 1003 Frequency Counter

Introduction

The Aceco FC 1003 hand-held frequency counter is probably the best value ever, even advanced features such as field strength measurement are incorporated. It is a compact, truly pocket-sized, test instrument designed for ease of use and dependable performance. Supplied as a complete unit with internal NiCd pack, AC wall charger and 7 section telescopic antenna.

Specifications

Frequency range:	1MHz-3GHz
Weight:	210g
Size:	80mm high x 68mm wide x 31mm deep
Impedance:	50 Ohms (BNC socket)
Case:	Stamped aluminum with black anodized finish
Battery:	Internal 4 x AA 600mAH NiCd pack
Power:	9 VDC 300mA
Timebase:	Less than 1 PPM at room temperature

Features

- 10 digit LCD (Liquid Crystal Display)
- Filter to prevent display of random noise
- Low power consumption (Average 6 hours battery life)
- Supplied with NiCd pack, AC wall charger and telescopic antenna
- Hold switch to lock display
- Low battery indicator
- Ultra sensitive synchronous detector 16 section bargraph to show RF signal strength
- High speed 300 MHz direct counter with 0.1 Hz resolution
- 4 Selectable gate speeds

Controls

1. Power switch - This slide switch turns the counter on and initiates a 2 second test of all the LCD segments.
2. Range switch - This should be switched to the 300 MHz position for frequencies between 1 MHz and 300 MHz and switched to the 3 GHz position for frequencies between 10 MHz and 3 GHz.
3. Filter switch - This slide switch turns the filter on and off.
4. Hold button - This button holds the current display and stops the counter from counting.
5. Gate button - This selects the gate or measurement time. A longer gate time allows counting for longer periods and results in higher accuracy.
6. Calibration – The calibration adjustment opening is located on the front panel of the counter. This allows access to the trimmer capacitor that provides about a 10 PPM adjustment range of the time base oscillator. This is not usually necessary but to do so read a signal of a known frequency before adjusting the trimmer for correct frequency display. If you calibrate at 4.1943 MHz or above then the counter will be more accurate.

Warranty

Aceco Electronics, Corp. guarantees the counter and accessories for one year against defects in manufacturing. This warranty does not cover items that have been modified, subject to unauthorized repairs, misused or abused. This warranty does not cover damage caused by excessive power levels applied to the signal input. Never make any kind of connection between the counter and a transmitter.

Hints and Tips

1. NiCd Operation

This frequency counter can operate for up to six hours from its fully charged NiCd batteries. They are charged when the unit is plugged into the supplied AC/DC adapter. Full recharge will occur over 12 to 16 hours. Before recharging the batteries you should be deep cycled occasionally by allowing them to completely discharge to maintain battery capacity. The NiCd batteries should last for several years. However, it is a good idea to check them every twelve months for signs of corrosion or leakage. Always replace the whole set if any one cell fails.

2. Signal Input

When using the counter with an antenna for signal pick up, random frequencies may appear on the display. This is quite normal and is caused by the high gain of the receiver circuits which amplify noise in the absence of a strong readable signal. Never get the unit too close to a transmitter as internal damage will result.

3. Antenna Selection

The supplied telescopic antenna is best for general purpose use. This is because its length can be adjusted to suit the frequency required. Usually you will want a shorter antenna for UHF (300MHz-3GHz) and a fully extended one for VHF (30MHz-300MHz)/ HF (3MHz-30MHz).

4. Reception Distance From Transmitter

The distance from which you will be able to receive frequencies will depend upon the type and location of the transmitting antenna, transmitter output power and the frequency in use.

Some typical distances are:

Cordless Phone:	0.98 feet
Cellular Phone:	10-65 feet
CB Radio:	6-26 feet
VHF Two Way Radio:	10-98 feet
UHF Two Way Radio:	10-98 feet

Input Sensitivity (Typical)

Amplifier:	50 Ohms
Impedance:	50 Ohms VSWR less than 2:1
Range:	1 MHz - 3GHz
Sensitivity:	< 0.8 mV @ 100 MHz
	< 6 mV @ 300 MHz
	< 7 mV @ 1.0 GHz
	< 100 mV @ 2.4 GHz
Max Input:	15dBm

RF Signal Strength Bargraph

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

Frequency Display Resolution

Range	Gate Time (Seconds)	LSD	Sample Display
300 MHz	0.0625	10 Hz	300.00000 MHz
	0.25	1 Hz	300.000000 MHz
	1.0	1 Hz	300.000000 MHz
	4.0	0.1 Hz	300.0000000 MHz
3 GHz	0.0625	1000 Hz	300.000 MHz
	0.25	100 Hz	300.0000 MHz
	1.0	10 Hz	300.00000 MHz
	4.0	10 Hz	300.00000 MHz