



**Practical Instrument Electronics**

## Model 541 Frequency Calibrator with Totalizer

### Features

#### Frequency Read & Source Functions

Accuracy  $\pm 0.005\%$  of range

Source and Read

Six Ranges 1 count per hour to 20.000Khz

Calibrate Totalizer input and outputs from 1 to 99999

Count Pulses 1 to 99999

LED indicator for gate time

#### Read Function

Read a wide range of Frequencies and Waveforms

Read 50mV to 120V peak

Read signals from Flowmeter pickups, Velocity and

Motion Detectors

Totalizers

#### Source Function

**Sine and Square waves, Zero Based and Zero Crossing**

Frequency from 1CPH to 20 KHz

Adjustable amplitude from 100mV to 12Volts peak-to-peak

Simulates Vibration Pickups, Variable Speed Drives and more

#### Calibrate Totalizers

Output a number of pulses from 1 to 100 minutes

#### Gate Trigger Indicator

The LED flashes in synch with the output frequency. This allows easy adjustment of the attenuation for proper gate triggering.

#### Full 5 Digit Display

True  $\pm 0.005\%$  of range accuracy

Bar graph for quick reference of trigger level and output levels, 5% of frequency range

High contrast graphic display viewable in all lighting conditions and angles

#### EZ-Dial™ Knob

Change the speed of dialing your test point by just pushing down on the knob

#### EZ-Check™ Switch

Stop watch style push button for accurate totalizer measurements and for high and low readings

#### Uses a standard 9V Alkaline Battery

Superior battery life of 24 hours under typical continuous usage

Easy access to battery compartment

#### 240 VAC Tolerant

Fuse-less protection from accidental misuse

#### Lightweight and rugged with a solid feel

Convenient Velcro® hand strap allows for a firm confident grip or attachment to pipes and ladders.



**CE APPROVED!**



# Model 541 Datasheet

## Description

The Practical Instrument Electronics' Model 541 is the best tool for calibration, test, and diagnosing turbine meters, frequency counters, vibration systems, tachometers, vortex shedders, integrators, and any other Frequency devices in the shop, plant and/or field. The Model 541 brings all the features you would expect from a frequency calibrator and timesaving new ones. The model 541 comes with an LED indicator showing gate time for easy trigger level adjustment. Make adjustments with the EZ-Dial™ Knob or test limits with the dual action EZ-Check™ Switch. Save hours of troubleshooting time on problems when compared to other calibration methods. When calibrating a totalizer, the model 541 eliminates the need of a stop watch. This calibrator will automatically stop when the selected number of pulses has been sent to the totalizer.

## Specifications

### General Specifications:

(Unless otherwise indicated all specifications are rated from a nominal 23 °C, 70 % RH for 1 year from calibration)

Operating Temperature Range	-20 to 60 °C (-5 to 140 °F)
Storage Temperature Range	-30 to 60 °C (-22 to 140 °F)
Relative Humidity Range	10 % ≤RH ≤90 % (0 to 35 °C), Non-condensing 10 % ≤RH ≤ 70 % (35 to 60 °C), Non-condensing
Size	7.00 X 3.30 X 2.21 inches (177.8 x 83.8 x 56.1mm)
Weight	12.0 oz (340 grams)
Battery	9V Alkaline
Miscellaneous	Low battery indication with nominal 1 hour of operation left Over-voltage protection to 120 Vrms (rated for 30 seconds) or 240 Vrms (rated for 15 seconds) High contrast graphic liquid crystal display with 0.45" (11.4 mm) high digits

### Common Specifications for all Frequency Modes:

Frequency Ranges	1CPH to 20.000Khz
Accuracy	± 0.005% of range
Temperature Effect	≤ 10ppm/°C of range

### Frequency Ranges Specifications:

1	1 CPH < CPH Range < 20000 CPH
2	0.1 CPM (0.0167Hz) < CPM Range < 2000.0 CPM (33.33Hz)
3	0.01Hz < Hz < 200.00Hz
4	0.1Hz < Hz Range < 2000.0Hz
5	0.001KHz < KHz Range < 20.000KHz
6	Totalize inputs/outputs from 1 to 99999 counts in 0.1 minutes to 100.0 minutes

### Read Inputs Specifications:

Read	<b>x1 attenuation range:</b> 0.1Vpk to 12Vpk <b>x10 attenuation range:</b> 1Vpk to 120V peak – Limit of attenuation is 120Vpk
Input Impedance	> 1 Meg Ω + 100pF
Adjustable Signal Attenuation	Adjustable trigger level with X1 and x10 attenuation ranges
Miscellaneous	Battery life ≥ 24 hour typical
Fuse-less protection	240Vrms



# Model 541 Datasheet

## Waveforms Source Specifications:

Output current	>6mApp at 12Vpp output, 20KHz
Output Impedance	< 25Ω
<b>Square Wave:</b>	
Zero Crossing, Zero Based	Selectable
Rise/Fall Time	< 0.0001% of output Vpk per Second
Frequency Jitter	< 0.5LSB of frequency range
Duty cycle	50% ± 2%
<b>Sine Wave:</b>	
Offset and Zero Crossing Symmetry	< ± 10% of Vpk Output amplitude setting
Amplitude Adjustment	100mV < Nominal Output < 12Vpp ± 10% of setting

## Calibration Certificate:

	NIST Traceable Certificate provided
Option:	Test data available upon request at additional charge.

## Available Options:

Option:	Part Number:
Model 541 BNC	With a BNC connector      ADDED CHARGE OF \$50.00 to the list of the 541
Carrying Case	020-0200

## Other Products Available:

RTD Source (Single Type/1° resolution)	Model 510
RTD Source (7 Types, Ω/0.1° resolution) Pt100: α=1.3850, 1.3902, 1.3916, 1.3926 Cu10: α=1.427 Ni110: α=1.530 Ni120: α=1.672	Model 511
RTD Calibrator (Source/Read 7 Types, Ω /0.1° resolution)	Model 512
RTD Calibrator (Source/Read 7 Types, Ω /0.1° resolution) With Auto Stepping	Model 512S
T/C Source (Single Type/1° resolution)	Model 520
T/C Source (8 Types, mV/0.1° resolution) B, E, J, K, N, R, S, T, mV	Model 521
T/C Calibrator (Source/Read 8 Types, mV/0.1° resolution) B, E, J, K, N, R, S, T, mV	Model 522
Dual RTD – T/C Source & Read Calibrator With Auto Stepping	Model 525
4-20 Milliamp Loop Calibrator	Model 530
4-20 Milliamp Pocket-Mate Calibrator	Model 531
4-20 Milliamp/Voltage Calibrator with Loop Diagnostics	Model 532
4-20/10-50 Dual Range Loop Calibrator	Model 535

## Warranty

*Our equipment is guaranteed against defective material and workmanship (excluding batteries) for a period of three years from the date of shipment. Claims under guarantee can be made by returning the equipment prepaid to our factory. The equipment will be repaired, replaced or adjusted at our option. The liability of Practical Instrument Electronics (PIE) is restricted to that given under our guarantee. No responsibility is accepted for damage, loss or other expense incurred through sale or use of our equipment. Under no condition shall Practical Instrument Electronics, Inc. be liable for any special, incidental or consequential damage.*