THURLBY THANDAR INSTRUMENTS

PFM3000

3GHz low-cost high resolution handheld frequency counter

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PFM3000 3 GHz low-cost high resolution handheld frequency counter

- 3 Hz to > 3000 MHz in two overlapping ranges
- High input sensitivity over the full frequency range
- High impedance measurement up to 125 MHz
- Reciprocal counting technique gives superior resolution
- Period measurement from 3 Hz to 125 MHz
- Battery operation; handheld format with tilt-stand
- Push-to-measure function with auto power-down
- Large 8+ digit display with full range of annunciators
- Selectable measurement time; display hold function
- Noise filter for low frequency measurements

Wide frequency range and high resolution

The PFM3000 offers high sensitivity frequency measurement from 3Hz to more than 3GHz in two overlapping ranges. Period measurement is also provided from 8ns to 330ms.

The PFM3000 uses a continuous reciprocal measurement technique to provide high resolution at all frequencies with rapid update.

It offers high sensitivity across the whole frequency range. A low pass filter can be selected to reduce high frequency signal noise at lower frequencies.

Large and clear display

Despite its compact dimensions, the PFM3000 incorporates a large 8 digit LCD. Annunciators are provided for measurement function, measurement time, overflow, trigger activity, low battery, and measurement units.

Low power consumption and push-to-measure

Despite its wide frequency range the PFM3000 has a power consumption that enables it to operate for many hours from a PP3 size battery.

A push-to-measure capability gives an instantaneous reading followed by an automatic power down after 15 seconds. This provides greatly extended battery life where continuous monitoring of the signal is not required.

Bench-top use

The PFM3000 has the performance needed for many bench-top applications, and its built-in tilt stand sets the display at a convenient angle.

MEASUREMENT FUNCTIONS

Frequency (Range A)

Frequency Range: 3Hz to 125MHz
Resolution: 10^{-7}Hz to 100Hz (see Note)

Frequency (Range B)

Frequency Range: 80MHz to >3000MHz
Resolution: 1Hz to 10kHz (see Note)

Period (Range A only)

Period Range: 8ns to 330ms
Resolution: 10^{-7}ns to 1us (see Note)

Measurement Time

Selectable as 10s, 1s or 0.1s. (Note that for the 0.1s setting the effective measurement time is 0.3 seconds).

Resolution

The displayed resolution depends upon the measurement time and the input frequency. Eight digits (or nine using an overflow indication) are displayed for a 10s measurement time. Seven or eight digits are displayed for a 1s measurement time, and six or seven digits for 0.1s depending upon the input frequency. Usable resolution may be further reduced by noise, particularly at low frequencies.

Accuracy

Measurement accuracy is the sum of the timebase accuracy and measurement resolution plus one count.

TIMEBASE

Crystal Oscillator Frequency:	10MHz
Initial Oscillator Adjustment Error:	± 2ppm (closed-case adjustable by user)
Oscillator Temperature Coefficient:	Typically less than ± 0.3ppm/°C 18°C to 28°C, ±10ppm –20°C to 70°C
Oscillator Ageing Rate:	<± 5ppm/year

OPERATING FUNCTIONS

Press to measure

With the power switch off, pressing any of the function select keys will power the instrument up in the corresponding function. The instrument will automatically switch off 15 seconds after the last key press.

Hold

Pressing the Hold key will stop further measurements being made and the current measured value will remain in the display until the Hold key is pressed again.

Noise filter

The Filter key controls a low pass filter, with a cut-off frequency of about 50kHz, to ensure more stable readings at low frequencies.

Signal activity indicator

When no input signal is detected the Trig indicator will be off, indicating that no measurement is possible. The gate time indicator flashes until the first measurement interval is complete.

INPUT SPECIFICATIONS

Input A

Input Impedance: 1MΩ//20pF (AC coupled)
Frequency Range: <3Hz to >125MHz
Sensitivity: Sinewave - 15mVrms 10Hz-125MHz

Input B

Input Impedance: 50Ω (AC coupled)
Frequency Range: <80MHz to >3000MHz
Sensitivity: Sinewave - 15mVrms 80MHz-2GHz, 50mVrms to 3GHz

Maximum Input Voltage

Input A and Input B: 30Vdc; 30Vrms 50Hz/60Hz reducing to 1Vrms above 1MHz
Note that the inputs will not be damaged if subjected to an accidental short-term connection to a 50/60Hz line voltage not exceeding 250V rms.

DISPLAY

No. of Digits:	8 full digits plus overflow indicator for 8.5 digits
Size of Digits:	11.5mm (0.45")
Annunciators:	15 annunciators

POWER REQUIREMENTS

Battery Type:	9V PP3 alkaline
Battery Life:	Typically 20 hours
Low Batt. Indicator:	'Bat' shows in display when approximately 10% of battery life remains

GENERAL

Operating Range:	+5°C to +40°C, 20% to 80% RH
Storage Range:	-20°C to +60°C
Environmental:	Indoor use at altitudes up to 2000m Pollution Degree 2
Size:	81mm x 178mm x 30mm (W x L x D)
Weight:	190gms excluding battery
Electrical Safety:	Complies with EN61010-1
EMC:	Complies with EN61326

Thurlby Thandar Instruments Ltd. operates a policy of continuous development and reserves the right to alter specifications without prior notice.

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