



Universal Counter HM 8021-4

- Frequency Range: DC to 1.6GHz
- Sensitivity: 20mV
- 7 Measuring Functions
- 3 Selectable Gate Times; External Gate
- 8 Digit LED-Display + Sign + Exponent
- Temperature-Compensated Time Base (TCXO) 5×10^{-7}
- Selectable Autotrigger

With over 15,000 units sold in Europe, the **HM 8021-4** brought new dimensions to the price/performance ratio available in universal counters. With this new model, **HAMEG** continues to lead the market in high performance, low price counters. This **microprocessor-based** instrument has built in self-test and auto-calibration features as well as two high sensitivity inputs with an extended frequency input range of **DC to 1.6 GHz**.

The reciprocal frequency measurement technique provides high resolution of low frequency signals with at least **seven significant digits** for a **1s** measurement duration. The **HM 8021-4** is equipped with an extremely stable temperature compensated **crystal oscillator** (TCXO) with a stability of 0.5 parts per million over the entire operating temperature range. Readings of frequency, period, time interval and totalized count, up to 99,999,999, combined with the **Display Hold** function and a full range offset makes this instrument ideally suited for a broad range of applications. The **Auto Trigger** function allows for accurate measurements to be made, even on noisy waveforms and those with extremely short duty cycles. The **HM 8021-4** provides variable trigger control, offers selectable **20 dB** attenuation and AC or DC coupling to simplify measurements on complex signals.

SPECIFICATIONS

(Reference Temperature: 23°C ±1°C)

Measurement Functions:

Frequency A/C; Period A; Totalize A;
Pulse width $\overline{1}/\overline{1}$ (averaged);
Totalize A during Ext. Gate.

Input Characteristics: (Input A)

Frequency range:

DC coupled 0 to 150 MHz
AC coupled 10 Hz to 150 MHz

Sensitivity: (normal triggering)

sinewave, DC to 80 MHz 20mV_{rms}
80mV (pulse)
sinewave, 80 MHz to 150 MHz 60mV_{rms}
sinewave,
20 Hz to 80 MHz (autotrigger) 50mV_{rms}

Min. pulse duration:

5ns

Input noise:

100µV, typical

Coupling:

AC or DC (switch selectable)

Input impedance:

1MΩ/140pF

Attenuator:

x1, x20 (switch selectable)

Max. input voltage:

from 0 to 440 Hz 250V (DC+AC_{peak})
derated to 8V_{rms} at 1 MHz

Input Characteristics: (Input C)

Frequency range: 100 MHz to 1.6 GHz

Sensitivity: 100 mV (typ. 80 mV)

Input impedance: 50Ω nominal;

Coupling: AC

Max. input voltage: 5V (DC+AC_{peak})

Input Characteristics: (External Gate):

Input impedance: 4,7kΩ

Max. input voltage: ±30V

High-/Low-Level: >2V/<0,5V

Min. pulse duration: 50ns

Min. eff. gate time: 150µs

Frequency A:

LSD: $(2.5 \times 10^{-7} \text{ s} \times \text{Freq.}) / \text{measuring time}$

Resolution: ±1 or 2 LSD

Period A:

Range: 10000sec to 66,6ns

LSD: $(2.5 \times 10^{-7} \text{ s} \times \text{period} / \text{measuring time})$

Resolution: ±1 or 2 LSD

Totalize A (manually / gated by external

signal):

Range: DC to 20MHz

Min. pulse duration: 25ns

LSD: ±1 Count

Resolution: LSD

Ext. Gate error: (in manual mode only) 100ns

Time Interval:

LSD: 100ns to 10ps (averaged)

Resolution: 1 or 2 LSD

Offset range: same specification as normal

measurement

Gate Time:

Range: 100ms to 10s in 3 steps

(cannot be shorter than 1 period)

External gate time: min. 150µs

Timebase:

Frequency:

10MHz clock rate; 10MHz crystal (TCXO)

Accuracy between 10 °C and 40 °C: ±5x10⁻⁷

Aging: <2,5ppm / years

General Information:

Display: 8 digit 7 segment LED

7.65mm height. Sign and Exponent.

Power requirements: 7 Watts

Ambient temperature: +10 °C to +40 °C

Humidity: 10% - 90%

without condensation: 5%-95% RH

Dimensions (WxHxD): 135 x 68 x 228 mm

Weight: approx. 650g

Values without tolerances are meant to be guidelines and represent characteristics of an average instrument.

Subject to change without notice.