product data

CNT-66 and CNT-69

High-quality budget Counters

Outstanding value for money

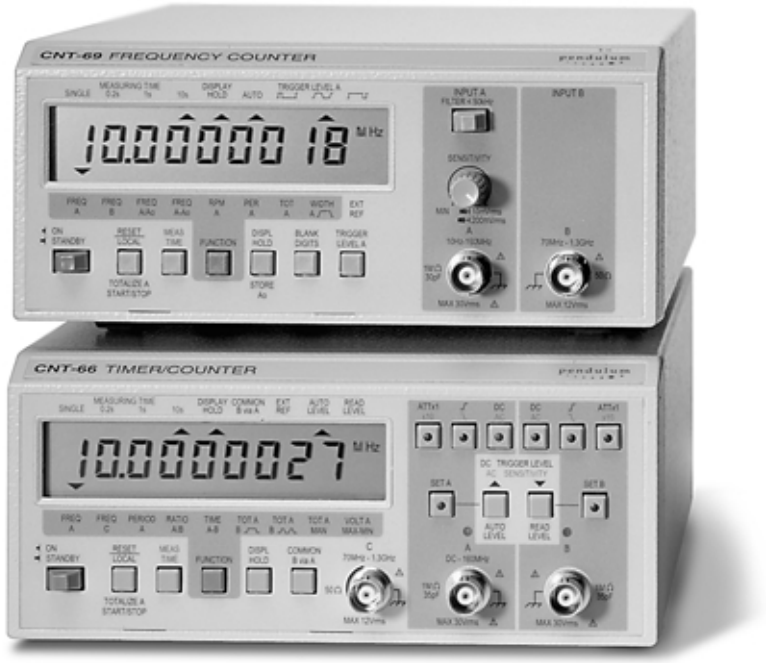
- 1.3 GHz frequency range
- GPIB interface
- 0.1ppm MTCXO time base
- Error-free triggering for any input signal
- Rugged, portable, reliable
- MTBF 70 000 h
- EMI-proof metal cabinet (CE)

CNT-66 timer/counter:

- Full GPIB programmability
- Auto trigger, auto sensitivity
- Voltage measurements

CNT-69 frequency counter:

- Ease of operation
- Auto triggering
- Noise suppression filter



The CNT-66 and CNT-69 are high-quality, easy-to-use budget counters for accurate and reliable measurements. The units use reciprocal frequency counting, giving 7-8 digits resolution even on low frequency measurements. The optional high-stability MTCXO time base has a stability in the order of 0.1 ppm.

The no-compromise input design of these counters, provide smart auto triggering to handle any type of input signal, plus variable sensitivity and other noise immunity functions. The counters are rugged, input-protected and reliable with exceptional MTBF figures of up to 70000h. They have excellent EMC performance.

The optional GPIB interface turns CNT-66 into the lowest cost, fully programmable timer/counter available from any quality manufacturer.

CNT-66 Timer/Counter

The CNT-66 is a 100% GPIB-programmable timer/counter. All counter functions including also trigger level and sensitivity settings are GPIB-controlled. The bus-learn mode makes programming faster and easier.

Error-Free Triggering

Trigger level setting can be automatic on all input signals. The trigger level can be displayed immediately with one keystroke, and input triggering is instantly checked with the tri-state LED trigger indicators. Input sensitivity (noise immunity) is selectable from 20 mV to 1V.

V p-p measurements up to 50 MHz

The CNT-66 has Volt peak measurements up to 50 MHz. Both the minimum and the maximum signal peaks are displayed simultaneously.

CNT-69 Frequency Counter

The multi-function CNT-69 performs frequency, period, totalize, pulse width and frequency ratio or difference measurements. The CNT-69 can be used for frequency measurements on the bench or in the field. It is easy to operate including a.o. also blanking of irrelevant display digits to make it easy to read results.

MTCXO Time Base

(Mathematically Temperature Compensated Crystal Oscillator)

The optional high stability MTCXO timebase offers a stability, comparable to standard oven oscillators, but at a much lower cost. The temperature dependency of the individual crystal is stored in a non-volatile memory and used for immediate compensation of the displayed value. Unlike oven oscillators, an MTCXO gives high accuracy instantly, without long warm-up times.

Calibration and adjustment is very easy. Just connect the frequency standard and push a button. There is no trimmer to be turned.

pendulum

CNT-66 and CNT-69 Specifications

Measuring Modes CNT-66

Frequency

Freq. A:	0.1 Hz to 160 MHz
Freq. C:	70 MHz to 1.3 GHz
Resolution:	7 digits in 1s measuring time

Period A

Range:	8 ns to $2x10^8$ s
Resolution:	100 ns (Single) or 7 digits in 1s (Average)

Ratio A/B, C/B

Range:	0 and $1x10^{-7}$ to $2x10^9$ (A/B) 0 to $1x10^{15}$ (A/B Single) 8 to $6x10^{10}$ (C/B)

Time interval A-B)

Range:	100 ns to $2x10^8$ s (Single) 0 ns to 20 s (Average)
Resolution:	100 ns / $\sqrt{N}$

Number of Intervals averaged N: N=Measuring time / Signal repetition rate.
Min dead time from stop to start: 250 ns

Totalize A

Range:	0 to $1x10^{15}$ (0 Hz to 16 MHz)
Modes:	Counting on A, gated by B signal OR started/stopped by B signal OR manually controlled by START/STOP button.

Volt Max/Min A

Range:	-5.1V to +5.1V / -51V to +51V
Frequency range:	DC; 100 Hz to 50 MHz
Resolution:	20mV / 200 mV

Measuring Modes CNT-69

Frequency A or B, Period A See specs for CNT-66

Totalize A See specs for CNT-66 (only manual gating)

Frequency A/Ao and A- Ao The Freq. A value is divided by, or subtracted with, the constant Ao before display.

RPM A Display value = Freq. A value x 60

Range:	6 RPM...$720x10^6$ RPM

Width A

Range:	100 ns...$2x10^8$s
Resolution:	100 ns (always Single)

Input A and Input B CNT-66

Frequency range:	DC to 160 MHz (120 MHz to 160 MHz with limited temperature range; typ. +23 °C ± 5 °C)
Coupling:	DC or AC (-3dB at 20 Hz sine)
Max. sensitivity	20 mV rms, 0 Hz to 30 MHz 40 mV rms, 30 MHz to 120 MHz 60 mV rms, 120 MHz to 160 MHz Sensitivity is selectable in 1-2-5 steps from 20 mV through 1V rms; nominal (LF-signals)
Impedance:	1 MΩ //35 pF
Attenuation:	x1 or x10, or AUTO
Max. Voltage without damage:	350 V (DC+AC peak) between 0 and 440 Hz, falling to 8 V rms at 1 MHz.

Triggering

Trigger level range (x1 attenuation):	DC: +5.1V to –5.1V, 20 mV resolution AC: 0 V fixed or AUTO level. Uncertainty: ± 10 mV ± 1 % of setting
AUTO level:	Set to 50 % of input signal amplitude. Frequency range: >100 Hz
Trigger indicators:	Tri state LED;
Trigger slopes:	Positive or negative.

Input-A CNT-69

Frequency range:	10 Hz to 160 MHz (120 MHz to 160 MHz with limited temperature range; typ. +23 °C ± 5 °C)
Impedance:	1 MΩ // 30 pF; AC-coupled
Max. Sensitivity	10 mV rms, 10 Hz to 120 MHz 30 mV rms, 120 to 160 MHz
Attenuation:	Continuously variable in two ranges between x1 and x400
Filter:	50 kHz low pass noise filter
Max. voltage without damage:	350 V (DC + AC peak) between 0 and 440 Hz, falling to 11 rms at 1 MHz.
Trigger levels:	3 fixed levels: symmetrical, high/low duty factor and AUTO (repetition rate > 100 Hz)

RF Input 1.3 GHz

Freq. range:	70 MHz to 1.3 GHz
Coupling:	AC
Operating input voltage range:	10 mV to 12 V rms, 70 MHz to 900 MHz 15 mV to 12 V rms, .0.9 to 1.1 GHz 40 mV to 12 V rms, 1.1 to 1.3 GHz
Impedance:	50Ω nominal, VSWR <2:1
Max. voltage without damage:	12 Rms, PIN diode protected

Auxiliary functions

Measuring time:	0.2s, 1s, 10s or Single
Blank digits (CNT-69 only):	Blanking least significant display digits, to hide unstable digits on the display

External reference input D

Input:	10 MHz ± 0.1 MHz, >500 mV rms
Max input voltage:	15 V rms

GPIB interface (Option 04)

Programmable device Functions for:

CNT-66:	Full GPIB programmability
CNT-69:	All front panel settings except Sensitivity and Filter

Max Data Output Rate:

Normal Mode:	Approx. 5 readings/s
High-Speed Dump:	Approx. 100/s.

General

Line voltage:	115 / 230 V; 46 to 440 Hz, (<24 VA incl. all options).
Safety:	EN61010 Cat II, pollution degree 2; CSA 22.2; CE
EMC:	EN55011, group 1, class B; EN50082-1; CE
MTBF:	70000h (CNT-69), 50000 h (CNT-66)

Mechanical Data

WxHxD:	186x88x270 mm
Weight:	CNT-66 Net: 2.4 kg, Shipping: 3.2 kg CNT-69 Net: 2.1 kg, Shipping: 3.0 kg
Temperature:	Operating: 0° C to +50° C Storing: -40 °C to +70° C

Time base Oscillators

Standard crystal

Aging:	< $5x10^{-7}$/month; $5x10^{-6}$/year
Temp. 0 to 50°C:	< $1x10^{-5}$
Total uncertainty (2σ):	- 1 year after calibration < $1.2x10^{-5}$ - 2 years after calibration < $1.5x10^{-5}$

MTCXO (option 07).

Aging:	< $1x10^{-7}$/month; $5x10^{-7}$/year
Temp. 0 to 50°C:	< $2x10^{-7}$
Total uncertainty (2σ):	- 1 year after calibration < $6x10^{-7}$ - 2 years after calibration < $1x10^{-6}$

Ordering information

CNT-66:	Basic timer/counter 1.3 GHz, standard time base
CNT-69:	Basic frequency counter 1.3 GHz, standard time base
Opt. 04:	GPIB interface
Opt. 07:	MTCXO time base

Included with Instrument
Operators manual
Calibration certificate

Optional accessories

Option 05:	19" rack mount kit
Option 09:	Carrying case

Specifications subject to change without notice

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