5 MHz function generators from TOELLNER®

TOE 7402 / TOE 7404



The TOE 7402 and TOE 7404 function generators are compact, rugged and low-cost signal sources designed to meet everyday practical requirements.

The outstanding feature of these instruments is the frequency counter with LED for measuring both internal and external signal frequencies.

The high output voltage of max. V_{pp} = 30 V will satisfy the requirements of most general-purpose laboratory or service tasks as well as the needs of applications in production plants or educational institutions. All inputs and outputs are absolutely no-load and short-circuit proof. The output amplifiers are guarded against dangerous feedback by an integral external voltage protection feature.

These generators have a frequency range of 0.5 Hz to 5 MHz and generate the following output functions: sine, triangle, square, pulse, amplifier and bipolar DC voltage. When in amplifier mode, the instruments perform as a broadband amplifier from DC up to approx. 5 MHz.

All front panel input and output sockets are floating.

The TOE 7404 function generator corresponds to the standard TOE 7402 unit. In addition, it has an extended frequency range down to 0.05 Hz and a variable symmetry adjustment. The latter facility allows the generation of positive and negative pulses as well as rising or falling sawtooth functions in addition to the fundamental sine, triangle and square functions.

Specifications

Functions and operating modes
Functions: Sine, triangle, square, pulse, amplifier, DC, variable symmetry (TOE 7404)

Operating modes: Free-running oscillator, external sweep-frequency control, amplifier mode, frequency counter

Frequency characteristics
Frequency range:
TOE 7402 0.5 Hz to 5 MHz
TOE 7404 0.05 Hz to 5 MHz
in 6 decadic subranges

Frequency offset: ± 2 %

Frequency error: ± 2 digits.
< 5 % of full-scale value when using the scale.

Drift: 1 x 10^{-3}/K up to 500 kHz,
3 x 10^{-3}/K up to 5 MHz;
5 x 10^{-3} in 8 hours, in each case following 30 min warm-up time

Function output
Output amplitude: V_{pp} = 10 mV to 30 V, 15 V_{pp} in pulse mode

Output impedance: 50 Ohm. The output is no-load and short-circuit proof.

Feedback voltage protection up to ≤ 120 V.

DC offset: 0 to ± 10 V

Output attenuator: 30 dB continuously adjustable plus 20 or 40 dB steps.
Frequency response (sine, triangle): 0.03 dB, or 0.5 dB above 1 MHz

Function specification
at max. output voltage and 50 Ohm load

Sine: Distortion factor: < 0.5 % up to 100 kHz
< 5 % up to 5 MHz

Triangle:
Linearity error < 1 % up to 100 kHz
Symmetry error < 1 % up to 100 kHz

Square:
Transition time < 28 ns
Overshoots < 5 %

Pulse: see square

Symmetry variation: 10 % to 90 %,
f_{max}: 500 kHz (TOE 7404)

Amplifier: approx. 17 dB gain, DC up to approx. 5 MHz, distortion factor < 0.2 % up to 100 kHz, R_i = 10 kOhm

Other signal inputs and outputs
Synchronizing signal output: TTL-compatible, source impedance: 50 Ohm, 5 fan-out

VCO modulation input: approx. 5 V for a frequency variation ratio of 1000:1

OCV output: 0 to 5 V output voltage for a frequency variation ratio of 1:1000

EXT IN: amplifier input, max. input voltage 15 V_{rms}, frequency counter input

Frequency counter mode
Frequency range: < 1 Hz to 30 MHz

Resolution:
4 or 5 digits with autoranging

Accuracy: ± 2 digits

Sensitivity: 150 mV_{rms} < 10 MHz
250 mV_{rms} > 10 MHz

Input impedance: 1 MOhm II 120 pF
Input protection: up to 15 V_{rms}

General data:

Mains voltage: 115/230 V ± 10 %, 48 to 60 Hz

Power consumption: 30 VA

Operating temperature: 0 to 50 °C

Dimensions: (WxHxD) 265 x 147 x 280 mm

Weight: approx. 3.5 kg

Housing: aluminium

Options:

19“ adapter, 3HU	**TOE 9501**
19“ slide-in module, 4HU	**TOE 9503**
Carrying handle	**TOE 9008**

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