

Arbitrary Function Generator AFG 100

digimess[®] compact

Order No.: H.UC 66-00



Freely definable waveforms in spite of a tight budget? That's no problem with the arbitrary function generator AFG 100 from Grundig Instruments. Besides featuring the standard sinusoidal, square wave, triangular and ramp signal functions, the generator can also be used to freely define waveforms or download measured one-off signals with a digital oscilloscope and reproduce them as often as required. This makes the AFG 100 the ideal instrument for synthesizing stimuli signals. Its frequency range of 0.01 Hz to over 12 MHz opens up a wide array of applications, whether it be the synthesis of mechanical vibrations, the simulation of typical waveforms in vehicle electrical systems, the simulation of physiological signals in the field of medical engineering or the generation of signals in video and RF engineering. In conjunction with the optional signal synthesis software package, the AFG 100 is suitable even for the less experienced user hand-

ling sophisticated applications. As with all the instruments of the Grundig *digimess*[®] range, the AFG 100 is controlled by a microprocessor. This makes it easy to use thanks to the „quattro key“ operating concept and provides self-diagnosis and complete remote control and evaluation capabilities via the standard RS 232 C interface. The desired parameters, such as frequency, signal level and waveform can be set by means of the digital shaft encoder. The remote control facility via the PC interface allows the AFG 100 to be used in automatic test systems, thus satisfying the requirements for a modern signal generator. Two 16-digit alphanumeric LC display lines with background lighting constantly provide the operator with information on all setting values. The excellent price-performance ratio ensures that the AFG 100 will find wide application in the fields of development, production, service and training. The AFG 100 is a must for every test bench!

Technical Data

General

Nominal temperature	+23 °C ± 2 °C
Operating temperature	+5 °C ... +40 °C
Relative humidity	20% ... 80%
Atmospheric pressure	70 kPa ... 106 kPa
Operating position	horizontal or inclined by ± 15°
Operating voltage	alternating voltage 230 V/115 V (+10%, -15%), 47 ... 63 Hz
Power consumption	27 VA (max. 27 W)
Safety class	I acc. to EN 61010-1 (DIN VDE 0411 Part 1, 11/93)
Radio interference suppression	EN 55011 Class B, VDE 0871 Category B
Dimensions (in mm)	225 x 85 x 200 (L x H x D)
Dimensions of packing (in mm)	315 x 115 x 270 (L x H x D)
Weight of AFG 100	approx. 2.5 kg
Weight of AFG 100 incl. packing	approx. 3.5 kg

Specifications

Frequency range	0.01 Hz ... 12.5 MHz for sinusoidal and square wave signals 0.01 Hz ... 100 kHz for triangular and ramp signals
Frequency setting	5 digits or 0.001 Hz
Accuracy of frequency setting (at nominal temperature)	± 0.01% ± 0.0002 Hz
Temperature coefficient of frequency	± 100 ppm in operating temperature range

Signal output

Output impedance	50 Ω ± 1.5%, unbalanced
Output voltage V_{op}	10 mV ... 10 V/50 Ω
Output voltage setting	3 digits
Accuracy of output voltage at $f = 1$ kHz	± [2% + 20 mV]
Additional frequency error of output voltage	± 1 dB in the range 10 Hz ... 1 MHz, ± 3 dB 0.01 Hz ... 10 MHz
Temperature coefficient of output voltage	< ± 5 × 10 ⁻³ /K
Direct voltage offset of signal (V_{offset})	± 2.5 V in 10 mV steps
Accuracy of offset voltage setting	± (1% + 20 mV)
Output signal	sinusoidal, square wave, triangular, ramp (up, down) arbitrary
Distortion factor of sinusoidal signal	< 0.5% in the range 10 Hz ... 100 kHz
Rise time of square wave signal	< 25 ns
Overshoot of square wave signal	< 0.5% + 30 mV
Non-linearity of triangular signal (5% ... 95%)	< 1%

Arbitrary signal characteristics

Horizontal resolution (length of signals)	8192 points
Vertical resolution of level	1024 points (10 Bit)
Sample period	30 ns × 2 ^{N-1} , N = 1 ... 32

SWEEP function

Frequency change for the SWEEP function	0.01 Hz ... 12.5 MHz (100 kHz for triangular and ramp signals)
Sweep type	linear, logarithmic - discrete
Direction of frequency change	rising, falling
Period of repetition for the SWEEP function	10 ms ... 60 s

Amplitude modulation

Source of modulation signal	internal, external
Frequency range of external modulation input	0 Hz ... 20 kHz
Amplitude of external signals (V_{in})	2 V for AM modulation depth $m = 100\%$
Input impedance of external AM input	100 kΩ
Frequency range of internal modulation oscillator	from approx. 100 Hz to approx. 10 kHz, discrete frequency values
Depth of amplitude modulation	0 to 100%, 1% steps for internal generator of AM

Square wave synchronisation output

Output voltage V_{op}	5 V ± 10% CMOS
Duty cycle of output signal	approx. 1:1 for periodical signals pulse "Start" with a width of approx. 5 μs at the sweep function

Display

Two-line alphanumerical LC display with 2 x 16 digits and background lighting. The display shows setting values such as level, frequency, units, decimal point and system signals.

Interface/Remote control

The AFG 100 has full remote control facilities via the RS 232 C interface with 1,200 to 19,200 Bd.