

20 MHz DDS Function Generator
TGA2000



W=260 H=88 D=235mm. Weight = 2kg

Direct digital synthesis (DDS) is a technique for generating waveforms digitally using a phase accumulator, a look-up table and a DAC. The accuracy and stability of the resulting waveforms is related to that of the crystal master clock. The DDS generator offers not only exceptional accuracy and stability but also high spectral purity, low phase noise and excellent frequency agility.



NEW

- 0.001Hz to 20MHz frequency range, 6 digits or 1mHz setting resolution.
- 1ppm stability and better than 10 ppm absolute accuracy for one year.
- Sine, square, triangle, positive pulse and negative pulse waveforms.
- Low distortion, high spectral purity sine waves.
- Internal sweep, linear or logarithmic, phase continuous, 0.1Hz to 20MHz in one range.
- Modulations modes of gated, AM, FSK and tone switching; built-in trigger generator.
- 5mV to 20V pk-pk output from 50Ω or 600Ω; plus fixed level auxiliary output.
- Storage for up to nine complete instrument set-ups in non-volatile memory.
- Fully programmable via RS-232 or USB interfaces.

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|-------------------------------|---|-------------------|--------------------------|
| Frequency | All waveforms are derived from a crystal clock using DDS | | |
| Frequency Range | 1mHz - 20MHz (except triangle) | | |
| Resolution | 6 digits or 1mHz | | |
| Accuracy | ±10ppm for 1 year, 18°C to 28°C | | |
| Temp Coefficient | Typically <1ppm/°C outside 18°C to 28°C | | |
| Waveforms | Range | Resolution | Output Level |
| Sinewave | 1mHz - 20MHz | 6 digits or 1mHz | 5mV - 20V pk-pk from 50Ω |
| Squarewave | 1mHz - 20MHz | 6 digits or 1mHz | 5mV - 20V pk-pk from 50Ω |
| Triangle | 1mHz - 1MHz | 6 digits or 1mHz | 5mV - 20V pk-pk from 50Ω |
| Pulse | 1mHz - 20MHz | 6 digits or 1mHz | 5mV - 20V pk-pk from 50Ω |
| Modulation Modes | Continuous cycles of the selected waveform are output at the selected frequency | | |
| Continuous | Non phase-coherent signal keying, output only ON when gate signal is HIGH | | |
| Gated | 0.1Hz to 20MHz (all waveforms) | | |
| Carrier | dc to 100kHz external, dc to 5kHz internal | | |
| Trigger Rep. Rate | MAN TRIG key, internal gate generator, TRIG/GATE input, remote interface | | |
| Gate Source | MAN TRIG key, internal gate generator, TRIG/GATE input, remote interface | | |
| Sweep | Modes: Linear or logarithmic; single or continuous. | | |
| Carrier | All waveforms | | |
| Sweep Width & Time | 0.2Hz - 20MHz (50ms - 999s) | | |
| Trigger Source | free run or MAN TRIG key, TRIG/GATE input, remote interface | | |
| Amplitude Modulation | Carrier 1mHz to 20MHz (all waveforms) | | |
| Modulation Source | VCA IN socket | | |
| Frequency Shift Keying | Phase-coherent switching between 2 frequencies at a rate defined by the switch source | | |
| Carrier | 1Hz to 20MHz (all waveforms) | | |
| Switch Rep. Rate | dc to 1MHz external, dc to 5kHz internal | | |
| Switch Signal Source | MAN TRIG key, internal gate generator, TRIG/GATE input, remote interface | | |
| Tone | Tone is output only when the trigger signal is HIGH | | |
| Carrier | All waveforms | | |
| Frequency List | Up to 16 frequencies between 1Hz and 20MHz | | |
| Switching Source | MAN TRIG key, internal trigger generator, TRIG/GATE input, remote interface | | |
| Internal Trigger/Gate | Period 0.2ms to 999s (resolution 0.2ms) | | |
| Waveform | Squarewave (1:1 duty cycle) | | |
| Main Output | Output Impedance 50Ω or 600Ω switchable | | |
| Amplitude | 5mV to 20V pk-pk open circuit | | |
| Accuracy | ±3% ±1mV | | |
| Flatness | ±0.2dB to 500kHz; ±2dB to 20MHz | | |
| DC Offset | ±10V from 50Ω/600Ω | | |
| Resolution | 3 digits for both amplitude and offset | | |
| Auxiliary Output | Multi-function output user definable to be any of the following: | | |
| Waveform Sync | outputs a 50% duty cycle squarewave at the main waveform frequency | | |
| Trigger Out | outputs a replica of the current trigger signal | | |
| Sweep Sync | outputs a trigger signal or marker at the start of a sweep | | |
| Inputs | Ext. Trigger / Gate max. input ±10V. Impedance: 10kΩ | | |
| VCA IN | dc to 100kHz, 2.5V. Impedance approx. 6kΩ | | |
| Interfaces | RS232 variable baud to 19200, 9-pin D connector | | |
| USB | Standard USB 1.1 connection | | |
| General | Display 20 x 4 alphanumeric LCD | | |
| Data Entry | keyboard, number keys, rotary control | | |
| Memory | up to 9 complete instrument setups can be stored in battery-backed memory | | |
| Power Requirements | 100V, 110-120V or 220-240V, 50/60Hz, 40VA max | | |
| Operating Conditions | +5°C to 40°C, 20%-80% RH | | |

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| Mfrs. List No. | Order Code | 1+ | 3+ | 10+ |
| TG2000 | 979-8960 | 47,753.00 | 44,499.00 | 44,342.00 |
| Standard Calibration | | S C11 | Price Each | |
| UKAS Calibration | | N C11 | Price Each | |

Function Generator/Frequency Counters

1.3GHz Frequency Counter - Handheld
PFM1300



H = 178, W = 81, D = 30

- 8 digit 11.5mm LCD
- Wide measurement range 5Hz to 1.3 GHz
- Reciprocal counting for high resolution at all frequencies

Hand held frequency meter offering accurate measurement of frequency or period for ranges from 5Hz to 1.3GHz. The instrument uses a reciprocal counting technique to provide high resolution at all frequencies. Normally 7 significant digits of reading are produced per second of measurement time.



There are two signal inputs. Input A is a high impedance input (1MΩ) for frequencies in the range 5Hz to 25MHz. Input B is a nominal 50Ω input for frequencies in the range 20MHz to 1.3GHz. The LCD has indicators showing measurement function, measurement time, overflow, low battery and the units of the reading which may be Hz, KHz, MHz, ns, μs, ms or s.

Supplied with operating instructions.

- Selectable low pass filter for stable readings at low frequencies
- Frequency and period measurement
- Hold function freezes reading

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|------------------------------|---|---|
| Frequency measurement | Input A: | Input B: |
| Frequency range | 5Hz to 25MHz | 20MHz to 1.3GHz |
| Resolution | 0.0001MHz to 10Hz | 1Hz to 1KHz |
| Accuracy | ± (1 digit + timebase accuracy) | ± (1 digit + timebase accuracy) |
| Period Measurement | Input A: | Input B: |
| Frequency range | 5Hz to 25MHz | 5Hz to 25MHz |
| Resolution | 100ns to 1μs | 100ns to 1μs |
| Accuracy | ±(1 digit + timebase accuracy) | ±(1 digit + timebase accuracy) |
| Inputs | Input A: | Input B: |
| Input impedance | 1MΩ/25pF | 50Ω nominal |
| Frequency range | 5Hz to 25MHz | 20MHz to 1.3GHz |
| Sensitivity | Sinewave 15mV rms 10Hz to 20MHz | 10mV rms 20MHz to 700MHz 50mV rms 700MHz to 1.3GHz |
| Max. input voltage | 30Vdc; 30V rms 50/60Hz reducing to 1V rms above 1MHz | 30Vdc; 30V rms 50/60Hz 1V rms 20MHz to 1.3GHz |
| Coupling | ac | ac |
| Timebase | Crystal oscillator frequency Initial oscillator adjustment error Oscillator temperature coefficient Oscillator ageing rate | 10MHz ±2ppm Typically less than ±0.3ppm/°C 18°C +5ppm/year |
| Power Requirements | Internal | |
| Battery type | 9V PP3 alkaline (not supplied) | |
| Battery life | Typically 12 hours | |
| General | Operating temperature range | +5°C to +40°C |
| | Operating humidity range | 20% RH to 80% RH |
| | Storage temperature range | -20°C to +60°C |
| | Weight | 190g |

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|------------------------------------|-------------------|-------------|------------|
| Mfrs. List No. | Order Code | 1+ | Price Each |
| PFM1300 | 504-671 | 9,587.00 | + |
| Standard Calibration Charge | | S C8 | Price Each |
| UKAS Calibration Charge | | N C8 | Price Each |

Pulse Generator
TGP110



H = 140, W = 220, D = 230 Weight = 1.6 Kg

- 0.1Hz to 10MHz frequency range
- 50ns minimum pulse width
- Fully variable pulse delay and double pulse modes
- Squarewave, double pulse and delayed pulse modes
- Free-run, gated and trigger modes
- 50Ω output, variable 0.1V to 10V, TTL and sync. output
- Overlap indicators to give warning of illegal setting conditions
- Large diameter vernier controls for ease of setting

Test Equipment - Electrical / Environmental

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Compliant Non-compliant Limited stock - RoHS replacement available

RoHS