**TG120 Low-cost 20MHz function generator**

**An essential instrument**
The function generator is one of the most versatile instruments available. It can generate a variety of precision waveshapes over a range of frequencies from mHz to MHz. It can provide a wide range of controlled amplitudes from a low impedance source and maintain constant amplitude as the frequency is varied. Voltage control of frequency allows FM modulation to be introduced or can provide a swept frequency source for such tasks as frequency response testing.

**20MHz from a low-cost generator**
Most lower cost function generators use a technology which enables them to operate up to no more than 2MHz. The TG120 utilises an alternative technology which retains its waveform quality right up to 20MHz.

**Variable symmetry for pulse and ramp waveforms**
The TG120 provides switchable bi-directional variable symmetry which enables variable duty cycle pulse waveforms and sawtooths to be generated.

**Sweep mode operation (external)**
The TG120 can be operated in sweep mode by connecting an external sweep voltage. A sweep range of at least 20:1 can be achieved.

**Wide range level control**
The TG120 provides a main output with a maximum emf of 20V pk-pk from a 50Ω source. An amplitude vernier with a range of 26dB is combined with two -20dB switched attenuators to provide levels down to 10mV pk-pk. An auxiliary output provides a fixed 0 to +5V level suitable for driving both TTL and CMOS loads.

**Technical Specifications**

**FREQUENCY**
- **Frequency Range:** 0.2Hz to 20MHz in 8 overlapping decade ranges with fine adjustment by a vernier.
- **Vernier Range:** >10:1 on each range.

**SWEEP MODE (EXTERNAL)**
- **Input Impedance:** >82 kΩ
- **Sweep Range:** Typically > 20:1
- **Input Sensitivity:** Typically 0 to 2V for 10:1 sweep
- **Max. Input Voltage:** ±10V
- **Max. Slew Rate:** ±1V/us

**OPERATING MODES**
*Sine*:
- **Distortion:** Typically 2% on 200, 2k and 20k ranges.
- **Amplitude Flatness:** ±0.2dB to 200kHz, ±2dB to 20MHz.

**Triangle**:
- **Linearity:** Typically 99% on kHz ranges.

**Square Wave**:
- **Rise and Fall Times:** <22ns

**DC**:
- **Range:** ±10V from 50Ω

**SYMmetry**
- **Symmetry Range:** Typically variable from 1:6 to 6:1 up to 500kHz.

**OUTPUTS**
- **0dB Range:** 1V to 20V peak-to-peak (0.5V to 10V into 50Ω).
- **-20dB Range:** 100mV to 2V peak-to-peak (50mV to 1V into 50Ω).
- **-40dB Range:** 10mV to 0.2V peak-to-peak (5mV to 0.1V into 50Ω).
- **DC Offset Range:** ±10V from 50Ω. DC offset plus signal peak limited to ±10V (±5V into 50Ω). DC offset plus waveform attenuated proportionally in -20dB and -40dB position.

**TTL/CMOS**
- **Capable of driving 4 standard TTL loads.**

**GENERAL**
- **Power:** 230V or 115V nominal 50/60Hz, adjustable internally: operating range ±14% of nominal; 30VA max. Installation Category II.
- **Operating Range:** +5°C to +40°C, 20% to 80% RH.
- **Storage Range:** -10°C to +50°C.
- **Environmental:** Indoor use at altitudes to 2000m, Pollution Degree 1.
- **Electrical Safety:** Complies with EN61010-1.
- **EMC:** Complies with EN61236.
- **Size:** 220(W) x 80(H) x 230(D) mm. (10.3 x 3.4 x 9.2") excluding feet.
- **Weight:** 1.5 Kg (3.3lb).

Thurlby Thandar Instruments Ltd. operates a policy of continuous development and reserves the right to alter specifications without notice.

**Key features**
- 0.2Hz to 20MHz frequency range
- 10mV to 20V pk-pk from 50Ω
- TTL/CMOS auxiliary output
- DC offset control with zero detent
- Variable symmetry control
- External sweep input

**Designed and built in Europe by:**

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20MHz function generator
- 0.2Hz to 20MHz frequency range
- 10mV to 20V pk-pk from 50Ω, plus TTL/CMOS output
- DC offset control with zero detent
- Variable symmetry control
- External sweep input
- Very low cost
An essential instrument
The function generator is one of the most versatile instruments available.

It can generate a variety of precision waveshapes over a range of frequencies from mHz to MHz. It can provide a wide range of controlled amplitudes from a low impedance source and maintain constant amplitude as the frequency is varied.

Voltage control of frequency allows AM modulation to be introduced or can provide a swept frequency source for such tasks as frequency response testing.

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Technical Specifications

### FREQUENCY
- Frequency Range: 0.2Hz to 20MHz in 8 overlapping decade ranges with fine adjustment by a vernier.
- Vernier Range: ±10% on each range.
- Vernier Accuracy: Typically ±5% of full scale.

### SWEEP MODE (EXTERNAL)
- Input Impedance: 82 kΩ
- Sweep Range: Typically > 20:1
- Input Sensitivity: Typically 0 to 2V for 10:1 sweep
- Max. Input Voltage: ±10V
- Max. Slope Rate of sweep voltage: 0.1V/µs

### OPERATING MODES
(Specifications apply for the top decade of each frequency range and output 10V peak-to-peak into 50Ω termination.)

#### SINE
- Distortion: Typically 2% on 200, 2k and 20k ranges.
- Amplitude Flatness: ±0.2dB to 200MHz; ±2dB to 20MHz.

#### TRIANGLE
- Linearity: Typically 99% on kHz ranges.

#### SQUAREWAVE
- Rise and Fall Times: <22ns
- DC Range: ±10V from 50Ω

#### SYMMETRY
- Symmetry Range: Typically variable from 1:6 to 6:1 up to 500kHz.

### OUTPUTS
- 50Ω
  - Three switch-selectable ranges with 26dB vernier control within each range.
    - 0dB Range: 1V to 20V peak-to-peak (0.5V to 10V into 50Ω).
    - -20dB Range: 100mV to 2V peak-to-peak (50mV to 1V into 50Ω).
    - -40dB Range: 10mV to 0.2V peak-to-peak (5mV to 0.1V into 50Ω).
- DC Offset Range: ±10V from 50Ω. DC offset plus signal peak limited to ±10V (±5V into 50Ω). DC offset plus waveform attenuated proportionally in -20dB and -40dB position.

### TTL/CMOS
- Capable of driving 4 standard TTL loads.

### GENERAL
- Power: 230V or 115V nominal 50/60Hz, adjustable internally; operating range ±14% of nominal; 30VA max. Installation Category II.
- Operating Range: +5°C to +40°C, 20% to 80% RH.
- Storage Range: -10°C to +55°C.
- Environmental: Indoor use at altitude to 2000m, Pollution Degree 1.
- Electrical Safety: Complies with EN61010-1.
- EMC: Complies with EN61236.
- Size: 220(W) x 80(H) x 230(D) mm, (10.3 x 3.4 x 9.2") excluding feet.
- Weight: 1.5 Kg (3.3lb).

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- Variable symmetry control
- External sweep input
- Very low cost
Company name and product brands
Thurlby Thandar Instruments Ltd. (TTi) is one of Europe’s leading manufacturers of test and measurement instruments.

Products have been sold under two brand names: TTi and Aim.

In the future, however, the full product range will be branded Aim-TTi.

This changeover will be gradual and many products will continue to carry the TTi or Aim brands for some time to come.

Web Addresses (URLs)
The preferred URL for obtaining information concerning Aim-TTi products is:
www.aimtti.com (international customers)

Customers in the UK should use the URL:
www.aimtti.co.uk

Customers in the USA should use the URL:
www.aimtti.us

Note that previous URLs such as www.tti-test.com will continue to operate for the time being.

Product Summary

Laboratory Power Supplies
Bench and system power supplies from 30 watts up to 1200 watts using linear, mixed-mode and PowerFlex regulation technologies.

Waveform Generators
Analog and digital (DDS) function generators, true arbitrary generators, arbitrary/function generators and pulse generators.

Precision Measurement Instruments
Benchtop DMMs, frequency counters, component measurement instruments (LCR), electronic dc loads, current probes.

RF and EMC Test Equipment
Spectrum analyzers, signal generators, frequency counters, power meters, emc measurement instruments.

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