Measurably Better Value

Laboratory DC Power Supplies and Loads

Function, Arbitrary & Pulse Generators

Precision Measurement Instruments

RF and EMC Test Equipment

TEST & MEASUREMENT INSTRUMENTS

General Catalog

Aim-TTi

aimtti.com

Test and Measurement Instruments

Thurlby Thandar Instruments Limited

Product Index

About this Product Summary Catalog

Products included

All of the main products that were available for sale at the time of printing have been included within this catalog. Options and accessories are not necessarily included.

A full listing of current products, options and accessories is contained within the Price List which can be accessed from the website.

New product introductions and changes

Aim-TTi regularly introduces new products and some may have been added since this catalog was created. For the latest information please visit our website.

Products are subject to continuous development and changes to some detailed specifications or to cosmetic appearance may have taken place since the catalog was printed.

Detailed product information

This catalog contains only limited product information.

Fully detailed information for each product is available from the website. Alternatively contact Aim-TTi or the local distributor in your country to request detailed information.

Product illustrations

The illustrations within this catalog are representative of the products at the time of printing. The main illustration for each product is at approximately 42% (linear) of actual size in order to enable size comparisons.

Further illustrations within the product description area are at a variable scaling to fit the available space.

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Excellence through experience

Aim-TTi is the trading name of Thurlby Thandar Instruments Ltd. (TTi), one of Europe's leading manufacturers of test and measurement instruments.

The company has wide experience in the design and manufacture of advanced test instruments and power supplies built up over more than thirty years.

The company is based in the United Kingdom, and all products are built at the main facility in Huntingdon, close to the famous university city of Cambridge.

Traceable quality systems

bsi. ISO 9001 Quality Management

TTi is an ISO9001 registered company operating fully traceable quality systems for all processes from design through to final calibration.

ISO9001:2008
Certificate number FM 20695

Where to buy Aim-TTi products

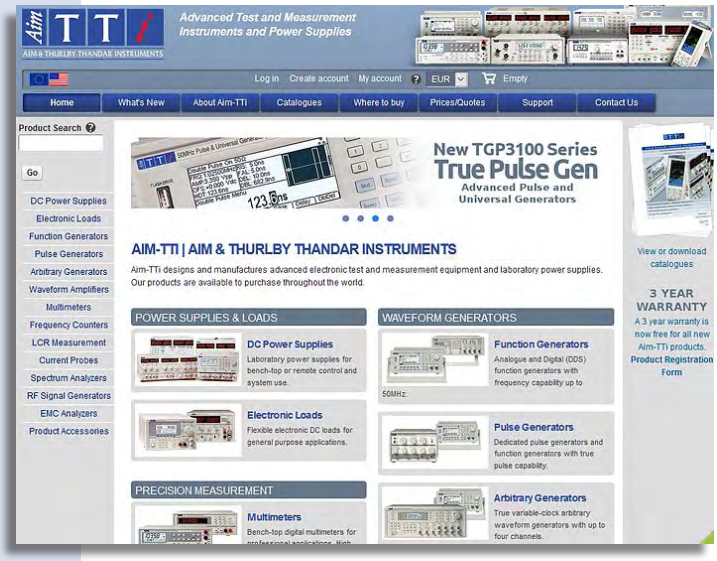
Aim-TTi products are widely available from a network of distributors and agents in more than sixty countries across the world.

To find your local distributor, please visit our website which provides full contact details.

The Aim-TTi Websites

Detailed product information is provided on the Aim-TTi website, together with support information and price lists.

The website for Aim-TTi products is: **aimtti.com**



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Laboratory Power Supplies 1.

Laboratory DC Power Supplies

A technology leader

Aim-TTi is one of the world's major producers of laboratory power supplies (PSUs).

It has been a major technology innovator in PSUs since 1979 and offers products ranging from 30 watts up to 1200 watts.

Hundreds of thousands of Aim-TTi power supplies are in everyday use around the world.

Power technologies

Aim-TTi laboratory power supplies use both linear and switch-mode technologies in order to optimize performance and value for money.

Linear regulation

Pure linear regulation still provides the lowest output noise and best transient response. The disadvantage is greater physical size and weight for a given power, together with higher heat output.

Mixed-mode regulation

For higher power levels, Aim-TTi have developed a technology that uses switch-mode pre-regulation and linear final regulation. This technique combines exceptional efficiency with noise levels that are close to that of pure linears.

PowerFlex & PowerFlex+ regulation

The Aim-TTi PowerFlex system uses a modified form of mixed-mode regulation to provide higher levels of current when the voltage is set to lower values.
PowerFlex+ uses a multi-phase conversion technique to eliminate the need for a linear final stage and offers an even wider range of voltage/current combinations.

Measurement and control

Digital Metering

All Aim-TTi power supplies incorporate separate digital meters for voltage and current.

On most models these are 4 digit scale length with fixed resolution (e.g. 0.00V to 56.00V). Fixed resolution avoids the misinterpretation of readings that can occur with autoranging 3 or 3½ digit meters where the decimal point position moves as the reading changes.

QL and QPX models provide 5 digit meters for voltages to give still higher precision and resolution.

QL and PL models also include a low current range which provides 0.1mA resolution (0.01mA on PL-H).

Remote Sense

Most Aim-TTi power supplies incorporate remote sense terminals that can be enabled/disabled at the flick of a switch.

Remote sensing is essential to maintaining precise regulation at the load and true metering of the load voltage. Many other power supplies omit remote sense, but quote regulation figures that could never be achieved in a practice.

N.B. A 2 meter length of a 24/0.2 wire pair has a resistance of around 0.1 Ω. For a 5V load drawing 3A the metering error would be 0.3V and the effective full current load regulation would be around 6%, against a quoted figure of perhaps 0.01% for the power supply itself.

Output On/Off Switches

All Aim-TTi power supplies incorporate output on/off switches for the main outputs. This enables voltage and current settings to be viewed before the load is connected and allows multiple outputs to be controlled individually.

Many other power supplies omit this essential feature.

Analog or Digital Controls

Aim-TTi power supplies offer a choice of true analog controls or digital controls (numeric keyboard and/or spin-wheel).

The PL and CPX Series combines true analog controls with advanced digital features such as S-Lock and V-Span.

The QL, QPX and MX series offer digital control and five digit metering with a resolution of 1mV.

Bus programmable models

As well as the large range of manually controlled power supplies, Aim-TTi also offers many bus programmable units incorporating varying combination of GPIB, RS-232, USB and LAN interfaces, as well as models with analog remote control.

LabVIEW, LabWindows and IVI drivers are available for most power supplies.

Silent Cooling

Many Aim-TTi power supplies use convection cooling thus removing the need for a fan and providing silent operation.

Other models incorporate a fan to assist cooling, but use smart control techniques to minimise noise.

Rack mounting

Many Aim-TTi PSU series, both bus programmable and manual, have a rack-modular casing size.

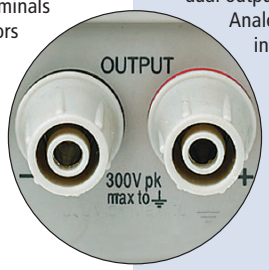
Rack mounts are available for the PL, QL, TSX, MX, CPX and QPX series.

Safety binding-post terminals

In response to changing customer requirements, Aim-TTi has introduced a new terminal design to most of the power supply range.

The new terminals accept a 4mm safety plug with rigid insulating sleeve; a requirement specified by an increasing number of laboratories for safety reasons.

However, unlike the usual 4mm safety sockets, the new Aim-TTi terminals can also accept fork connectors or bare wires, giving maximum flexibility.



Model ranges

2. Laboratory Power Supplies - manual & bus programmable

Aim TTi Measurably better value

Linear Regulation

Power supplies using all linear regulation offer the lowest output noise, the best transient response and the most benign stability characteristics when driving complex loads.

The disadvantage is greater physical size and weight for a given power, together with higher heat output. Linear regulation is used on the EL-R, PL, PLH and QL series.

EL-R Series

- Linear bench power supplies
- Single, dual or triple outputs
- 30W to 130W power range
- Switched remote sense terminals
- RS-232 & USB interface models

Dual output and triple output models are available using a similar casing style.

The EL302RT triple (illustrated) has a variable voltage auxiliary output which can be set using the digital displays. ▼

Model	Outputs	Voltage / Current	Power	Interfaces
EL301R	One	0 to 30V / 0 to 1A	30W	-
EL183R	One	0 to 18V / 0 to 3.3A	60W	-
EL302R	One	0 to 30V / 0 to 2A	60W	-
EL302P	One	0 to 30V / 0 to 2A	60W	RS232
EL302P-USB	One	0 to 30V / 0 to 2A	60W	USB
EL561R	One	0 to 56V / 0 to 1.1A	60W	-
EL155R	One	0 to 15V / 0 to 5A	75W	-
EL303R	One	0 to 30V / 0 to 3A	90W	-
EL302RD	Two	2 x (0 to 30V / 0 to 2A)	120W	-
EL302RT	Three	2 x (0 to 30V / 0 to 2A) plus 1.5 to 5V @ 2A	130W	-

Brief specifications for main outputs:
Line & load regulation: <0.01%. Output noise: < 1mV rms.
Meter accuracies: voltage - 0.3% ± 3 digits, current - 0.5% ± 3 digits.
Sizes: singles - 140 x 160 x 295mm; dual/triple - 260 x 160 x 295mm (WxHxD)

- Linear regulation provides low noise
- 4 digit voltage and current meters on each output *
- Constant voltage or constant current operation
- Variable auxiliary output (1.5-5V@2A) on triple model
- Silent fan-free cooling
- DC output switches
- Low costs

** Note that a 3 digit current meters is used on the EL302P & EL302P-USB, and that these models do not have remote sense terminals.*

The EL-R series is the ideal solution for users requiring a good quality manual control, linear regulated bench power supply of low to medium power.

The series offers dual displays, high resolution control and metering, remote sensing, dc output switches and silent fan-free operation.

For those requiring a basic bus controllable power supply, versions with an RS-232 interface (EL302P) or a USB interface (EL302P-USB) are available. ▶

RS-232 RS-423 USB UNIVERSAL SERIAL BUS

PLH & PLH-P Series

- High voltage versions of New PL
- Manual or bus programmable
- 90W power at 120V or 250V
- RS-232, USB, LAN or optional GPIB

Higher voltage up to 250V

The PLH series has been developed from the PL series (see next page) and retains all of its advanced features at output voltages of 120V or 250V.

Linear regulation offers the highest possible performance, and the compact quarter-rack width design provides an impressive 90 watts of power. A low current range provides 0.01mA resolution.

PLH-P series units have the same comprehensive set of interfaces as the PL-P, but with electrical isolation of the analog inputs.

Model	Outputs	Voltage / Current	Power	Interfaces
PLH120	One	0 to 120V / 0 to 0.75A	90W	-
PLH250	One	0 to 250V / 0 to 0.375A	94W	-
PLH120-P	One	0 to 120V / 0 to 0.75A	90W	RS232/USB/LAN
PLH250-P	One	0 to 250V / 0 to 0.375A	94W	RS232/USB/LAN

Brief specifications for main outputs:
Line & load regulation: <0.01%. Output noise: < 2mV rms.
Meter accuracies: voltage - 0.1% ± 1digit, current - 0.3% ± 3 digits.
Size: PLH - 105 x 130 x 290mm; PLH-P - 105 x 130 x 315mm

ETHERNET LAN LXI USB UNIVERSAL SERIAL BUS RS-232 RS-423 ISOLATED ANALOG REMOTE CONTROL GPIB IEEE-488 OPTIONAL

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manual & bus programmable - Laboratory Power Supplies 3.

Model	Outputs	Voltage / Current	Power	Interfaces
PL068	One	0 to 6V / 0 to 8A	48W	
PL155	One	0 to 15V / 0 to 5A	75W	-
PL303	One	0 to 30V / 0 to 3A	90W	-
PL601	One	0 to 60V / 0 to 1.5A	90W	-
PL303QMD	Two	2 x (0 to 30V / 0 to 3A)	180W	-
PL303QMT	Three	2 x (0 to 30V / 0 to 3A) + 0 to 6V / 0 to 8A	228W	
PL068P	One	0 to 6V / 0 to 8A	48W	RS232/USB/LAN
PL155P	One	0 to 15V / 0 to 5A	75W	RS232/USB/LAN
PL303P	One	0 to 30V / 0 to 3A	90W	RS232/USB/LAN
PL601P	One	0 to 60V / 0 to 1.5A	90W	RS232/USB/LAN
PL303QMDP	Two	2 x (0 to 30V / 0 to 3A)	180W	RS232/USB/LAN
PL303QMTP	Three	2 x (0 to 30V / 0 to 3A) + 0 to 6V / 0 to 8A	228W	RS232/USB/LAN

Brief specifications for main outputs:
Line & load regulation: <0.01%. Output noise: < 0.4mV rms.
Meter accuracies: voltage - 0.1% ± 1digit, current - 0.3% ± 3 digits.
Sizes: singles - 105 x 130 x 290/315mm; dual - 210 x 130 x 290mm
triple - 315 x 130 x 290mm (WxHxD)

- Linear regulation provides ultra-low noise
- Highly compact (¼ rack 3U) with small bench footprint
- True analog controls with advanced digital features
- Settings can be locked at the touch of a button
- 4 digit voltage and current meters on each output
- Low current range with 0.1mA resolution
- Constant voltage or constant current operation
- Independent, tracking or true parallel modes (QMD & QMT)
- High current (8A), high precision (1mV resolution) output on PL303QMT and PL068
- Front and rear power and sense terminals (PL-P models)
- Analog remote control (PL-P single output models)
- RS-232, USB and LXI compliant LAN interfaces (PL-P models) GPIB optional

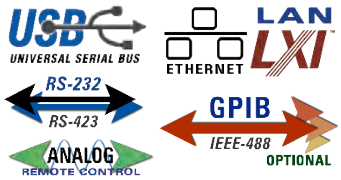
The New PL series represents the successor to best-selling PL series which became an "industry standard".

This ultra-compact linear regulated design retains the traditional analog controls of the original PL but adds important digital features.

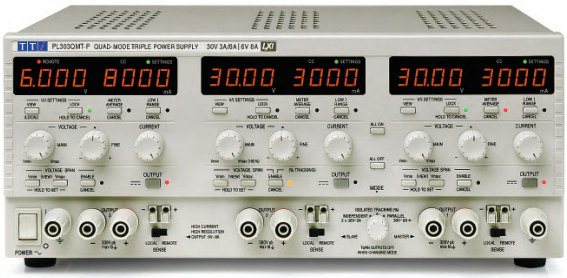
When working with any piece of equipment, engineers tend to require a voltage source variable over only a narrow range.
That's where the V-Span function comes in.
It allows the user to redefine the end-stop values of the voltage control to create a specific voltage range.
For example - An engineer is working on a circuit that will operate from four NiMh cells. They use V-Span to set a Vmax of 5.8 volts (to prevent over-voltage damage) and a Vmin of 3.6 volts (to ensure that the circuit doesn't reset).
They now have a power supply which provides high-resolution analog control over the exact voltage range they need.

The PL-P series offers a comprehensive set of digital interfaces including RS232, USB and LAN (Ethernet) as standard, with GPIB optional.

The LAN interface is compliant with LXI-C. LXI (LAN eXtensions for Instrumentation) is the next-generation, modular architecture standard for automated test systems, and is expected to become the successor to GPIB in many systems.



New triple output and high current single models



PL & PL-P Series

- High performance power supplies
- Single, dual and triple outputs
- Linear regulation, 48W to 228W
- Manual or bus programmable
- RS-232, USB, LAN or optional GPIB

The PL series is the solution for users requiring an advanced linear regulated precision bench power supply that retains conventional analog controls.

It's ultra-compact design uses minimal space on the bench or in the rack.

The PL-P series offers the same manual control features but adds full remote control using analog, RS232, USB and LAN interfaces, the latter conforming with LXI.

The New PL303QMT offers three full-performance linearly regulated outputs in a compact format.

Unlike many triple output PSUs, the third output has fully variable voltage and current with high resolution and selectable remote sense.

Voltage is variable from 0V to 6V with 1mV resolution, and current is fully variable up to 8A with 1mA or 0.1mA resolution.

All of the normal facilities including S-Lock and V-Span are included.

This high current module is also available as a single output power supply for low voltage but high current applications.

4. Laboratory Power Supplies - manual & bus programmable

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QL & QL-P Series II

- High precision power supplies
- Single or triple outputs
- Linear regulation, 105W to 242W
- GPIB/RS-232/USB/LAN interfaces

The QL series II is a revised and improved version of the best selling QL series. It represents the state-of-the-art in a linear regulated laboratory PSU.

Very high precision is matched by very low output noise. The digital user interface combines speed with safety.

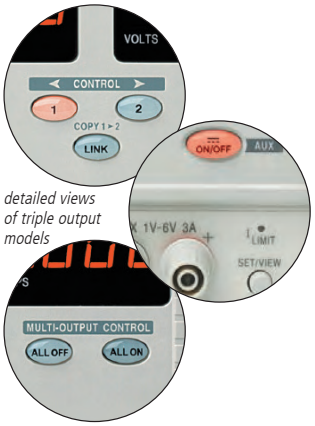
Despite the compact dimensions, power is in excess of 100 watts per output, and multiple ranges provide higher current at lower voltages.

The series II adds extra models, a greatly improved auxiliary output on triple models, and a LAN interface with LXI support on P models.

The triple output models incorporate two single output units plus an auxiliary low voltage output.

The two main outputs can be put into a linked mode for simultaneous or tracking control.

A master on/off system enables all three outputs to be switched synchronously. ▼



detailed views of triple output models

The auxiliary output can be set and monitored at the touch of a button.

Voltage can be set to 0.01V resolution and current can be monitored.

On P versions remote setting and readback of the auxiliary output is provided.

Model	Outputs	Voltage / Current	Power	Interfaces
QL355	One	0 to 35V / 0 to 3A or 0 to 15V / 0 to 5A	105W	-
QL564	One	0 to 56V / 0 to 2A or 0 to 25V / 0 to 4A	112W	-
QL355T	Three	2 x (0 to 35V / 0 to 3A or 0 to 15V / 0 to 5A) plus 1 to 6V @ 3A	228W	-
QL564T	Three	2 x (0 to 56V / 0 to 2A or 0 to 25V / 0 to 4A) plus 1 to 6V @ 3A	242W	-
QL355P	One	0 to 35V / 0 to 3A or 0 to 15V / 0 to 5A	105W	RS232/USB/ LAN/GPIB
QL564P	One	0 to 56V / 0 to 2A or 0 to 25V / 0 to 4A	112W	RS232/USB/ LAN/GPIB
QL355TP	Three	2 x (0 to 35V / 0 to 3A or 0 to 15V / 0 to 5A) plus 2.7/3.3/5.0 @ 1A	215W	RS232/USB/ LAN/GPIB
QL564TP	Three	2 x (0 to 56V / 0 to 2A or 0 to 25V / 0 to 4A) plus 1 to 6V @ 3A	242W	RS232/USB/ LAN/GPIB

Brief specifications for main outputs:
Line & load regulation: <0.01%. Output noise: < 0.35mV rms.
Setting accuracies: voltage - 0.03% ± 5mV, current - 0.2% ± 5mA.
Sizes: singles - 141 x 172 x 300mm; triples - 282 x 172 x 300mm (WxHxD)

- Linear regulation with noise below 0.35mV rms
- 1mV setting resolution at all output voltages
- Setting by direct numeric entry or by spin wheel
- Multiple ranges for higher currents at lower voltages
- Multiple non-volatile setting memories with preview
- OVP and OCP trips with isolated alarm output
- Selectable remote sense for perfect regulation
- Linked-mode operation of main outputs (T models)
- Auxiliary output of 1V to 6V at 3A with voltage setting to 0.01V and current metering (T models)
- Compact modular width for bench or rack mounting
- GPIB, RS232, USB and LAN (LXI) interfaces (P versions)
- Front and rear mounted output terminals (P versions)

QL-P versions are fitted with rear power and sense terminals together with digital bus control interfaces.

These now include LXI compliant ethernet in addition to USB, RS232 and GPIB.

Mixed-mode Regulation

All-linear regulation becomes impractical at higher power levels, so Aim-TTi have developed a technology that combines HF switch-mode pre-regulation with linear final regulation.

This technique combines exceptional efficiency with noise levels that are close to that of pure linears. Mixed-mode regulation is used in the EX-R, MX and TSX series.

EX-R Series

- Compact bench power supplies
- Single, dual or triple outputs
- Mixed-mode regulation
- Power from 175W to 420W
- Switched remote sense terminals
- RS-232 & USB interface models

Model	Outputs	Voltage / Current	Power	Interfaces
EX355R	One	0 to 35V / 0 to 5A	175W	-
EX355P	One	0 to 35V / 0 to 5A	175W	RS232
EX355P-USB	One	0 to 35V / 0 to 5A	175W	USB
EX1810R	One	0 to 18V / 0 to 10A	180W	-
EX2020R	One	0 to 20V / 0 to 20A	400W	-
EX4210R	One	0 to 42V / 0 to 10A	420W	-
EX354RD	Two	2 x (0 to 35V / 0 to 4A)	280W	-
EX354RT	Three	2 x (0 to 35V / 0 to 4A) plus 1.5 to 5.0V @ 5A	305W	
EX752M	Two	2 x (0 to 75V / 0 to 2A) or 0 to 75V / 0 to 4A or 0 to 150V / 0 to 2A	300W	

Brief specifications for main outputs:
Line & load regulation: <0.01%. Output noise: < 2mV rms.
Meter accuracies: voltage - 0.3% ± 3 digits, current - 0.5% ± 3 digits.
Sizes: singles - 140 x 160 x 295mm; dual/triple - 260 x 160 x 295mm (WxHxD)

- Mixed-mode regulation with linear output stage
- 4 digit voltage and current meters on each output *
- Constant voltage or constant current operation
- Variable auxiliary output (1.5-5V@5A) on triple model
- Switched remote sensing (not EX355P or EX752M)
- Silent fan-free cooling **
- DC output switches

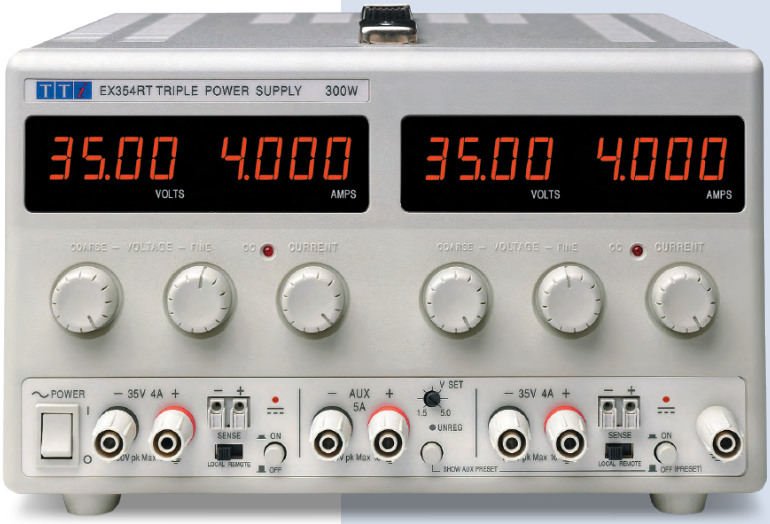
** Note that 3 digit current meters are used on the EX355P and EX752M and that voltmeter resolution on the EX752M is 0.1V.*

*** Note that the EX2020R and EX4210R use fan assisted cooling.*

The EX series is the value-for-money PSU for users who require higher power levels. Mixed-mode regulation gives excellent performance combined with compact size and low weight.

Dual output and triple output models are available in a similar casing style.

The EX354RT triple (illustrated) has a variable voltage auxiliary output which can be set using the digital displays. ▼



USB UNIVERSAL SERIAL BUS

RS-232 RS-423

For those requiring a basic bus controllable power supply, versions with an RS-232 interface (EL302P) or a USB interface (EL302P-USB) are available. ◄

** Note that a 3 digit current meters is used on the EL302P & EL302P-USB, and that these models do not have remote sense terminals.*

Higher current up to 20A

Higher voltage up to 150V

The EX752M is a dual output 300 watt PSU with Multi-Mode capability. This enables it to operate as a dual power supply with two independent and isolated outputs, or as a single power supply of double the power. ◄

As a dual, each output provides 0 to 75V at 0 to 2A (mode A). As a single, the output can be selected as either 0 to 75V at 0 to 4A (mode B) or 0 to 150V at 0 to 2A (mode C). In single modes, the unused half of the unit becomes completely inoperative and its displays are blanked.

6. Laboratory Power Supplies - manual & bus programmable

Measurably better value

TSX & TSX-P Series II

- Mixed-mode regulation
- Very high performance
- Single output, 350W/360W
- Front and rear terminals

The TSX series is housed in a 3U half-rack size case suitable for bench use or rack mounting.

It uses silent convection cooling for the quietest possible working environment.

Model	Outputs	Voltage / Current	Power	Interfaces
TSX1820	One	0 to 18V / 0 to 20A	360W	-
TSX3510	One	0 to 35V / 0 to 10A	350W	-
TSX1820P	One	0 to 18V / 0 to 20A	360W	RS232, USB LAN, GPIB*
TSX3510P	One	0 to 35V / 0 to 10A	350W	RS232, USB LAN, GPIB*

Brief specifications:
Line and load regulation: <0.01%. Output noise: < 1mV rms.
Meter accuracies: voltage - 0.2% ± 1digit, current - 0.5% ± 1digit.
Size: 210 x 130 x 350mm (WxHxD). Weight: 5.0kg

- Choice of 35V/10A and 18V/20A models
- Very low noise, excellent transient response
- Constant voltage or constant current operation
- Comprehensive protection including OVP trip
- High setting resolution, remote sense terminals
- Bench or rack mounting, front and rear terminals
- Compact half-rack 3U case size
- Digital control with keyboard/spin-wheel (TSX-P)
- Rotary and delta control of voltage/current (TSX-P)
- Third display for parameter indication (TSX-P)
- Storage of up to twenty five settings (TSX-P)
- USB, RS232, GPIB* and LXI compliant LAN (TSX-P)

*GPIB optional

The TSX series offers exceptionally good noise and transient performance.

The switch-mode pre-regulation uses ultra low capacitance components to minimise common mode noise, while the linear final regulator minimises differential output noise.

Higher current up to 20A

TSX 3510P

Local operation convenience features of the TSX-P series include an auxiliary display for displaying other data such as increment values, OVP level, or watts.

The display is also used to preview entry from the keyboard in order to prevent errors.

Twenty five non-volatile memories are provided for storing frequently used settings. Each store holds a voltage, current and OVP setting.

ETHERNET LAN LXI USB UNIVERSAL SERIAL BUS RS-232 RS-423 GPIB IEEE-488 OPTIONAL

Measurably better value

manual & bus programmable - Laboratory Power Supplies 7.

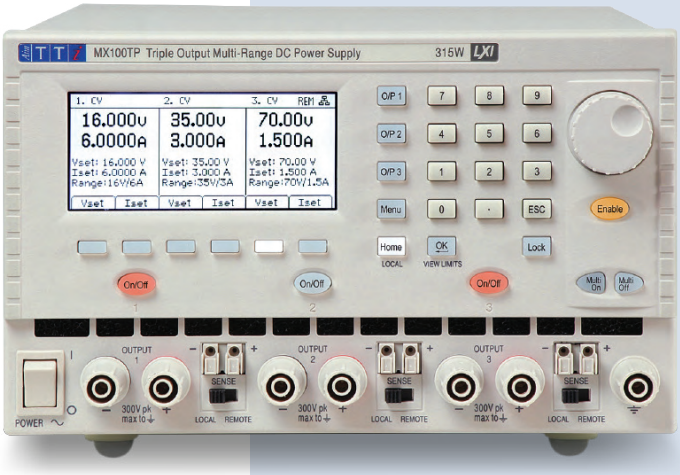
MX & MX-P Series

- 3 or 4 full-performance outputs
- Up to 420 watts total power
- Multiple voltage/current ranges
- High resolution graphic LCD
- RS-232, USB, LAN and GPIB

Model	Outputs	Voltage / Current	Power	Interfaces
MX100T	Three	See Range Combinations	315W	-
MX100Q	Four	See Range Combinations	420W	-
MX180T	Three	See Range Combinations	378W	-
MX100TP	Three	See Range Combinations	315W	RS232, USB LAN, GPIB
MX100QP	Four	See Range Combinations	420W	RS232, USB LAN, GPIB
MX180TP	Three	See Range Combinations	378W	RS232, USB LAN, GPIB

Brief specifications:
Line regulation: <0.01%. Load regulation: <0.01%. Output noise: < 3mV rms.
Setting accuracy: voltage - 0.05% ± 3mV, current - 0.3% ± 3mA.
Size: 211/317 x 130 x 380mm (WxHxD); Weight: 4.6kg/5.0kg/6.9kg

The MX series are compact multi-output power supplies using mixed-mode regulation with the added flexibility of range switching.



- Three or four outputs each with full functionality
- Range switching gives variable voltage/current combinations
- Shared power mode - double power from a single output
- Up to 70V and 6A (MX100T / MX100Q), or up to 120V and 20A (MX180T)
- Low output noise and ripple via linear final regulation
- High setting resolution of up to 1mV and 0.1mA
- Variable OVP and OCP trips on all outputs
- 50 setting memories per output plus 50 linked memories
- Selectable voltage tracking (isolated tracking)
- Selectable current meter averaging
- Switchable remote sense capability
- Graphic LCD provides simultaneous output metering
- Numeric or spin-wheel control of all parameters
- Individual or combined output on/off control with programmable delay sequencing.
- 3U case for bench or rack mounting (½ rack on triples)
- GPIB, RS-232, USB and LAN (LXI) interfaces (MX-P models)
- Duplicate power & sense terminals at rear (MX-P models)

The MX series differs from most other multi-output power supplies in having three or four full function outputs with fully variable voltage and current along with OVP and OCP trips.

Each output features CV or CI operation, simultaneous high resolution metering, switchable remote sensing, and an individual output switch.

Range switching and power control

To increase its ability to match the widest range of applications, each output has more than one range giving the choice of higher voltage or higher current.

When higher power is required, two outputs can be combined internally to provide twice the power from a single output - up to 210 watts for the MX100T/MX100Q and up to 360 watts for the MX180T.

MX100T Range Choices			
	Output 1	Output 2	Output 3
Range 1	35V/3A	35V/3A	35V/3A
Range 2	16V/6A	16V/6A	70V/1.5A
Range 3	--	35V/6A*	70V/3A**

* = output 3 disabled; ** = output 2 disabled

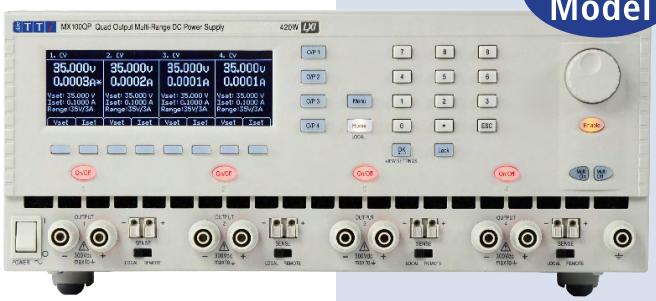
MX180T Range Choices			
	Output 1	Output 2	Output 3
Range 1	30V/6A	30V/6A	5.5V/3A
Range 2	15V/10A	15V/10A	12V/1.5A
Range 3	60V/3A	60V/3A	--
Range 4	30V/12A*	--	--
Range 5	15V/20A*	--	--
Range 6	60V/6A*	--	--
Range 7	120V/3A*	--	--

* = output 2 disabled (shared power mode)

Higher current up to 20A

Higher voltage up to 120V

NEW Model



MX100Q Range Choices				
	Output 1	Output 2	Output 3	Output 4
Range 1	35V/3A	35V/3A	35V/3A	35V/3A
Range 2	16V/6A	16V/6A	70V/1.5A	70V/1.5A
Range 3	35V/6A*	35V/6A*	70V/3A*	70V/3A*

* = subject to another output being disabled

8. Laboratory Power Supplies - manual & bus programmable

Measurably better value

PowerFlex Regulation

The Aim-TTi PowerFlex system uses a modified form of mixed-mode regulation to provide higher levels of current when the voltage is set to lower values.

PowerFlex+ uses a multi-phase conversion system and offers a wider range of voltage/current combinations.

PowerFlex regulation is used on the CPX series and the QPX1200S.

PowerFlex+ regulation is used on the QPX750S and QPX600D.

CPX & CPX-P Series

- PowerFlex regulation
- Higher current at lower voltage
- Single or dual outputs
- Up to 840 watts total power
- USB, RS232, GPIB & LAN (LXI) interfaces (P models)

CPX series models share a highly compact case style - 3U quarter rack (single) or half rack (dual).

Model	Outputs	Voltage / Current	Power	Interfaces
CPX200D	Two	2 x (0 to 60V / 0 to 10A*)	360W	-
CPX200DP	Two	2 x (0 to 60V / 0 to 10A*)	360W	RS232, USB LAN, GPIB
CPX400S	One	0 to 60V / 0 to 20A*	420W	-
CPX400SA	One	0 to 60V / 0 to 20A*	420W	Isolated Analog
CPX400SP	One	0 to 60V / 0 to 20A*	420W	RS232, USB LAN, GPIB
CPX400D	Two	2 x (0 to 60V / 0 to 20A*)	840W	-
CPX400DP	Two	2 x (0 to 60V / 0 to 20A*)	840W	RS232, USB LAN, GPIB

Brief specifications:
Line regulation: <0.01%. Load regulation: <0.01%. Output noise: < 3mV rms.
Meter accuracies: voltage - 0.1% ± 2 digits, current - 0.3% ± 2 digits.
Size: 210 x 130 x 350mm (WxHxD)
* Note: maximum current is not available with maximum voltage see PowerFlex power envelope curves.

- PowerFlex design gives variable voltage and current combinations within a maximum power range
- Isolated outputs can be wired in series or parallel
- Constant voltage or constant current operation
- Settings Locking (S-Lock)
- PowerFlex or fixed-range operation
- Variable OVP trips
- Selectable remote sense terminals
- Compact quarter or half rack 3U case size
- Isolated analog remote control (CPX400SA only)
- RS232, USB, GPIB & LXI compliant LAN (P models only)

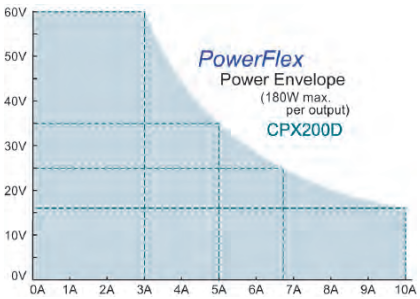
The CPX series is a different type of laboratory power supply designed to meet the need for flexibility in the choice of voltage and current.

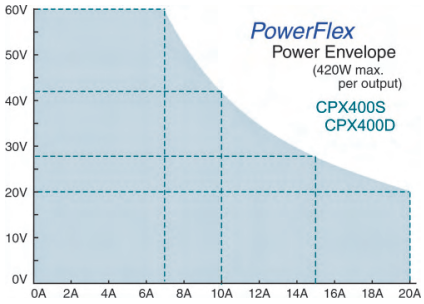
Today's engineers often need a wide voltage range capability and a high current capability. Normally, however, the maximum voltage and maximum current are not required simultaneously.

A conventional PSU has a fixed current limit giving a power capability that reduces directly with the output voltage.

The Aim-TTi PowerFlex design of the CPX series enables higher currents to be generated at lower voltages within an overall power limit envelope.

P models are fitted with USB, RS-232, GPIB and LAN interfaces as standard, the latter conforming to the LXI standard (LAN eXtensions for Instrumentation).





The CPX400S is a single output version of the best-selling CPX400D with a full 420W of power from a ¼ rack width casing.

The CPX400SP adds USB, RS232, GPIB and LAN interfaces with LXI support.

A version with isolated analog remote control is also available.

QPX1200S & SP

- 1200 watts PowerFlex/PowerFlex+
- Higher currents at lower voltages
- Up to 60 volts and up to 50 amps
- Analog, RS-232, USB, GPIB & LAN

Model	Outputs	Voltage / Current	Power	Interfaces
QPX1200S	One	0 to 60V / 0 to 50A*	1200W	Analog only
QPX1200SP	One	0 to 60V / 0 to 50A*	1200W	RS232/USB/LAN/GPIB

Brief specifications:
Line & load regulation: <0.01%. Output noise: < 3mV rms.
Setting accuracies: voltage - 0.1% ± 2mV, current - 0.3% ± 20mA.
Size: 350 x 130 x 415mm (WxHxD)
* Note: max. current is not available with max. voltage, see PowerFlex curve.

With a current capability of 20 amps at the maximum output of 60 volts, the PowerFlex design offers increasing output current with reducing output voltage.

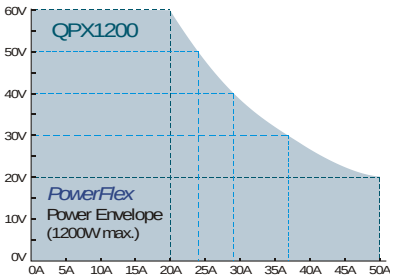
Example voltage/current combinations include 60V/20A, 48V/25A, 37.5V/30A, 26V/40A, and 20V/50A.

The QPX1200S has only an analog remote control interface.

The QPX1200SP has analog, RS232 USB, GPIB and LAN interfaces. The latter conforms with the LXI standard

QPX1200S & SP

- PowerFlex design gives variable voltage/current combinations within a power envelope
- Up to 60 volts and up to 50 amps
- Setting by direct numeric entry or by spin wheel
- High setting resolution of 1mV up to 60 volts
- Very low noise of < 3mV rms at full power
- Bench or rack mounting, front and rear terminals
- Analog, RS232, USB, GPIB & LAN interfaces (SP)



The QPX1200S & SP offer users a level of flexibility that cannot be achieved with conventional laboratory power supplies. They can therefore perform the task of many different power supplies.

These power supplies are suited to both bench-top and system applications with front and rear terminals and a wide range of interfaces.

TTi PowerFlex

Higher current up to 50A

QPX750S & SP

- 750 watts PowerFlex+
- Higher currents at lower voltages
- Up to 80 volts and up to 50 amps
- Wide range of remote interfaces

Model	Outputs	Voltage / Current	Power	Interfaces
QPX750S	One	0 to 80V / 0 to 50A*	750W	Analog only
QPX750SP	One	0 to 80V / 0 to 50A*	750W	RS232/USB/ LAN/GPIB

Brief specifications:
Line & load regulation: <0.01%. Output noise: < 3mV rms.
Setting accuracies: voltage - 0.1% ± 2mV, current - 0.3% ± 20mA.
Size: 212 x 130 x 380mm WxHxD (half rack x 3U)
* Note: max. current is not available with max. voltage, see PowerFlex+ curve.

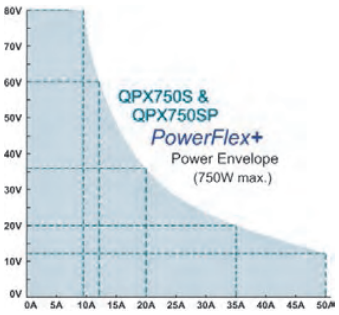
The QPX750S offers unrivalled flexibility in voltage/current combinations.

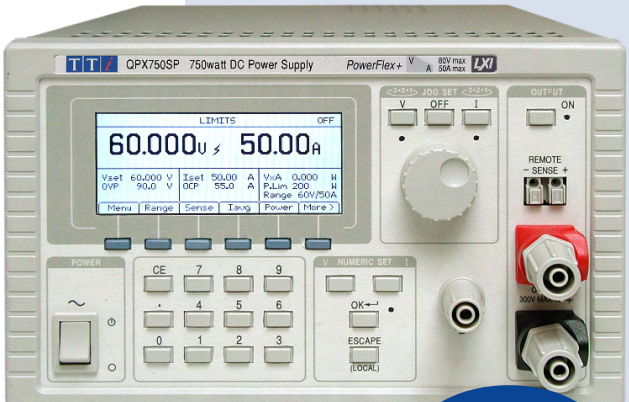
The compact half rack design is suitable for bench or rack with full current terminals front and rear.

The graphic LCD shows all parameters simultaneously.

QPX750S & SP

- PowerFlex+ gives ultra wide range of voltage/current combinations
- Up to 80 volts and up to 50 amps (750W max.)
- Low output noise and ripple
- High setting resolution of 1mV
- Large graphic LCD
- Smart functions built-in
- Analog, RS232, USB, GPIB & LAN interfaces (SP)





LAN LXI ETHERNET USB UNIVERSAL SERIAL BUS RS-232 RS-423 GPIB IEEE-488 QUASI ANALOG REMOTE CONTROL

TTi PowerFlex+

Higher current up to 50A

Coming Soon

10. Laboratory Power Supplies - manual & bus programmable

Measurably better value

QPX600D & DP

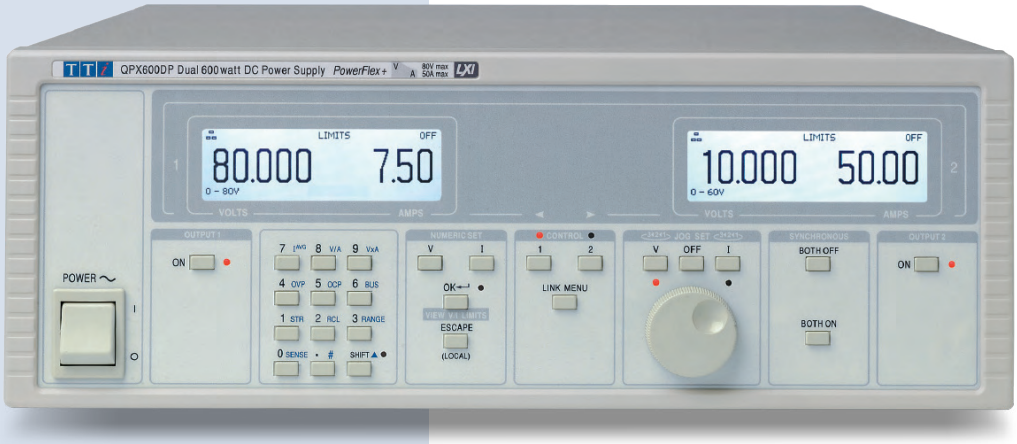
- 1200 watts PowerFlex+
- Dual 600 watt outputs
- Higher currents at lower voltages
- Up to 80 volts and up to 50 amps
- Smart tracking modes
- Wide range of remote interfaces

The QPX600D incorporates two isolated outputs of 600W each.

PowerFlex+ regulation provides up to 80V or 50A, and smart tracking enables the outputs to be combined with total voltage or current indicated on a single meter.

Model	Outputs	Voltage / Current	Power	Interfaces
QPX600D	Two	0 to 80V / 0 to 50A *	2 x 600W	Analog only
QPX600DP	Two	0 to 80V / 0 to 50A *	2 x 600W	RS232/USB/LAN/GPIB

Brief specifications:
Line & load regulation: <0.01%. Output noise: < 3mV rms.
Setting accuracies: voltage - 0.1% ± 2mV, current - 0.3% ± 20mA.
Size: 350 x 130 x 415mm (WxHxD)
* Note: max. current is not available with max. voltage, see PowerFlex curve.



The QPX600D & DP offer 1200 watts of maximum power, arranged as two isolated outputs of 600 watts each.

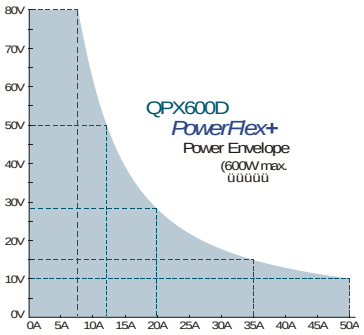
It uses the latest TTi regulation system, PowerFlex+, which offers a much wider flexing range of more than 6½:1.

The QPX600 can be operated as two entirely independent power supplies, each with its own display. Alternatively multiple tracking modes are available including ones intended for series and parallel operation which provide metering of total voltage or total current respectively.

These power supplies are suited to both bench-top and system applications and have a wide range of remote control interfaces.

QPX600D & DP

- Dual independent or tracking 600 watt outputs
- PowerFlex+ gives ultra wide range variable voltage/current combinations
- Up to 80 volts and up to 50 amps within each power envelope
- Isolated tracking of voltage and current
- Low output noise and ripple
- High setting resolution of 1mV
- Analog, RS232, USB GPIB & LAN interfaces (DP)



To learn more about LXI visit:
www.aimtti.com/go/lxi

Measurably better value

manual & bus programmable - Laboratory Power Supplies 11.

Power Supply Selector

MANUAL CONTROL MODELS												
Model No	Type	Regulation	O/Ps	Main Output(s)	Aux. Output	Power	R.Sense	Fan	Controls	Meters	Size mm	Weight
EL301R	Precision	Linear	Single	0 - 30V / 0 - 1A		30W	Yes	No	Analog	4 digit LED	140x160x195	3.4kg
EL183R	Precision	Linear	Single	0 - 18V / 0 - 3.3A		60W	Yes	No	Analog	4 digit LED	140x160x195	4.4kg
EL302R	Precision	Linear	Single	0 - 30V / 0 - 2A		60W	Yes	No	Analog	4 digit LED	140x160x195	4.4kg
EL561R	Precision	Linear	Single	0 - 56V / 0 - 1.1A		60W	Yes	No	Analog	4 digit LED	140x160x195	4.4kg
EL155R	Precision	Linear	Single	0 - 15V / 0 - 5A		75W	Yes	No	Analog	4 digit LED	140x160x195	5.0kg
EL303R	Precision	Linear	Single	0 - 30V / 0 - 3A		90W	Yes	No	Analog	4 digit LED	140x160x195	5.0kg
EL302RD	Precision	Linear	Dual	0 - 30V / 0 - 2A		120W	Yes	No	Analog	4 digit LED	260x160x195	7.5kg
EL302RT	Precision	Linear	Triple	0 - 30V / 0 - 2A	1.5 - 5V @ 2A	130W	Yes	No	Analog	4 digit LED	260x160x195	7.5kg
EX1810R	Precision	Mixed Mode	Single	0 - 18V / 0 - 10A		180W	Yes	No	Analog	4 digit LED	140x160x195	3.0kg
EX355R	Precision	Mixed Mode	Single	0 - 35V / 0 - 5A		175W	Yes	No	Analog	4 digit LED	140x160x195	3.0kg
EX2020R	Precision	Mixed Mode	Single	0 - 20V / 0 - 20A		400W	Yes	Yes	Analog	4 digit LED	140x160x195	3.5kg
EX4210R	Precision	Mixed Mode	Single	0 - 42V / 0 - 10A		420W	Yes	Yes	Analog	4 digit LED	140x160x195	3.5kg
EX354RD	Precision	Mixed Mode	Dual	0 - 35V / 0 - 4A		280W	Yes	No	Analog	4 digit LED	260x160x195	4.3kg
EX354RT	Precision	Mixed Mode	Triple	0 - 35V / 0 - 4A	1.5 - 5V @ 5A	305W	Yes	No	Analog	4 digit LED	260x160x195	4.3kg
EX752M	Multi-Mode HV	Mixed Mode	Dual	0 - 75V / 0 - 2A		300W	No	No	Analog	3 digit LED*	260x160x195	4.4kg
PL068	Advanced	Linear	Single	0 - 6V / 0 - 8A		48W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
PL155	Advanced	Linear	Single	0 - 15V / 0 - 5A		75W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
PL303	Advanced	Linear	Single	0 - 30V / 0 - 3A		90W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
PL601	Advanced	Linear	Single	0 - 60V / 0 - 1.5A		90W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
PL303QMD	Advanced	Linear	Dual	0 - 30V / 0 - 3A		180W	Yes	LN	Smart Analog	4 digit LED	210x130x295	9.0kg
PL303QMT	Advanced	Linear	Triple	0 - 30V / 0 - 3A	0V - 6V/0A-8A	228W	Yes	LN	Smart Analog	4 digit LED	315x130x295	13.4kg
PLH120	Advanced HV	Linear	Single	0 - 120V / 0 - 0.75A		90W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
PLH250	Advanced HV	Linear	Single	0 - 250V / 0 - 0.375A		94W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
QL355	High Precision	Linear	Single	0 - 35V / 0 - 5A #		105W	Yes	Yes	Digital	5 digit LED	141x171x300	5.0kg
QL564	High Precision	Linear	Single	0 - 56V / 0 - 4A #		112W	Yes	Yes	Digital	5 digit LED	141x171x300	5.0kg
QL355T	High Precision	Linear	Triple	0 - 35V / 0 - 5A #	1V - 6V @ 3A	228W	Yes	Yes	Digital	5 digit LED	282x171x300	10.0kg
QL564T	High Precision	Linear	Triple	0 - 56V / 0 - 4A #	1V - 6V @ 3A	242W	Yes	Yes	Digital	5 digit LED	282x171x300	10.0kg
TSX1820	Precision	Mixed Mode	Single	0 - 18V / 0 - 20A		360W	Yes	No	Analog	4 digit LED	210x130x350	5.0kg
TSX3510	Precision	Mixed Mode	Single	0 - 35V / 0 - 10A		350W	Yes	No	Analog	4 digit LED	210x130x350	5.0kg
MX100T	Precision	Mixed Mode	Triple	0 - 35V / 0 - 6A #		315W	Yes	Yes	Digital	Graphic LCD	210x130x380	4.6kg
MX180T	Precision	Mixed Mode	Triple	0 - 60V / 0 - 6A #	0 - 12V/0 - 3A#	378W	Yes	Yes	Digital	Graphic LCD	210x130x380	5.0kg
MX100Q	Precision	Mixed Mode	Quad	0 - 35V / 0 - 6A #		420W	Yes	Yes	Digital	Graphic LCD	315x130x380	6.8kg
CPX200D	Precision	PowerFlex	Dual	0 - 60V / 0 - 10A †		360W	Yes	Yes	Smart Analog	4 digit LED	210x130x350	6.0kg
CPX400S	Precision	PowerFlex	Single	0 - 60V / 0 - 20A †		420W	Yes	Yes	Smart Analog	4 digit LED	107x130x390	4.3kg
CPX400D	Precision	PowerFlex	Dual	0 - 60V / 0 - 20A †		840W	Yes	Yes	Smart Analog	4 digit LED	210x130x350	7.5kg
QPX750S	High Precision	PowerFlex+	Single	0 - 80V / 0 - 50A †		750W	Yes	Yes	Digital	Graphic LCD	210x130x 415	7.6kg
QPX1200S	High Precision	PowerFlex	Single	0 - 60V / 0 - 50A †		1200W	Yes	Yes	Digital	Graphic LCD	350x130x 415	9.2kg
QPX600D	High Precision	PowerFlex+	Dual	0 - 80V / 0 - 50A †		1200W	Yes	Yes	Digital	Graphic LCD	350x130x 415	9.6kg
BUS PROGRAMMABLE MODELS (Manual and Remote Control)												
Model No	Interfaces	Regulation	O/Ps	Main Output(s)	Aux. Output	Power	R.Sense	Fan	Local Cntrl	Meters	Size mm	Weight
EL302P	RS-232	Linear	Single	0 - 30V / 0 - 2A		60W	No	No	Digital	4 digit LED	140x160x195	4.4kg
EL302P-USB	USB	Linear	Single	0 - 30V / 0 - 2A		60W	No	No	Digital	4 digit LED	140x160x195	4.4kg
EX355P	RS-232	Mixed Mode	Single	0 - 35V / 0 - 5A		175W	No	No	Digital	4 digit LED	140x160x195	3.0kg
EX355P-USB	USB	Mixed Mode	Single	0 - 35V / 0 - 5A		175W	No	No	Digital	4 digit LED	140x160x195	3.0kg
PL068-P*	RS-232/USB/LAN	Linear	Single	0 - 6V / 0 - 8A		48W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.7kg
PL155-P*	RS-232/USB/LAN	Linear	Single	0 - 15V / 0 - 5A		75W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.7kg
PL303-P*	RS-232/USB/LAN	Linear	Single	0 - 30V / 0 - 3A		90W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.7kg
PL601-P*	RS-232/USB/LAN	Linear	Single	0 - 60V / 0 - 1.5A		90W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.7kg
PL303QMD-P*	RS-232/USB/LAN	Linear	Dual	0 - 30V / 0 - 3A		180W	Yes	LN	Smart Analog	4 digit LED	210x130x295	9.2kg
PL303QMT-P*	RS-232/USB/LAN	Linear	Triple	0 - 30V / 0 - 3A	0V - 6V/0A-8A	228W	Yes	LN	Smart Analog	4 digit LED	315x130x295	13.5kg
PLH120-P*	RS-232/USB/LAN	Linear	Single	0 - 120V / 0 - 0.75A		90W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
PLH250-P*	RS-232/USB/LAN	Linear	Single	0 - 250V / 0 - 0.375A		94W	Yes	LN	Smart Analog	4 digit LED	105x130x295	4.5kg
QL355P	RS232/USB/LAN/GPIB	Linear	Single	0 - 35V / 0 - 5A #		105W	Yes	Yes	Digital	5 digit LED	141x171x300	5.0kg
QL564P	RS232/USB/LAN/GPIB	Linear	Single	0 - 56V / 0 - 4A #		112W	Yes	Yes	Digital	5 digit LED	141x171x300	5.0kg
QL355TP	RS232/USB/LAN/GPIB	Linear	Triple	0 - 35V / 0 - 5A #	1V - 6V @ 3A	228W	Yes	Yes	Digital	5 digit LED	282x171x300	10.0kg
QL564TP	RS232/USB/LAN/GPIB	Linear	Triple	0 - 56V / 0 - 4A #	1V - 6V @ 3A	242W	Yes	Yes	Digital	5 digit LED	282x171x300	10.0kg
TSX1820P	RS-232 & GPIB	Mixed Mode	Single	0 - 18V / 0 - 20A		360W	Yes	No	Digital	4 digit LED	210x130x350	5.5kg
TSX3510P	RS-232 & GPIB	Mixed Mode	Single	0 - 35V / 0 - 10A		350W	Yes	No	Digital	4 digit LED	210x130x350	5.5kg
MX100TP	RS232/USB/LAN/GPIB	Mixed Mode	Triple	0 - 35V / 0 - 6A #		315W	Yes	Yes	Digital	Graphic LCD	210x130x380	4.6kg
MX180TP	RS232/USB/LAN/GPIB	Mixed Mode	Triple	0 - 60V / 0 - 6A #	0 - 12V/0 - 3A#	378W	Yes	Yes	Digital	Graphic LCD	210x130x380	5.0kg
MX100QP	RS232/USB/LAN/GPIB	Mixed Mode	Quad	0 - 35V / 0 - 6A #		420W	Yes	Yes	Digital	Graphic LCD	315x130x380	6.9kg
CPX200DP	RS232/USB/LAN/GPIB	PowerFlex	Dual	0 - 60V / 0 - 10A †		360W	Yes	Yes	Smart Analog	4 digit LED	210x130x350	6.0kg
CPX400SA	Isolated Analog	PowerFlex	Single	0 - 60V / 0 - 20A †		420W	Yes	Yes	Smart Analog	4 digit LED	107x130x390	4.3kg
CPX400SP	RS232/USB/LAN/GPIB	PowerFlex	Single	0 - 60V / 0 - 20A †		420W	Yes	Yes	Smart Analog	4 digit LED	107x130x390	4.3kg
CPX400DP	RS232/USB/LAN/GPIB	PowerFlex	Dual	0 - 60V / 0 - 20A †		840W	Yes	Yes	Smart Analog	4 digit LED	210x130x350	7.6kg
QPX750SP	RS232/USB/LAN/GPIB	PowerFlex+	Single	0 - 80V / 0 - 50A †		750W	Yes	Yes	Digital	Graphic LCD	210x130x 415	7.7kg
QPX1200SP	RS232/USB/LAN/GPIB	PowerFlex	Single	0 - 60V / 0 - 50A †		1200W	Yes	Yes	Digital	Graphic LCD	350x130x 415	9.2kg
QPX600DP	RS232/USB/LAN/GPIB	PowerFlex+	Dual	0 - 80V / 0 - 50A †		1200W	Yes	Yes	Digital	Graphic LCD	350x130x 415	9.6kg

* Bus programmable models marked with an asterisk are optionally available with a **GPIB** interface in addition to RS232, USB and LAN.
\# Indicates a multi-range model - maximum voltage and current are not available simultaneously.
† Indicates a PowerFlex model - maximum voltage and current are not available simultaneously.

for full power supply technical information: **www.aimtti.com/psu**

12. Waveform Generators

Measurably better value

Product Range

Function, Arbitrary & Pulse generators

Aim-TTi is a world leader in waveform generation with products ranging from basic analog function generators through to advanced multi-channel arbitrary generators.

Waveform quality

The success of Aim-TTi function generators has always been based around waveform quality.

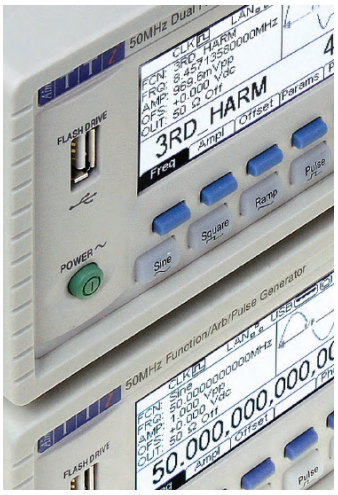
Aim-TTi generators offer waveform quality not just at high output levels, but at low levels as well - a much more difficult task.

Careful analog design yields excellent waveform purity at all frequencies and levels, unlike many competitive products.

Digital architectures

Aim-TTi has been at the forefront of digital generator design with products that combine both DDS (direct digital synthesis) and variable-clock architectures in order to offer optimum performance for specific applications.

Most recently an innovative architecture for pulse generation has been developed which eliminates the jitter created by other digital techniques.



TGP110 Pulse Generator

- 0.1Hz to 10MHz pulse generator
- Very wide pulse control range

The TGP110 is an analog pulse generator that offers a very wide control range.

Its dedicated architecture enables it to generate fast rise time flat top pulses over a very large duty cycle range.

The unit offers selectable delay between trigger and pulse, or between two pulses in double pulse mode. A sync output signal provides a pulse in synchronism with the trigger.

A low impedance output of fully variable level is provided together with a TTL/CMOS output and a level inversion switch.

- 0.1Hz to 10MHz frequency range
- Independent control of pulse frequency, width and delay
- 50ns minimum pulse width
- Squarewave, double pulse and delayed pulse modes
- Free-run, gated and triggered modes
- 50 Ohm output: 0.1V to 10V amplitude
- TTL/CMOS and Sync outputs

TGP3100 Series

- True pulse generators with universal waveform capabilities
- 50MHz or 25MHz, 1 or 2 channels
- Very high pulse resolution and very low jitter
- True asynchronous operation
- USB, GPIB & LAN (LXI) interfaces

True Pulse Generators with Universal Waveform capabilities

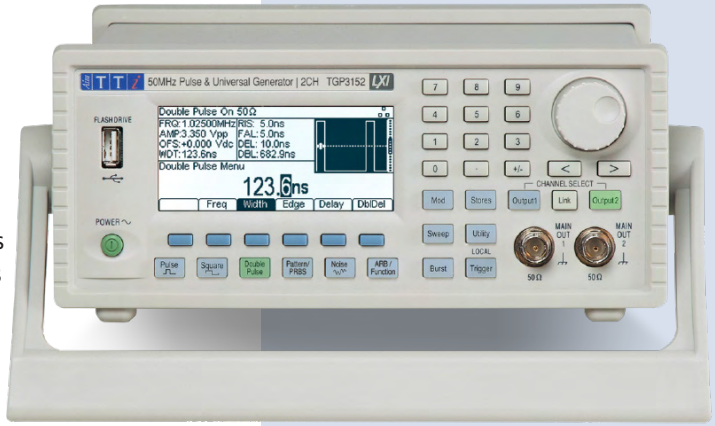
The TGP3100 Series are true pulse generators using all digital techniques. They can replicate the capabilities of traditional pulse generators whilst adding many additional facilities such as pulse modulations.

Unlike DDS based function generators the TGP3100 Series can generate pulses up to 50MHz with very low jitter and high resolution of width and delay (100ps). They can also operate in an asynchronously triggered mode with low jitter.

A high drive capability output stage enables up to 20 volts pk-pk to be driven into a 50 Ohm load.

As well as operating as pulse generators, the instruments can act as high performance noise generators and as function/arbitrary generators - making them truly universal waveform generators.

Full product details are available on the website.



- Pulse waveforms from 1mHz to 50MHz, minimum rise time 5ns
- Very low jitter synchronous and asynchronous operation
- Pulse, double pulse, pulse pattern and PRBS waveforms
- Pulse period, width and delay resolutions of 100ps or 11 digits
- Independently variable rise and fall times from 5ns to 800 seconds
- True low jitter asynchronous operation, externally triggered pulses or pulse reconstruction
- High drive capability output can provide 20V pk-pk into 50Ω
- Wide range of pulse modulations including AM, FM, PM, FSK, BPSK, SUM, PWM & PDM using internal or external modulation sources.
- Triggered (burst count) or gated operation using internal or external trigger sources
- Full Noise generator to 25MHz with selectable crest factor and user defined distribution
- Full Arbitrary/Function generator with 16 waveform types - sine waves up to 50MHz
- Arbitrary waveforms at 800MS/s sampling rate and 16-bit vertical resolution
- Internal channel coupling, tracking and modulations (2 channel models)
- Extensive internal/external modulation of all waveform types
- Linear and logarithmic sweeps of all waveform types
- Front panel mounted USB Flash drive interface
- GPIB, USB and LXI compliant LAN interfaces

GPIB IEEE-488 · USB UNIVERSAL SERIAL BUS · LAN ETHERNET LXI · RS-232 RS-423

Model	Max Freq.	Channels
TGP3121	25MHz	One
TGP3151	50MHz	One
TGP3122	25MHz	Two
TGP3152	50MHz	Two

Pulse and Universal Generators

Although designed primarily as high performance pulse generators, the TGP3100 series can operate as function, arbitrary and noise generators making them a universal waveform generation tool.

Noise Generator

As a noise generator, the TGP3100 series offers fully variable noise bandwidth from 1mHz up to 25MHz. Noise amplitude distribution can be Gaussian (with variable crest factor) or fully user defined.

Function Generator

The TGP3100 Series can operate as a high performance function generator at up to 50MHz.

Sixteen standard waveforms include sine, square, triangle, ramps, sinc, cardiac, plus logarithmic, exponential and gaussian shapes.

Arbitrary Generator

With an 800MS/s sample clock, the TGP3100 series can perform as high speed arbitrary generators with 16-bit vertical resolution and up to 4096 waveform points.

14. Function Generators - waveform generation

Measurably better value

Function Generators

Function generators fall into two basic categories, analog and digital.

Analog generators use a voltage controlled oscillator to generate a triangular waveform of variable frequency. Sinusoids and square waves are generated from this.

Digital generators use a digital to analog converter (DAC) to generate a wave shape from values stored in memory. Normally such generators only offer sine and square waves up to the maximum generator frequency. Triangle waves and other waveforms are limited to a much lower frequency.

See page 16 onwards for arbitrary/function and true ARB generators.

The function generator is a particularly versatile instrument. It can generate a variety of precision wave shapes over a range of frequencies from mHz to MHz with a wide range of controlled amplitudes from a low-impedance source, and maintain constant amplitude as the frequency is varied.
Although digital function generators may offer more features, analog function generators have advantages that can make them more appropriate for certain applications.

Analog and Digital Function Generators - comparison table

	TG315	TG330	TG1006	TG1000/2000
Frequency Range (sine)	0.03Hz to 3MHz	0.03Hz to 3MHz	0.001Hz to 10MHz	0.001Hz to 10/20MHz
Frequency Resolution (sine)	up to 4 digits	up to 4 digits	6 digits or 1mHz	6 digits or 1mHz
Waveform Generation System	Analog	Analog	DDS	DDS
Frequency Accuracy	±1 digit 0.2Hz to 3MHz	±1 digit 0.2Hz to 3MHz	Better than ±10ppm	Better than ±10ppm
Waveform Functions	Sine, Square, Triangle	Sine, Square, Triangle	Sine, Square, Triangle	Sine, Square, Triangle, +ve/-ve Pulse
Variable Symmetry Range	10% to 90%	10% to 90%	20% to 80% square	20% to 80% square/pulse
Frequency Sweep (Rate/Mode)	N/A	20ms to 20s, lin or log	50ms to 999s, lin or log	50ms to 999s, lin or log
Internal/External Modulations	No	AM	FSK, AM	Tone, FSK, External AM
Internal Trigger Generator	No	No	0.001Hz to 10kHz	0.001Hz to 5kHz
Gated Operation	No	No	No	Yes
Amplitude Range (pk-pk EMF)	2mV - 20V from 50/600Ω	2mV - 20V from 50/600Ω	2mV - 20V from 50/600Ω	5mV - 20V from 50/600Ω
DC Offset Range	±10V EMF	±10V EMF	±10V EMF.	±10V EMF.
Sinewave Purity	<0.5% to 30kHz <-25dBc to 3MHz	<0.5% to 30kHz <-25dBc to 3MHz	Typically 0.1% to 20kHz <-30dBc at 10MHz	Typically 0.1% to 20kHz <-40dBc at 20MHz
Output Flatness	±0.2dB to 200kHz; ±2dB to 3MHz	±0.2dB to 200kHz; ±2dB to 3MHz	±0.5dB to 500kHz; ±2dB to 10MHz	±0.2dB to 500kHz; ±2dB to 20MHz
Auxiliary Output	Sync	Sync	Sync	Multi-function output for Waveform Sync, Trigger Out, Sweep Sync
Ext. Frequency Counter	No	5Hz to 120MHz	3Hz to 120MHz	No
Display	4 + 3 digit LCD	4 + 3 digit LCD	4 + 3 digit LCD	Dot-matrix backlit LCD
Digital Interfaces	No	No	No	RS232/USB (TG2000 only)
Power: 230V or 115V AC nominal 50/60Hz, Size & weight: 260 x 88 x 235 mm (WxHxD) 2.0 kg (4.4lb) .				

TG300 Series

- 3MHz function generator range
- Display of frequency and level
- 120MHz frequency counter (TG330)
- Sweep and AM modulation (TG330)

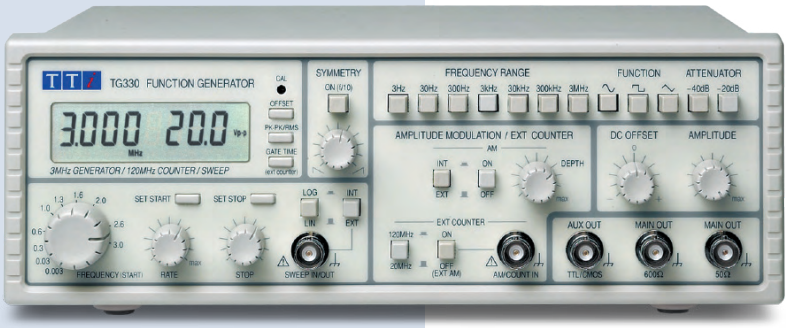
Further details are provided in the comparison table above Full details are available on the website.

The TG300 series are analog function generators with a digital display which provides simultaneous readout of frequency and level - amplitude pk-pk, amplitude rms or dc offset.

The TG330 includes an external counter with 7 digit resolution (using the full width of the display) at up to 120MHz.

The TG330 also includes a sweep generator and internal/external amplitude modulation.

- 0.03Hz to 3MHz frequency range
- Simultaneous display of frequency/amplitude
- High waveform quality at all frequencies & levels
- 2mV to 20V pk-pk from 50Ω or 600Ω
- Variable symmetry with constant frequency
- Auxiliary TTL/CMOS output
- 1000:1 freq. change by vernier or sweep voltage
- External seven digit 120MHz counter (TG330 only)
- Precision internal lin/log sweep (TG330 only)
- Internal/external AM up to 100% (TG330 only)



for more complete information:
www.aimtti.com/generator

TG1006

- 10MHz DDS function generator
- 120MHz frequency counter
- Sweep, AM and FSK

The TG1006 is a low cost function generator using DDS frequency generation and covering the range 1mHz to 10MHz. Up to ten frequencies can be stored in a list.

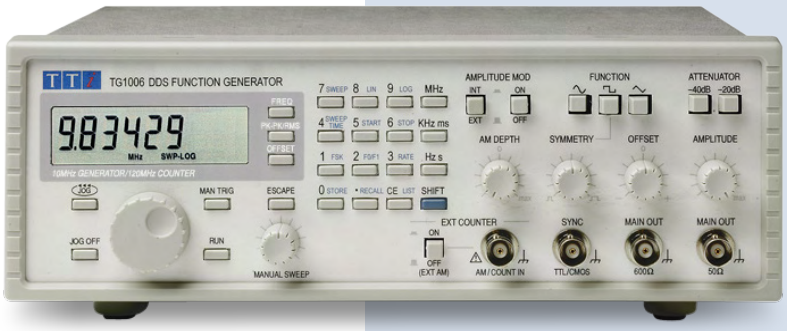
Despite its price, it includes a wide range of features including wide range phase continuous sweep, AM and FSK.

A seven digit frequency counter covering 3Hz to 120MHz is also incorporated.

A unique feature is manual sweep which enables any frequency range to be spanned by a quasi-analog control.

- 0.001Hz to 10MHz frequency range
- 6 digits or 1mHz resolution
- Simultaneous display of frequency and voltage amplitude or offset
- 1ppm stability and 10ppm one year accuracy
- Low distortion, high spectral purity sine waves
- Internal phase-continuous sweep, lin or log
- Unique manual sweep gives quasi-analog control
- AM and FSK modes, frequency list (10 steps)
- 2mV to 20V pk-pk from 50 or 600 Ohms
- Built-in seven digit 120MHz frequency counter

Further details are provided in the comparison table on p.14. Full details are available on the website.



TG1000 & TG2000

- 10/20MHz DDS function generator
- High stability and resolution
- USB & RS232 interfaces (TG2000)

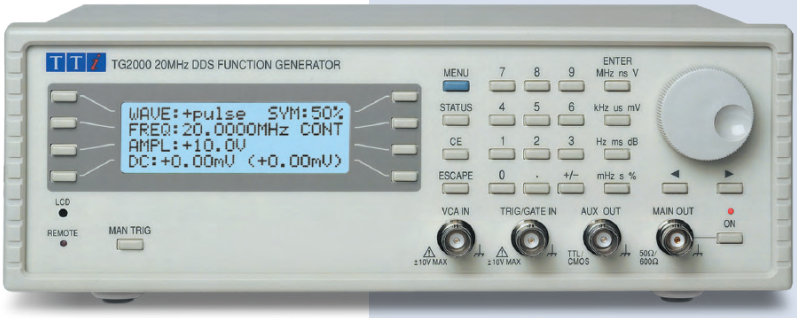
The TG2000 is a high performance DDS based function generator covering the range 1mHz to 20MHz.

It is ideal for engineers who require a high stability and high resolution function generator, but who do not require arbitrary waveforms.

The TG1000 has a lower maximum frequency of 10MHz and omits the RS232 and USB interfaces of the TG2000.

- 0.001Hz to 10MHz or 20MHz frequency range
- 6 digits or 1mHz resolution
- 1ppm stability and 10ppm one year accuracy
- Low distortion, high spectral purity sine waves
- Internal phase-continuous sweep, lin or log
- AM, FSK, gated and tone switching modes
- 5mV to 20V pk-pk from 50Ω or 600Ω
- Storage for multiple instrument set-ups
- USB and RS232 Interfaces (TG2000 only)

Further details are provided in the comparison table on p.14. Full details are available on the website.



Unlike some other lower cost DDS based generators, the TG1000 and TG2000 provide digital control of all parameters and functions.

This allows for the complete instrument status to be stored in the set-up memories.

On the TG2000, it also enables complete control via the digital bus interfaces.

USB UNIVERSAL SERIAL BUS

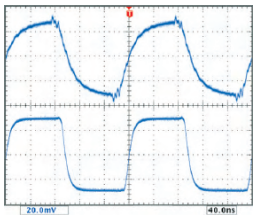
RS-232 RS-423

Waveform Quality

Ultimately what matters in a function generator is the quality of the output signal. The TG1000 and TG2000 maintains the Aim-TTi reputation for high signal quality at all frequencies and all levels.

The waveform capture opposite shows just how much difference that can make. The scope display opposite was captured from two 5MHz square wave signals each at 60mV pk-pk level into 50 Ω.

The upper waveform is from a widely available competitive DDS generator. The lower waveform is from a TG2000.



16. Function/Arbitrary Generators - waveform generation

Measurably better value

TGF4000 Series

- 40MHz / 80MHz / 160MHz/ 240MHz function generator
- High speed arbitrary waveforms
- Pulse, noise and harmonics generator modes
- Built-in frequency counter
- USB, LAN and optional GPIB

Model Comparison	TGF4042	TGF4082	TGF4162	TGF4242
Max frequency (sine)	40MHz	80MHz	160MHz	240MHz
Max frequency (square/ pulse)	25MHz		100MHz	
Vertical bits / Sample rate	14 bits / 400Msa/s		16 bits / 800Msa/s	
Noise bandwidth	50MHz		100MHz	

Full details are available on the website.

The TGF4000 series is the latest arbitrary function generator series from Aim-TTi.

With two channels and very high frequency capability, it offers exceptional value for money.

- 0.001mHz to 240MHz (TGF4242), 160MHz (TGF4162) , 80MHz (TGF4082) or 40MHz (TGF4042) sine frequency range
- High sine wave purity with low phase noise and jitter, audio band THD down to 0.05%
- Square waves up to 100MHz with variable duty cycle, edge speeds down to 3ns
- Resolution of up to 15 digits or 1µHz, high stability TCXO timebase
- Two identical channels - independent or linked with coupled and tracking modes
- Inter-channel phase offset of -360° to +360° with 0.001° resolution
- 1mHz to up to 100MHz Pulse generation with 100ps width resolution, <30ps jitter, and independently variable rise/fall times
- Wideband noise generator with up to 100MHz noise bandwidth
- PRBS pseudo-random bit sequence generation with 8 sequence lengths *
- Harmonics generation using up to 16 harmonics *
- Wide range of standard and arbitrary waveforms built-in
- Arbitrary waveforms of 14-bits / 400MSa/s (TGF4042 & TGF4082) or 16-bits / 800MSa/s (TGF4162 & TGF4242)
- Waveform Manager Plus for Windows, editing software included
- Front USB host socket for waveform storage and file transfers using Flash drives
- Comprehensive internal/external digital and analog modulation set including Sum* modulation
- Modulation frequencies up to 10MHz internal and 5MHz external
- Gate and Burst modes with internal and external triggering
- Bi-directional linear and logarithmic sweep using internal or external triggering
- 125MHz frequency counter/timer with five measurement modes
- Compact half-rack 2U casing with protective buffers and handle
- Programmable via USB and LAN (LXI) interfaces; GPIB optional

LAN ETHERNET LXI USB UNIVERSAL SERIAL BUS GPIB IEEE-488 OPTIONAL

TG5011A & TG2511A

- 50MHz/25MHz function generator
- High speed arbitrary waveforms
- Pulse generator mode with variable rise/fall times
- USB, LAN and optional GPIB

The TG5011A and TG2511A are high performance DDS arbitrary/function generators offering high quality sine and square waveforms at up to 50MHz.

The full graphics display is capable of showing representative waveform information simultaneously with a comprehensive status readout. The casing is highly compact being half rack width by 2U height.

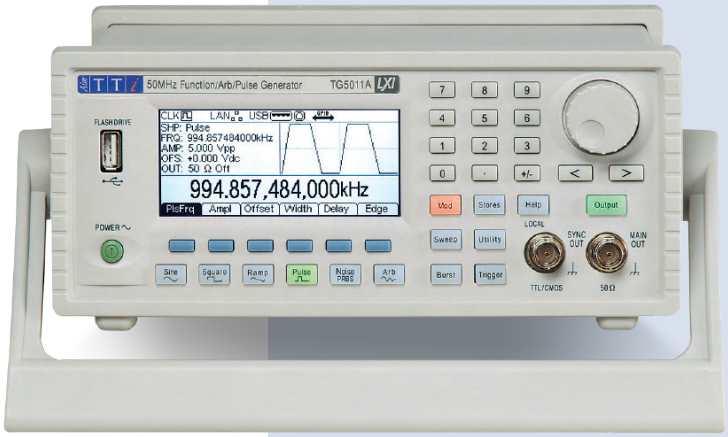
The wide range of standard waveforms is supplemented by full arbitrary waveform capability using a 125MS/s sampling rate and up to 128K word record length. Waveforms can be downloaded via the digital interfaces or loaded and saved via the front mounted USB flash drive interface.

Pulse waveforms are generated by a dedicated pulse generator system with independent setting of period, width and delay. Rise and fall times are independently variable over a wide range.

A comprehensive digital modulation system is incorporated covering AM, FM, PM, PWM, FSK and Noise. Modulations can be internal or external at frequencies from DC up to 20kHz external or 1MHz internal.

A comprehensive set of interfaces includes USB and LAN (conforming with LXI) as standard plus GPIB as an option.

Full details are available on the website.



- 1µHz to 50MHz or 25MHz range; 14 digits or 1µHz resolution.
- Standard waveforms include sine, square, ramp, pulse, PBRS, sin(x)/x, noise, exponential and logarithmic rise.
- True pulse generator with variable delay and variable rise/fall.
- Arbitrary waveforms of up to 128K points at up to 125MS/s.
- Waveform storage using USB flash drives
- Large graphic LCD with simultaneous text and waveform display.
- Comprehensive internal and external digital modulations including AM, FM, PM, PWM, SUM, FSK and BPSK.
- 20mV to 20V pk-pk output from 50Ω plus multi function aux. out.
- Storage for multiple instrument set-ups in non-volatile memory.
- Waveform Manager Plus for Windows software included.
- Programmable via USB and LAN (LXI) interfaces; GPIB optional.

USB UNIVERSAL SERIAL BUS — GPIB IEEE-488 OPTIONAL — LAN ETHERNET LXI

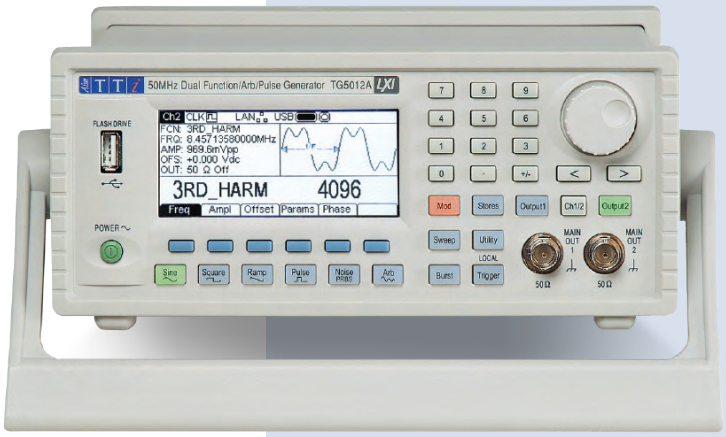
TG5012A & TG2512A

- Dual channel function generator
- 50MHz or 25MHz max. frequency
- Independent, coupled or tracking channel operation
- USB, LAN and optional GPIB

The TG5012A and TG2512A are two channel versions of the TG5011A/2511A, (detailed above) and have identical features augmented by multi-channel capabilities including coupling for frequency and/or level, full tracking, and defined phase offset.

The channels can also be used as completely independent generators and they represent excellent value for money when compared with buying two generators.

Full details are available on the website.



- Two channels - independent or linked with coupled/tracking modes.
- Selectable coupling of frequency (equal or offset), amplitude/dc offset.
- Inter-channel phase offset of -360° to +360° with 0.1° resolution.
- Individual channel features as TG5011A/TG2511A.

LAN ETHERNET LXI — USB UNIVERSAL SERIAL BUS — GPIB IEEE-488 OPTIONAL

18. Arbitrary Generators - waveform generation

Measurably better value

ARB generator types

Arbitrary generator describes a class of digital generator potentially capable of reproducing any waveform shape. There are two distinctly different ways in which arbitrary waveforms can be produced - DDS and Variable Clock *.

Because each manufacturer may choose a different description for their product, it is not easy to know which underlying technology is being used.

There are three broad classes of arbitrary waveform generator:

1. Generators that use DDS (direct digital synthesis) for the production of both standard waveforms (function generator mode) and arbitrary waveforms.

These are most commonly described as either Function/Arbitrary Generators or Arbitrary/Function Generators (AFG).

2. Generators that use a variable clock architecture for the production of both standard waveforms and arbitrary waveforms. Within these generators a standard waveform is simply a specific instance of an arbitrary waveform.

These are most commonly described as Arbitrary Waveform Generators (AWG)

3. Generators that use DDS for the production of standard waveforms (function generator mode) and variable clock for generating arbitrary waveforms.

These may be described as Universal Arbitrary Waveform Generators or simply Arbitrary Waveform Generators (AWG) as in category 2.

* See the Aim-TTi website for more information about arbitrary generator architectures.

TGA overview

Aim-TTi generators with the TGA prefix are universal arbitrary waveform generators offering a choice of one, two or four channels.

Two series are available; the TGA1240 which has a maximum clock speed of 40MHz, and the TGA12100 which has a maximum clock speed of 100MHz, greater waveform memory length, and a number of additional features.

A key feature of both series is the universal architecture which combines the advantages of true variable clock arbitrary waveform generation with the benefits of DDS (direct digital synthesis) when acting as a function generator.

The two and four channel models offer exceptional flexibility with channels that can be fully independent or linked. In independent mode each channel is a completely separate generator offering not just differing frequency, amplitude and waveform but different operational modes.

For example one channels could be used as a function generator while another is used as an arbitrary generator and a third as a pulse generator.

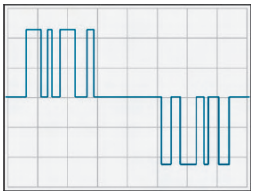
The channels can be set to provide inter-channel triggering, modulation or summing. Alternatively they can be linked to offer multi-channel phase controlled signals.

Universal Arbitrary Waveform Generators - comparison table (see also TG series - page 14)		
	TGA1240 series	**TGA12100 series**
Number of Channels	1, 2 or 4	1, 2 or 4
Arbitrary Waveforms		
Waveform Generation System	Variable Clock, 12 bit vertical resolution	
Clock Frequency Range	0.1Hz to 40MHz	0.1Hz to 100MHz
External ARB Clock	No	DC to 50MHz
Waveform Length	4 to 65,536 points	8 to 1,048,576 points
Internal Waveform Storage	Up to 100 waveforms	Up to 500 waveforms
Waveform Sequencing	Up to 16 waveforms	Up to 1024 waveforms
Arbitrary Waveform Editing	Internal or via Waveform Manager Plus software (supplied)	
Standard Waveforms (function generator mode)		
Waveform Generation System	DDS (Direct Digital Synthesis)	
Max. Frequency (sine/square)	16MHz/16MHz	40MHz/50MHz
Frequency Resolution (sine)	7 digits or 0.1mHz	10 digits or 0.1mHz
Minimum Frequency	0.0001Hz	0.0001Hz
Frequency Accuracy	Better than ±10ppm	
Waveform Functions	Sine, Square, Triangle, +ve/-ve Pulse, +ve/-ve Ramp, Pulse train, Cosine, Haversine, Havercosine, Noise (not 1240 series).	
Sinewave Purity	<0.1% to 100kHz <-35dBc at 10MHz	<0.15% to 100kHz, typically <-35dBc at 40MHz
Modulations		
Frequency Sweep (Range)	1mHz to 16MHz	1mHz to 40MHz
Frequency Sweep (Rate/Mode)	30ms to 999s, lin or log	1ms to 999s, lin or log
External AM/External Sum	Yes/Yes	Yes/Yes
Internal Trigger Generator	0.005 Hz to 100kHz	
Triggered Burst	1 to 1048575 cycles	
Variable Start-Stop Phase	0.1 degree resolution	
Other Modes	Gated, Tone Switching, FSK	
Inter-channel Modes (2 and 4 channel models)		
Channel Interactions	Inter-channel Modulation, Triggering, or Analog Summing for any number of channels	
Phase Locking	Any number of channels can be phase locked to 0.1 degree resolution plus 10ns uncertainty	
Output Characteristics		
Amplitude Range (pk-pk EMF)	5mV - 20V from 50Ω (display corrected for Hi-Z, 50Ω or 600Ω termination)	
DC Offset Range	±10V EMF	
Output Flatness	±0.2dB to 200kHz; ±1dB to 10MHz; ±2.5dB to 16MHz	±0.2dB to 1MHz; ±0.4dB to 40MHz
Other Features		
Auxiliary Output(s)	Multi-function output for Waveform Sync, Trigger Out, Sweep Sync., Marker	
Reference Clock In/Out	Input for external fixed reference clock or output of internal reference clock. Can be used to phase lock two or more generators	
Instrument Set-up Storage	9 stores	Up to 500 stores
Display	4 line backlit dot-matrix LCD	
Digital Interfaces	RS232/GPIB	RS232/USB/GPIB
Power: 230V or 115V AC nominal 50/60Hz, adjustable internally except for TGA12102/4 which are 100V to 230V, 50/60/400Hz. Size and weight: TGA1241 and TGA12101 are 3U half-rack: 212 x 130 x 335 mm (WxHxD). 4.1 kg (9 lb). TGA1242 and TGA1244 are 3U full (5/6) rack: 350 x 130 x 335 mm (WxHxD). 7.1 kg (15.6 lb) TGA12102 and TGA12104 are 3U full (5/6) rack: 350 x 130 x 335 mm (WxHxD). 6.0 kg (13.2 lb)		

Arbitrary, function and pulse

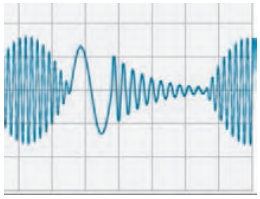
Each channel of a TGA series generator can be used as an arbitrary generator, function generator, or pulse pattern generator.

As a pulse generator a pattern of up to ten pulses can be defined with each pulse having its own amplitude, width and delay. The complete pattern can then be replayed at a user defined repetition rate.



Waveform sequencing

Sequencing enables complex waveforms to be constructed by sequencing simpler elements.

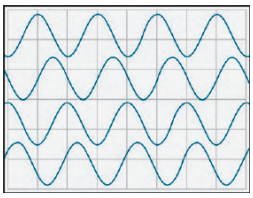


To understand the benefits of sequencing go to: www.aimtti.com/go/arb

Multi-channel phase locking

Multi-channel TGA series generators can be used to generate multi-phase signals

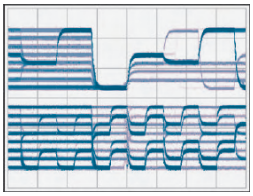
Any number of channels can be phase locked with offsets defined to a resolution of 0.1 degrees.



TGA12100 models can also be phase locked to an external clock and provide phase continuous frequency changes with a varying external signal.

Multi-channel modulation

Inter-channel modulation and summing allows the creation of complex modulation systems for simulation and testing.



TGA1240 Series

- 40MS/s universal arbitrary waveform generators
- One, two or four channels
- Variable clock ARB architecture
- DDS based function generator
- Independent or linked channels
- Pulse train generation
- RS-232 and GPIB interfaces

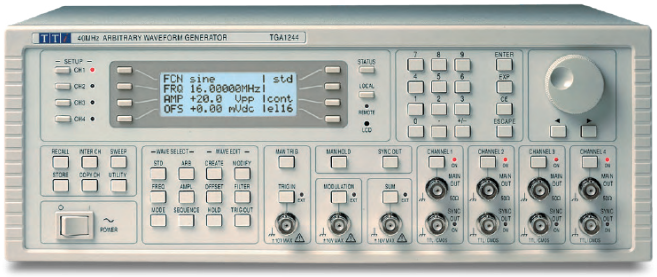
The TGA1240 series are universal arbitrary waveform generators that combine a high performance arbitrary waveform generator, pulse train generator and DDS function generator on each channel.

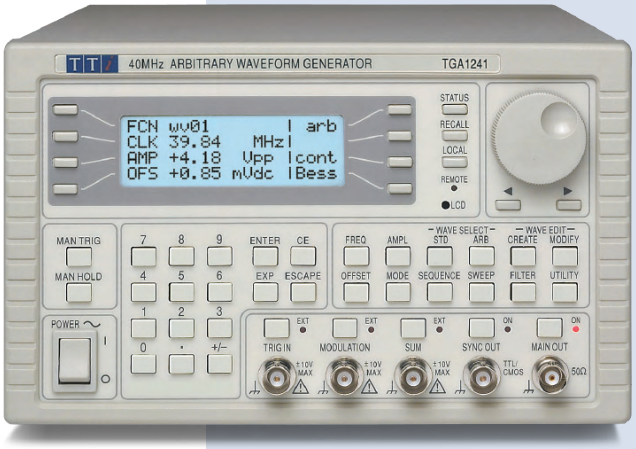
Variable clock architecture eliminates sampling jitter and enables complex waveforms to be created using waveform sequencing.

Multi-channel units can be operated as completely independent signal sources, phase locked sources, or interlinked sources using inter-channel triggering, modulation or summing.

- 1, 2 or 4 waveform channels, independent or linked.
- 40MS/s maximum sampling, (0.1Hz to 40MHz variable clock).
- 65,536 point waveform memory per channel.
- Non-volatile storage for up to 100 waveforms
- Complex waveform sequencing and looping capability.
- Inter-channel triggering, summing and phase control.
- 16MHz function generator capabilities using DDS.
- Multiple 'standard' waveforms including sine, square, triangle, haversine, ramp, pulse and sin(x)/x.
- Pulse train generation for up to 10 pulses.
- Wide range sweep, AM, tone switching, signal summing.
- Tone switching facilitates precision DTMF generation.
- Built-in trigger generator, gated & triggered burst modes.
- Fully interfaceable via RS-232 and GPIB (IEEE-488.2).

Further details are provided in the comparison table opposite. Full details are available on the website.





Model Range:

TGA1241 - single channel
TGA1242 - two channels
TGA1244 - four channels

RS-232 / RS-423 GPIB IEEE-488

TGA12100 Series

- 100MS/s universal arbitrary waveform generators
- One, two or four channels
- 1M word waveform memory
- External ARB clock input
- Storage on CF memory cards
- RS-232, GPIB and USB interfaces

Model Range:

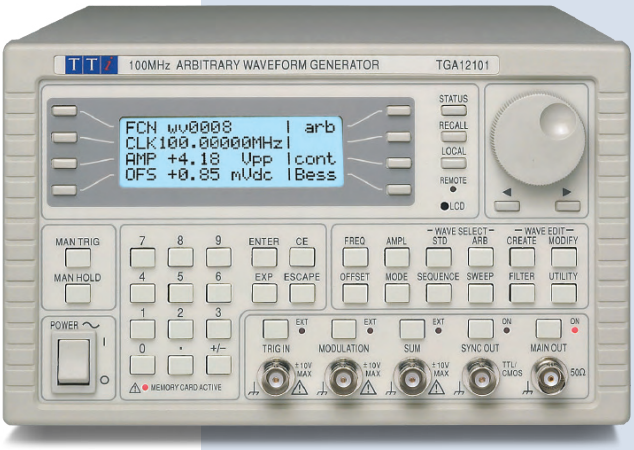
TGA12101 - single channel
TGA12102 - two channels
TGA12104 - four channels

RS-232 / RS-423 GPIB IEEE-488

The TGA12100 series offers all of the features of the TGA1240 series with extended sampling speed and memory depth.

It also includes a number of additional features such as an external ARB clock input that extends the capabilities further.

- Features as per the TGA1240 series with the following additions:
- 100MS/s maximum sampling, (0.1Hz to 100MHz variable clock).
- 1,048,576 point waveform memory per channel.
- Waveform storage using removable CompactFlash memory cards.
- 40MHz function generator capabilities using DDS.
- External ARB clock input for synchronism with external signals.
- "System clock" architecture for reduced inter-channel skew.
- Auxiliary sinewave output (3rd or 5th output) on TGA12102/4.
- RS-232 and GPIB (IEEE-488.2) and USB interaces.



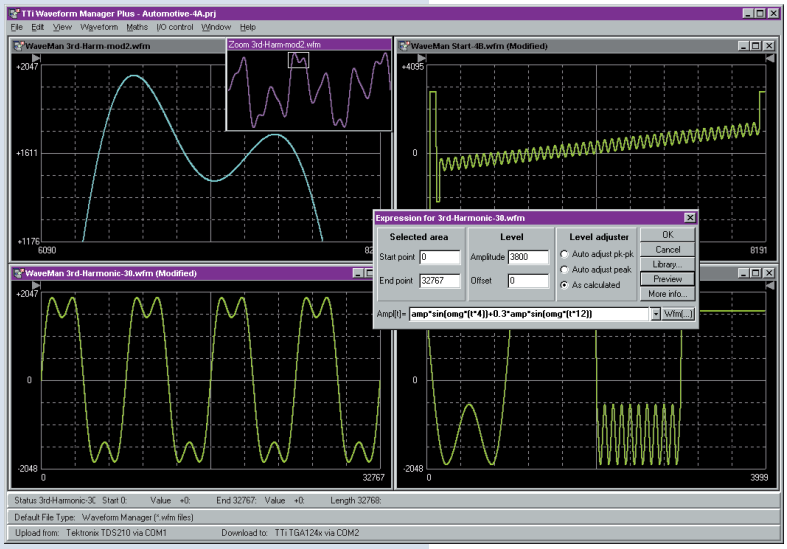
20. Waveform Software / Waveform Amplifier - waveform generation

Measurably better value

Waveform Manager Plus software

- Waveform creation, editing, import and management
- Full waveform building tools
- Pattern generation tools
- Interface via RS232, USB, LAN or GPIB

Waveform Manager Plus is supplied with all Aim-TTi generators that have arbitrary waveform capability.
Full details of the software capabilities are available on the website.



Aim-TTi arbitrary generators include a built-in waveform creation/editing facility that includes point-by-point value insertion, straight line interpolation between points and standard waveform insertion between points.

However, complex arbitrary waveforms will need to be generated using sophisticated software tools outside of the instrument and transferred using a digital interface.

Waveform Manager Plus is a Windows program that offers the most comprehensive range of waveform creation and editing tools available including a full mathematical expression generator and freehand drawing tools.

Waveform Manager Plus is supplied as standard with all TGA series generators, TG1010A, TGP3100 series, TG251xA and TG501xA generators and TGF series generators.

Waveform Manager Plus can also be used to import waveforms from other software programs or other hardware devices and to scale and crop these waveforms for compatibility with the target arbitrary generator.

- Full waveform building tools including standard waveforms, mathematical expressions, clipboard functions and freehand drawing.
- Compatible with Windows 2000 to Windows 10.
- Vertical resolutions up to 16 bits (65536 points).
- Horizontal resolutions to over one million points.
- Pattern generation tools for use with TGP31xx
- Waveform import/export via clipboard functions.
- Direct import from CSV files
- Download and upload via RS232, USB, GPIB, LAN.

WA301 Waveform Amplifier

- Up to 30 volts pk-pk output
- DC to 1 MHz bandwidth

The WA301 wide-band waveform amplifier is intended for extending the maximum output voltage swing of function and arbitrary generators for applications where an EMF of 20 volts pk-pk is insufficient.

- 30 V pk to pk output (15 V into terminating impedance)
- 50Ω and 600Ω outputs; full output protection
- Switchable 20dB output attenuator
- DC to 1MHz bandwidth
- High impedance input; 0dB to +20dB gain

Precision measurement instruments

Aim-TTi has been designing and manufacturing precision measurement instruments for over thirty years.

Expertise in precision analog design has enabled the company to offer high performance products with advanced features at attractive prices.

Aim-TTi offers instruments for the precision measurement of all of the fundamental electronic parameters including voltage, current, resistance, capacitance, inductance, power and frequency.

The I-prober positional current probe from Aim instruments enables the measurement of current in situations where it was previously not possible.

Product Range

Digital Multimeters

Digital Multimeters - Comparison Table		
	1604	**1908 & 1908P**
Display Type	LED	Dual LCD
Scale Length (Counts)	40,000	120,000
Dual Measurement	No	Yes
DC Voltage: Ranges	(5) 400mV to 1000V	(5) 100mV to 1000V
Best Resolution	10µV	1µV
Basic Accuracy	0.08%	0.02%
AC Voltage: Ranges	(5) 400mV to 750V	(5) 100mV to 750V
True RMS conversion	Yes	Yes
Frequency Response	45Hz to 20kHz	45Hz to 50kHz
DC/AC Current: Ranges	(3) 4mA to 10A	(4) 10mA to 10A
Best Resolution	100nA	100nA
Resistance: Ranges	(6) 400Ω - 40MΩ	(6) 100Ω - 10MΩ
Best Resolution	10mΩ	1mΩ
Frequency	Yes	Yes
Capacitance	No	Yes
Temperature	No	Yes
Smart Functions	3	12
Interfaces: RS-232	Yes *	Yes
USB	No	Yes
GPIB, RS232, LAN	No	Yes (1908P only)
Power Source	AC Line	AC Line or Rechargeable Battery

** RS232 interface on 1604 is only for use with the PC-1604 control and data logging software (included).*

Full technical details for the multimeters is available on the website.

PC and System connectivity

At some point most engineers are going to want to connect their DMM to their computer to provide automatic measurement control or importing of data into a computer programme. Unlike a hand-held DMM, Aim-TTi bench-top DMMs include isolated control interfaces.

For full system applications, the 1908P includes USB. RS232, GPIB and LAN interfaces.

Functions & features of real value

Hand-held DMMs may offer a few "smart" features but these are rarely well enough implemented to be of real use.

Aim-TTi bench-top DMMs offer features which are of real use and not just "gimmicks". Features such as dual Measurement & display, precision frequency measurement, dBm, data logging, power and VA, to mention just a few.

Bench-top DMMs versus hand-held

Low cost hand-held DMMs have replaced bench-top DMMs in many applications. Although the performance of these meters may be sufficient for some tasks, it is likely that most engineers will regularly encounter measurement problems that are beyond the capability of a hand-held unit.

An instrument intended for serious use

An Aim-TTi bench-top DMM is a substantial instrument. It stays where you put it even with heavy test leads connected. The tilt stand ensures that the large display is always readable. The functions buttons are large and the front panel is clearly marked.

Sensitivity, Resolution and Accuracy

Compare the performance of any Aim-TTi bench-top DMM with a good quality 4000 count hand-held DMM of 0.3% basic Vdc accuracy.

Longer scale length, greater sensitivity and higher accuracy ensure that measurement uncertainty is a full order of magnitude better.

Aim-TTi bench-top DMMs maintain good accuracy on all functions including ac voltage, resistance and current. For most hand-helds, the accuracies for functions other than dc voltage are dramatically poorer.

Wideband ac measurement and true RMS

Most hand-held DMMs have an ac frequency response specified to below 1kHz. All Aim-TTi bench-top DMMs provide excellent accuracy on all ranges throughout the audio band and beyond.

Most ac signals are not sinusoidal. However, most hand-held DMMs incorporate a mean sensing ac converter which only gives useful results on sinusoids. Those that do have a True RMS converter often have insufficient bandwidth to cope with complex waveshapes. All Aim-TTi bench-top DMMs combine True RMS ac with sufficient bandwidth to ensure accurate results.

22. Digital Multimeters - precision measurement

Measurably better value

1604 DMM

- 4¾ digit bench-top multimeter
- 0.08% basic Vds accuracy
- True RMS ac functions
- Isolated RS-232 interface

The 1604 is a high quality 40,000 count bench-top multimeter with a wide range of features.

It offers automatic or manual ranging, high resolution (10µV, 10mΩ) together with current measurement up to 10A.

Function	Ranges	Best Resolution	Best Accuracy
DC V	(5) 400mV - 1000V	10µV	0.08% ± 4 digits
AC V	(5) 400mV - 750V	100µV	0.5% ± 4 digits
Resistance	(6) 400Ω - 40MΩ	10mΩ	0.1% ± 4 digits
DC I	(3) 4mA - 10A	0.1µA	0.1% ± 4 digits
AC I	(3) 4mA - 10A	1µA	0.5% ± 4 digits
Frequency	(2) 4kHz to 40kHz	0.1Hz	0.01% ± 1 digit

Further measurement functions: Continuity. Diode Test.
Smart functions: Null (Relative), Hold, T-Hold, Min/Max.
Interface: opto-isolated bi-directional RS-232 interface. 9600 baud.
Power: 230V or 115V AC nominal 50/60Hz, adjustable internally.
Size & weight: 260 x 88 x 235 mm (WxHxD). 2.0 kg (4.4 lb)

- 40,000 counts, auto or manual ranging
- Accuracy and resolution, 0.08%, 10µV, 10mΩ
- Large and bright LED display (14mm/0.56")
- True rms ac functions, wide ac bandwidth
- Relative, T-Hold and Min-Max functions included
- Optional PC control and logging software

1908/1908P DMM

- Precision 5½ digit multimeter
- Dual display, dual measurement
- 0.02% basic Vdc accuracy
- AC line or battery operation
- USB, RS232, GPIB, LAN interfaces

The 1908 is a precision 5½ digit bench multimeter incorporating dual displays and dual measurement technology.

The dual displays can be used either to display one measurement in two units (e.g. mV and dB) or to measure two parameters simultaneously (e.g. dc-V and ac-V).

Function	Ranges	Best Resolution	Best Accuracy
DC V	(5) 100mV - 1000V	1µV	0.02% ± 3 digits
AC V	(5) 100mV - 750V	1µV	0.2% ± 100 digits
Resistance	(6) 100Ω - 10MΩ	1mΩ	0.03% ± 2 digits
DC I	(3) 10mA - 10A	0.1µA	0.05% ± 5 digits
AC I	(3) 10mA - 10A	0.1µA	0.35% ± 20 digits

Further measurement functions: Frequency, Capacitance, Temperature, Continuity, Diode Test. Smart functions: Null (Relative), Hold, T-Hold, Min/Max, dB, Ax+B, % deviation, VA.
Logger: 500 readings. Interfaces: USB (both models). GPIB, RS232, LAN (1908P).
Power: 230V or 115V AC 50/60Hz, or built-in NiMh rechargeable cells.
Size & weight: 250 x 87 x 269 mm (WxHxD). 3.2 kg (7 lb)

- Dual 120,000 count LCD, auto/manual ranging
- Accuracy and resolution: 0.02%, 10µV, 1mΩ
- Dual displays & 'dual measurement' technology
- Frequency, Capacitance and Temperature
- Wide range of computing functions e.g. Ax + B
- 500 reading data logger
- Mains and rechargeable battery operation
- 2U half-rack sizing with protective buffers
- USB interface on both models
- GPIB, RS232 & LXI compliant LAN interfaces (1908P)

ETHERNET LAN LXI USB UNIVERSAL SERIAL BUS RS-232 RS-423 GPIB IEEE-488

See previous page for DMM feature comparison table.

SMU4001 Series

- 4-quadrant Source & Measure
- ±210V, ±3.5A DC, ±10.5A pulse
- 1ppm resolution, 0.1µV & 1pA
- High speed arbitrary modes

Full details are available on the website.

Coming Soon

Advanced Source Measure Units

The SMU4001 provides class leading performance at a new and affordable price point for a four quadrant SMU.

Combining a highly responsive touch screen technology with an intuitive graphical user interface providing a clear and natural flow through the test and measurement process, allowing the user to focus on the task at hand.

The SMU4001 integrates a fast and agile, high power four quadrant PSU and advanced precise digital multimeter. Capable of precisely supplying positive and negative voltages, source or sink power, while simultaneously measuring both current and voltage, with it's non-invasive rangless operation giving optimal results.

With higher current and power combined with greater measurement speed than competitors, it is the ideal solution for educational environments as well as industrial development, identifying the SMU4001 as the all in one solution for simplifying test applications such as battery charging/discharging, I-V characterising, semiconductor testing and much more.

- Four quadrant source and measure unit
- 4.3" color touch screen user interface for numeric and graphical results including XY (eg. VI) plot and Yt (trend) plotsn
- ±210 volts and ±3.5A continuous or ±10.5A pulsed
- 45 watts continuous loading and up to 600 watts pulsed
- Rangeless operation over 0.1µV to 210V and 1pA to 10.5A
- Built-in unit linking for up to 5 channel operation
- High speed sweep stepping up to 100k steps at 50k steps/sec.
- Precision measurement of voltage, current, resistance and power.
- 6½ digit resolution meter with 0.012% basic accuracy
- 18 bit digitised measurements at up to 100k readings/sec.
- Internal memory for up to 2M measurements or 250k steps USB host interface for extended memory and data transfer
- Advanced script language enabling complex test scenarios
- Compact half rack 2U casing for bench or system use
- 8 general purpose I/O lines for triggering and synchronisation
- High speed GPIB, USB and LXI compliant LAN interfaces

USB UNIVERSAL SERIAL BUS

GPIB IEEE-488

LAN ETHERNET LXI

24. Component Measurement - precision measurement

Measurably better value

LCR400 LCR Bridge

- 0.1% basic accuracy
- Built-in component fixture
- Built-in limits comparator
- RS-232 interface

Note: Full technical details are available on the website.

- 0.1% basic measurement accuracy
- Three test frequencies of 100Hz, 1kHz and 10kHz
- Automatic component recognition
- Built-in 4 terminal component fixture
- Dual 5 digit high brightness displays
- Limits comparator with multiple pass and fail bins
- RS-232 interface for PC connectivity
- Optional SMD tweezers, Kelvin Clip leads, Windows logging software

Note: accessories not to same scale as LCR400

The LCR400 is a high performance LCR meter that offers an alternative to low-cost handheld units or expensive system units.

Dual displays, automatic component recognition and auto-ranging make it easy to use, while its built-in test fixture and limits comparator make it suitable for applications within the laboratory, production or inspection areas.

Range and resolution limits:

Resistance: 0.1mΩ to 990MΩ
Inductance: 0.001µH to 9900H
Capacitance: 0.001pF to 99000µF

BS407 Low Ohmmeter

- 0.1% basic accuracy
- 1µΩ to 20kΩ range
- Kelvin clip connection leads
- Rechargeable battery operation

Note: Full technical details are available on the website.

- High basic accuracy of 0.1%
- Wide measurement range of 1µΩ to 20kΩ
- Current reversal switch for detecting thermal emf
- Current diversion switch for easy zero setting
- Four terminal measurement using Kelvin clip leads
- Battery operation with built-in charger
- Switchable 20mV clamp for 'dry circuit' testing

The BS407 is fully optimised for the task of accurate measurement of low resistances with a best resolution of 1µΩ.

It uses a Direct Current technique to measure true resistance, rather than the resistive component of impedance which is shown by AC excited LCR bridges. The test current for each range has been chosen to minimise heating of the sample under test while being sufficient to minimise the effects of thermal emf and noise.

This gives much greater accuracy at low resistances than can be obtained from the very low test currents used by general purpose high resolution multimeters.

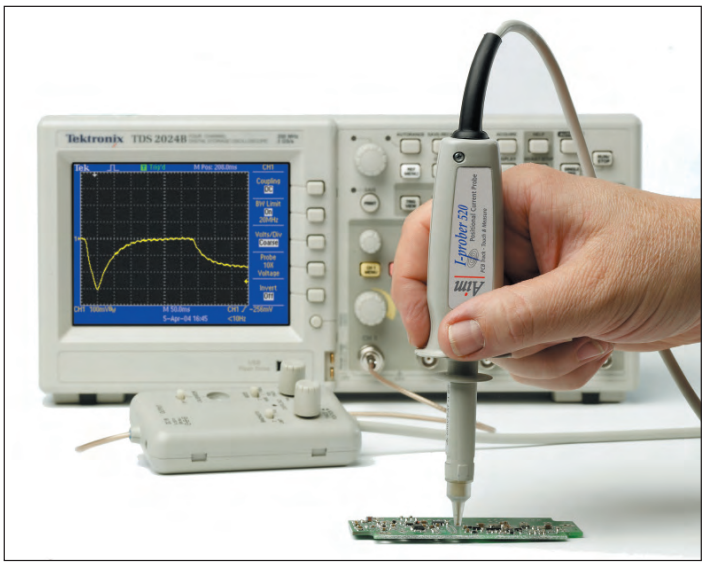
Aim instruments

I-prober 520

Positional Current Probe

PCB Track - Touch & Measure

Note: Full technical details are available on the website.



- Current measurement from non-contact probing of conductor
- Suitable for observation and measurement of current in PCB tracks, component leads and ground planes
- Wide dynamic range of 10mA to 20A peak to peak
- Wide bandwidth of DC to 5MHz
- Low noise equivalent to <6mA rms
- Safety rated to 300V Cat II (600V Cat I)
- Suitable for connection to any oscilloscope
- High accuracy general purpose H-field probe
- Convertible into standard 'closed magnetic circuit' current probe

The I-prober 520 is supplied with a clip-on toroid assembly which converts it into a closed magnetic circuit probe for measuring current in a wire.

The toroid is open until the probe is attached, allowing insertion of the wire without disconnection.

The wide bandwidth, dynamic range and low noise of the probe are retained.

I-prober 520

- Current measurement by simple non-contact probing of PCB track
- DC to 5MHz bandwidth
- 10mA to 20A dynamic range
- Low noise figure

The I-prober 520 positional current probe is unlike any other current measurement device available.

Calibrated measurement of current normally requires the current to be passed through a closed magnetic loop. Typically this is done using some form of split clamp device. Whereas this is suitable for individual wires, it is of no use for measuring current in PCB tracks.

The I-prober 520 is a compact hand-held probe which is used with an oscilloscope. By placing the insulated tip of the probe onto a PCB track, the current flowing in the track can be observed and measured.

for more complete information:
www.aimtti.com/go/iprober

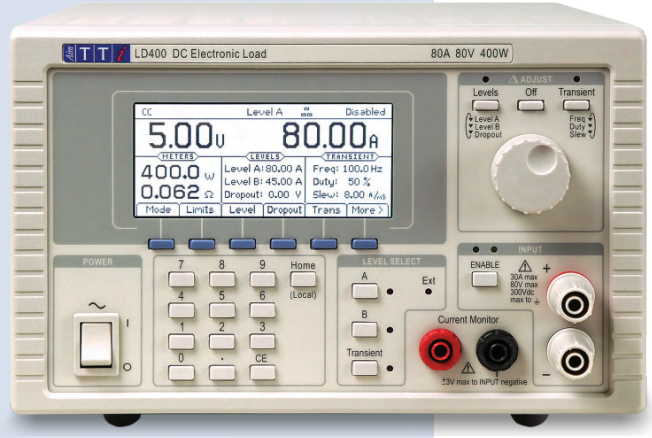
26. Power Source Testing - precision measurement

Measurably better value

LD400 & LD400P

- 400 watt dc electronic load
- Up to 80 volts or 80 amps
- CI, CR, CV, CP and CG modes
- Built-in transient generator
- USB, RS232, LAN and GPIB

Note: Full technical details are available on the website.

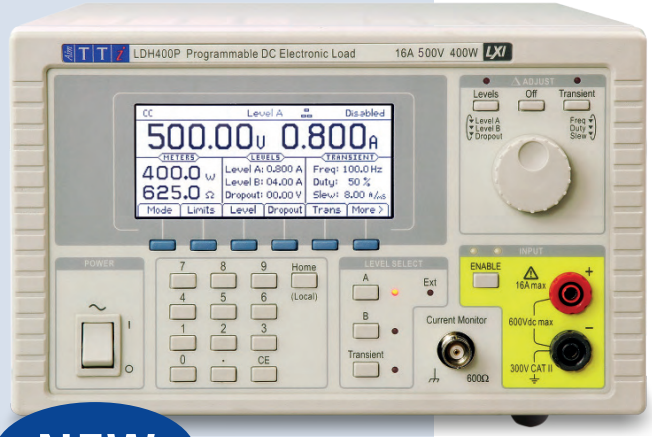


- Digitally controlled dc electronic load
- Constant current, constant resistance, constant conductance, constant voltage and constant power modes
- Wide voltage and current range, 0 to 80 volts and 0 to 80 amps.
- 400 watts continuous dissipation at 28°C (360W at 40°C)
- Up to 600 watts intermittent dissipation
- Low minimum operating voltage of <1V at 40A
- Built-in transient generator with variable slew
- Current monitor output for waveform viewing
- Variable drop-out voltage for battery testing
- USB, RS232, LAN (LXI) and GPIB interfaces (LD400P)

LDH400P

- 400 watt dc electronic load
- Up to 500 volts or 16 amps
- CI, CR, CP and CG modes
- Built-in transient generator
- USB, RS232, LAN and GPIB

Note: Full technical details are available on the website.



NEW

- Digitally controlled dc electronic load designed for testing of higher voltage sources such as PFCs
- Wide voltage and current range, 10 to 500 volts and 0 to 16 amps
- 400 watts continuous dissipation at 28°C (360W at 40°C)
- Constant current, constant resistance, constant conductance and constant power modes
- Built-in transient generator with variable slew
- Variable drop-out voltage for battery testing
- Current monitor output for waveform viewing
- Analog remote control of levels plus logic level switching
- USB, RS232, LAN (LXI) and GPIB interfaces

TF930 & TF960

- DC to 3GHz/6GHz frequency range
- Frequency, period, pulse width, ratio and event counter modes
- Rechargeable batteries
- USB interface included

- 0.001Hz to 3000MHz or 6000MHz frequency range
- TCXO timebase with better than 1ppm stability
- Frequency, period, pulse width and totalise modes
- Reciprocal counting measurements
- High impedance measurement up to 125 MHz
- Low pass filter, attenuator and trigger level control
- AC or DC coupling, 1M/50Ω selection, polarity invert
- Large 10 digit LCD display with annunciators
- Operation from built-in rechargeable batteries
- Low power consumption
- Remote control and readback via USB

The TF930 and TF960 are a high quality bench/portable universal frequency counters which offers period measurement, frequency ratio, pulse width and event counting.

They use an advanced reciprocal frequency counting technique to achieve high resolution at all frequencies. A dc coupled input enables VLF measurements to be made (down to 1mHz). The timebase uses a high quality TCXO crystal with a very low ageing rate. An external reference can also be used.

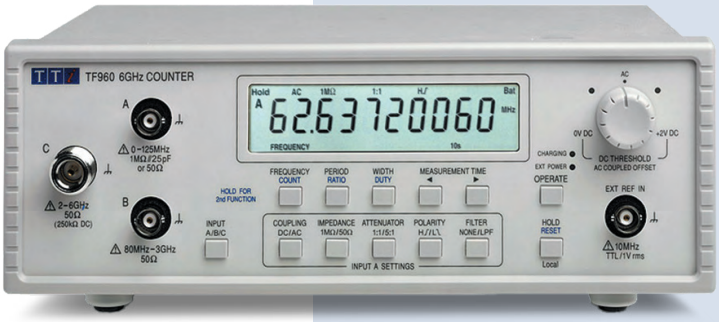
The large 10 digit LCD has a full set of annunciators. Measurement times can be set between 0.3 seconds and 100 seconds.

Pulse width measurements can be made from rising to falling or falling to rising edge with adjustable thresholds. A variable attenuator is incorporated the input impedance is switchable between 1MΩ and 50Ω.

The instruments operate from internal rechargeable NiMH batteries which give typically 24 hours operating life. The universal AC charger supplied will recharge the batteries in less than 4 hours and can be used for continuous AC operation.

Full remote control and read-back is provided via a USB interface.

Note: Full technical details are available on the website.



The TF960 is an extended version of the TF930 with an additional N connector input covering <2GHz up to >6GHz.

PFM3000

- 3Hz to 3GHz frequency range
- Frequency or period display
- Continuous reciprocal measurement
- Handheld format
- Long battery life

- 3Hz to 3000MHz frequency range
- Frequency and period measurement
- High sensitivity at all frequencies
- Switchable low pass filter
- Continuous reciprocal counting measurement
- 0.001mHz low frequency resolution
- Push-to-measure function with auto power-down
- Large 8.5 digit display with full range of annunciators

Note: Full technical details are available on the website.

The PFM3000 is the latest handheld frequency counter from Aim-TTi offering measurement up to 3GHz.

It provides high impedance measurement up to 125MHz and 50Ω measurement up to 3000MHz, with excellent sensitivity across all frequencies.

It can measure both frequency and period and uses a continuous reciprocal frequency counting technique which gives high resolution and accuracy at all frequencies.

Despite its wide frequency range the PFM3000 has a low power consumption enabling it to operate for many hours from a disposable battery.

A push-to-measure capability is provided to extend battery life when continuous signal monitoring is not required.

28. RF & EMC Test Equipment

Measurably better value

Product Range

RF and EMC Test Equipment

RF Test

The rapid growth in the use of wireless communications and the inclusion of RF elements into many electronic designs has increased the need for RF test equipment.

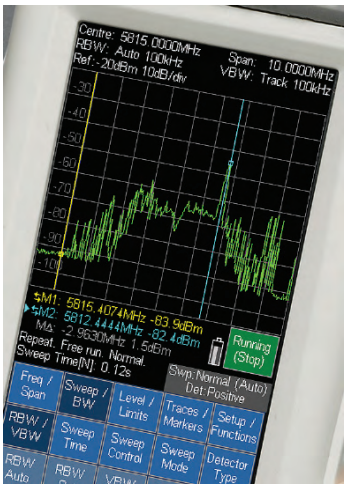
The high cost of products from the major producers in this area has led Aim-TTi to develop lower cost alternatives for the essential RF tools such as signal generators and spectrum analyzers.

RF products from Aim-TTi are designed to offer the essential elements required by engineers at significantly lower costs.

EMC Test

Most countries have now implemented legislation requiring products to comply with standards for radiated and conducted emissions.

Aim-TTi has produced equipment capable of compliance quality measurements, enabling users to self-certify for current harmonics and flicker.



PSA Series 2

- True handheld spectrum analyzers
- 1.3 GHz and 2.7 GHz models
- 4.3" color touch-screen
- More than 8hrs per charge

to see a full product information tour:
www.aimtti.com/go/psa

Model	Frequency Range
PSA1302	1 MHz to 1300 MHz
PSA2702	1 MHz to 2700 MHz
Size and weight: 190mm high x 92mm wide x 49mm deep 560 grams	

The PSA1302 and PSA2702 are low-cost, highly portable RF spectrum analyzers.

They incorporate the features most needed in a portable spectrum analyzer without the size, weight and complexity of more expensive products.

- 1MHz to 1300MHz or 2700MHz frequency range
- Resolution bandwidths of 1MHz, 280kHz or 15kHz
- Typical noise floor of -138dBm/Hz
- Measurement in dBm or dBµV, mV or µW
- Zero span mode with AM and FM audio demodulation
- Trace modes of normal, peak hold and trace average
- Live, View and Reference traces in contrasting colors
- Twin markers with readout of absolute & difference values
- Smart marker movement with selectable peak tracking
- Frequency presets and independent state storage
- Auto-find automatically sets sweep parameters for the highest signal found
- Unlimited storage for waveforms, set-ups and screens
- User assignable file names, file stamping from real-time clock
- USB interfaces for Flash drives and PC connection
- Comprehensive status and context sensitive help screens
- More than 8 hours continuous operation from a charge
- Smaller and lighter than other spectrum analyzers (weight only 0.56 kg)

further features with option U01 installed:

- Limit lines and limit patterns with limits comparator
- Data logging of peak values, complete traces or screen images from timer, external trigger or limits comparator
- Sweep triggering from external trigger or limits comparator
- Compensation tables, fixed offsets and 75Ω compensation
- Custom presets - fast change for repetitive setups
- Capability to show screen contents on a PC

The small size, low weight and long battery life of the PSA Series II make it the ideal tool for RF field measurements.

However, its surprisingly low cost provides every engineer with the potential to own a spectrum analyzer, whether they work in the RF field or not.

The PSA Series 2 will find applications within development, servicing and production as well as field use.

PSA Series 5

- True handheld spectrum analyzers
- 3.6 GHz and 6.0 GHz models
- Advanced digital processing
- 4.3" color touch-screen

Model	Frequency Range
PSA3605	10 MHz to 3600 MHz
PSA6005	10 MHz to 6000 MHz
Size and weight: 190mm high x 92mm wide x 49mm deep 560 grams	

The PSA3605 and PSA6005 are high performance, highly portable RF spectrum analyzers.

They use the latest digital techniques to provide performance comparable to instruments of much greater size, weight and cost.

- 10MHz to 3600MHz or 6000MHz frequency range
- Resolution bandwidths from 300Hz to 10MHz (1:3:10) with fully adjustable video filtering
- Typical noise floor of -160dBm/Hz
- Measurement in dBm or dBµV, mV or µW
- Multiple detector modes including Peak, Average, RMS, Sample
- Zero span mode with AM and FM audio demodulation
- Trace modes of normal, peak hold and trace average
- Live, View and Reference traces in contrasting colors
- Twin markers with readout of absolute & difference values
- Smart marker movement with selectable peak tracking
- Frequency counter at marker position with 10Hz resolution
- Frequency presets and independent state storage
- Auto-find automatically sets sweep parameters for the highest signal found
- Unlimited storage for waveforms, set-ups and screens
- User assignable file names, file stamping from real-time clock
- USB interfaces for Flash drives and PC connection
- Comprehensive status and context sensitive help screens
- More than 3½ hours continuous operation from a charge
- Smaller and lighter than other spectrum analyzers (weight only 0.56 kg)

further features with option U02 installed:

- Automatic measurement of channel power, adjacent channel ratio and occupied B/W
- Waveform demodulation for AM and FM signals
- Limit lines and limit patterns with limits comparator
- Data logging of peak values, complete traces or screen images from timer, external trigger or limits comparator
- Sweep triggering from external trigger or limits comparator
- Compensation tables, fixed offsets and 75Ω compensation
- Custom presets - fast change for repetitive setups
- Capability to show screen contents on a PC

RS-232
RS-423

to see a full product information tour:
www.aimtti.com/go/psa

The PSA Series 5 retains the same compact and lightweight design of the Series 2 but adds some important features as well as extending the frequency range.

Advanced digital processing is used to achieve outstanding performance whilst maintaining low power consumption.

PSA Comparison

PSA series comparison table (excludes specifications and features that are common to all models)

	PSA1302	PSA2702	PSA3605	PSA6005
Maximum Frequency	1300 MHz	2700 MHz	3600 MHz	6000 MHz
Minimum Frequency	1 MHz	1 MHz	10 MHz	10 MHz
Maximum Reference Level	0dBm		+20dBm	
Minimum Reference Level	-20dBm		-40dBm	
Noise Floor / DANL	-96dBm (Ref = -20dBm,15kHz RBW); -138dBm/Hz		-120dBm (Ref = -40dBm, 10kHz RBW); -160dBm/Hz	
Resolution Bandwidth (RBW)	15kHz, 280kHz, 1MHz or Auto		300Hz to 10MHz (1:3:10 sequence) or Auto	
Video Bandwidth (VBW)	On/Off (Tracking)		1kHz to 30MHz or Tracking	
Detector Modes	Peak (+ve)		Peak (+ve, -ve or alternate), Sample, RMS, Avg.	
Sweep Time Control	Automatically set by Span and RBW		Automatic with manual override	
Demodulation	Audio only, AM or FM		Audio and Waveform, AM or FM	
Frequency Counter	No		Yes (resolution down to 10Hz)	
Automatic Measurements	No		CP, ACPR, OBW (requires option U02)	
RF Input Connector	SMA		N type	
Battery Life per charge	> 8 hours		> 3.5 hours	

30. Signal Generators - RF & EMC test equipment

Measurably better value

TGR1040

- 1 GHz signal generator
- -127dBm to +7dBm
- RS-232, optional GPIB
- Low cost

Note: Full technical details are available on the website.

- 10MHz to 1000MHz frequency range
- Accuracy better than 1ppm over 15°C to 30°C
- Ageing better than 1ppm over one year
- Low phase noise and low leakage
- -127dBm to +7dBm amplitude, 0.1dB steps
- Amplitude entry in dBm or µV / mV
- FM modulation, internal or external
- Four line back-lit dot matrix LCD display
- Keyboard and rotary encoder control
- Non-volatile storage for 9 generator set-ups
- Full remote control through RS232 or optional GPIB
- Significantly lower cost than other synthesized RF generators

The TGR1040 is the low cost solution for RF engineers who require a basic RF generator of high stability and wide amplitude range.

It has good phase noise and low leakage and offers FM modulation, internal or external.

RS-232 / RS-423 GPIB IEEE-488 OPTIONAL

TGR2050

- 2 GHz signal generator
- -127dBm to +7dBm
- AM, FM & phase modulation
- RS-232 and GPIB standard

Note: Full technical details are available on the website.

- 150kHz to 2000MHz frequency range
- 10Hz frequency setability
- Locking to external frequency standard
- Accuracy better than 1ppm over 15°C to 30°C
- Ageing better than 1ppm over one year
- Low phase noise and low leakage
- -127dBm to +7dBm amplitude, 0.1dB steps
- Amplitude entry in dBm or µV / mV
- FM, Phase and AM modulation, internal or external
- Keyboard and rotary encoder control
- Non-volatile storage for 9 generator set-ups
- Full remote control through RS232 and GPIB
- Exceptional price/performance ratio

The TGR2050 offers a wide frequency range with a setability of 10Hz. It has 1ppm internal stability and can be locked to an external standard.

Modulation facilities of FM, Phase and AM are included.

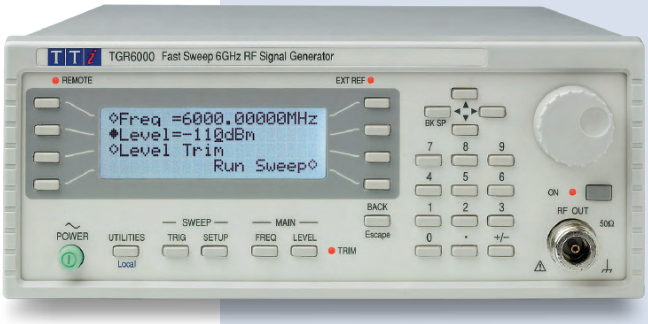
Remote control via RS232 and GPIB is included.

RS-232 / RS-423 GPIB IEEE-488

TGR6000

- 6 GHz signal generator
- -110dBm to +7dBm
- High speed sweep
- USB, RS-232, GPIB & LAN

Note: Full technical details are available on the website.



- 10MHz to 6000MHz frequency range
- Accuracy better than 1ppm over 15°C to 30°C
- Ageing better than 1ppm over one year
- Low phase noise and low leakage
- -110dBm to +7dBm amplitude, 0.1dB steps
- Amplitude entry in dBm, µV / mV, or dBµV
- User compensation tables for specific test set-ups
- Fast stepping sweep with dwell times down to 10ms
- Internal or externally triggered sweep, lin or log, up or down
- List sweep of up to 1000 points of amplitude versus frequency
- Non-volatile storage for 12 generator set-ups and 16 sweep lists
- Compact half-rack 2U casing uses minimum bench space
- Full remote control through RS232, USB, GPIB and LAN
- Significantly lower cost than other 6GHz generators

The TGR6000 is a highly cost effective solution for engineers requiring a high quality generator operating up to 6GHz.

No modulations are incorporated, but rapid settling times enables a fast stepped sweep.

Level trim allows amplitude to be adjusted at various frequencies to match the requirements of specfic test set-ups. List sweep enables up to 1000 points of amplitude versus frequency to be defined.

TGR2051/2053

- 1.5GHz/3GHz signal generators
- -127dBm to +13dBm
- Extensive modulations set
- USB, RS-232, GPIB & LAN

Note: See website for more details following release.

NEW

- 100kHz to 1.5GHz or 3GHz frequency range with 10Hz setability
- -127dBm to +13dBm amplitude, 0.1dB steps
- Extensive modulation set including AM, OOK, ASK, FM, FSK, GFSK, MSK, GMSK, PM, PSK, GPSK
- High accuracy/stability internal timebase, or locking to external frequency standard
- Low phase noise and low leakage
- Amplitude entry in dBm or µV / mV
- FM, Phase and AM modulation, internal or external
- Advanced user interface with touch-screen offering numeric or rotary adjustments
- Step sweep and List sweep with level compensation tables
- USB, GPIB and LXI compliant LAN interfaces

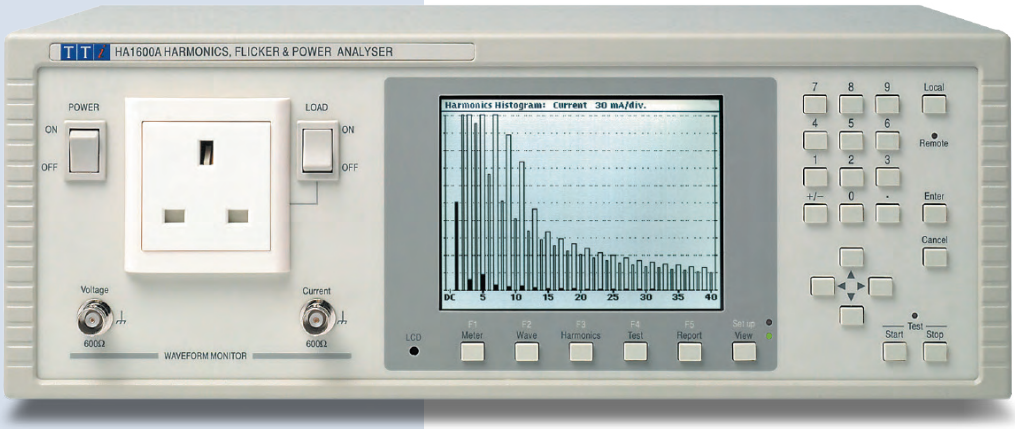
32. Harmonics & Flicker Analysis - RF & EMC test equipment

Measurably better value

HA1600A

- Compliance measurements to EN61000-3-2 & EN61000-3-3
- Tabular and histogram display of harmonics
- Continuous analysis with real-time graphical update
- Full power analyzer features
- PC software supplied

- Compliance quality current harmonics measurements to EN61000-3-2 when using compliant source (such as AC1000A)
- Tabular and histogram display of harmonics
- Continuous analysis with real-time graphical update
- Compliance quality fluctuations and flicker measurements to EN61000-3-3
- Full power analyzer measuring Watts, VA, Vrms, Vpk, Arms, Apk, A-inrush, CF, THD, PF, Hz
- Real-time voltage and current waveform displays
- Wide range of national power connectors available
- Parallel printer port plus RS232 and USB interfaces
- Windows PC control and documentation software supplied



Note: Full technical details are available on the website.

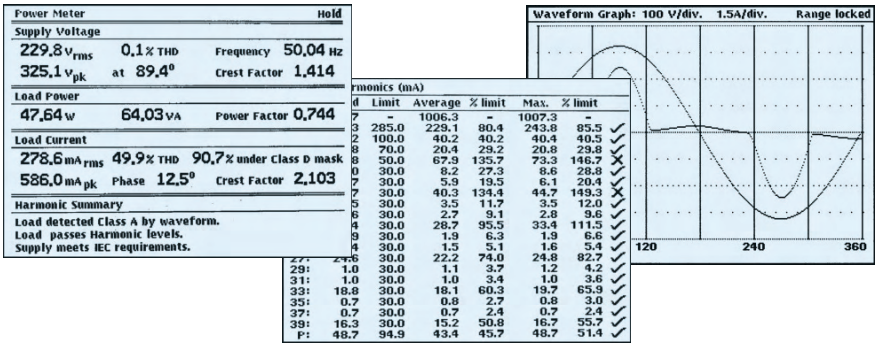
The HA1600A is a fast, easy to use power and harmonics analyzer with a large and high resolution graphical display, capable of continuous real-time analysis.

The HA1600A is intended primarily as a dedicated harmonics and flicker analyzer for compliance quality measurements, but it can also be used as a general purpose power analyzer.

The unit is available with a range of power connectors to suit different national standards.

A printer interface is included along with RS-232 and USB interfaces for PC connectivity.

It is suitable for both the product development environment, and for production line test verification.



AC1000A

- 1 kW low-distortion source
- Suitable for EN61000-3-2

Note: Full technical details are available on the website.

The AC1000A is an innovative, low cost, pure power source designed specifically for use with a harmonics analyzer such as the Aim-TTi HA1600A.

It permits compliance quality measurements to EN61000–3–2 in situations where the quality of the AC supply is poor or variable.

The AC1000A has a power rating of 1000 watts at 230 volts. Maximum continuous rms current is 4.4A with a peak current capability of 10A.

Measurably better value

Test and Measurement Instruments from Aim-TTi

AIM & THURLBY THANDAR INSTRUMENTS

Product Index

The page number index, together with general information about the company and its products, is on the inside of the front cover.

The Aim-TTi Website

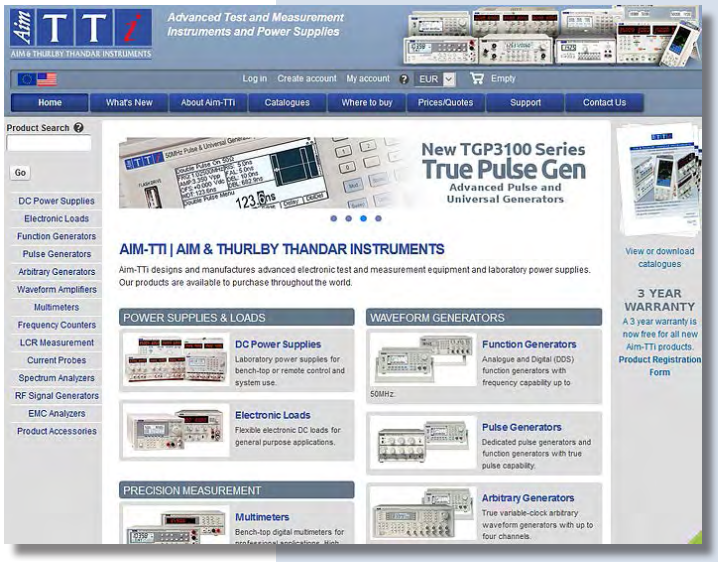
This catalog provides only limited information on each product.

The Aim-TTi Websites

Detailed product information is provided on the Aim-TTi website, together with support information and prices.

International customers (including the UK) should use the international website:
aimtti.com

USA customers should use the USA specific website:
aimtti.us



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Research, Design & Manufacturing

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