AIM & THURLBY THANDAR INSTRUMENTS

New PL & New PL-P Series



New PL Series - advanced linear regulated laboratory power supplies

true analog controls with digital functionality

New PL-P Series - full remote control for bench & system applications

analog, RS-232, USB, LAN (LXI) or GPIB interfaces

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Aim-TTi

New PL Series

Analog control for a digital world

Building on the success of a winning formula

In the 1980s the original PL series transformed customer expectations of the bench power supply and set a format that has been extensively copied by other manufacturers.

Over the years, the PL series has been steadily revised and extended. Hundreds of thousands of PL series units are currently in use across the world and it remains the laboratory power supply of choice for many organisations.



TTi has been at the forefront of laboratory power supply design for around thirty years during which it has re-defined the state-of-the-art for switch mode products with its innovative Mixed-mode and PowerFlex regulator designs.

Continuing development of linear models has generated the lower cost EL series, and the advanced QL series. However, demand for the PL series has remained strong - demonstrating how well it has met the needs of its many customers.

Now TTi has engineered an all-new design which retains all the key features of the original PL series, but combines them with new and important features.

Analog controls with digital stability

As technology has changed, many products have moved from analog controls to digital ones. Although digital controls suit many instruments, they do not necessarily suit a bench power supply.

Customer research shows that many users prefer the speed and simplicity of conventional analog controls for setting voltage and current. Digital controls may offer greater precision, but often at the expense of ease-of-use.

With this in mind, the New PL series has retained the true analog controls of its predecessor.

The main disadvantage of analog controls is stability and security. The settings of analog potentiometers can drift over time. More importantly, the settings can be changed accidentally with potentially serious consequences.

The New PL series introduces **S-Lock**. One press of the Lock button transfers control of voltage and current from the analog controls to internal digital circuitry.

This offers not just complete security, but exceptional stability as well with each setting controlled by an instrumentation quality DAC.

Lock your settings at the touch of a button !

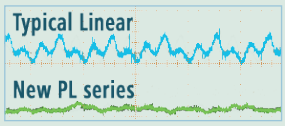


Linear regulation for ultra-low noise

Linear regulation still offers the lowest output noise and the best transient response (recovery time from a sudden current step).

Most linear regulated power supplies offer low output noise with figures below 2mV rms being typical.

The New PL series goes a stage further and an rms noise figure of 0.4mV with tightly specified pk-pk noise and common-mode current figures.



Choose a voltage range that suits your task

When working with any particular piece of equipment, engineers often require a voltage source variable over only a narrow range. Set the voltage too high and damage might occur, set it too low and the circuit may reset.

That's where the **V-Span** function of the New PL series comes in. It allows the user to redefine the end-stop values of the voltage control to define a specific voltage range.



For example:

An engineer is working on a circuit that will eventually 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.

Vmin and Vmax can be set anywhere between zero and maximum output voltage subject only to Vmax ≥ (Vmin + 0.1V). The fine control gives additional adjustment of ±1%.

Once set, the voltage span function can be turned on or off at the press of a button*.



New PL series - ultra compact using minimum bench or rack space

Ultra-compact design with higher power efficiency and near-silent cooling

The New PL series achieves an exceptional power density for a linear regulated power supply by offering up to 90 watts from a ¼ rack 3U sized casing.

This gives it an unusually small bench footprint taking up less space on a crowded bench.

For rack-mount application, up to four units can be mounted into a single slot.

Despite its small size and linear regulation, the New PL series generates relatively little heat through the use of an advanced phase controlled pre-regulator.

This gives it significantly higher energy efficiency than conventional linear regulated designs, particularly when supplying lower voltages.

The internal heat-sinks use fan-assisted convection cooling in order to remove the heat with minimal fan noise.

Better Energy Efficiency

Actual size



High accuracy four digit meters have a fixed resolution for consistent readings at-a-glance.

View and adjust setting limits at any time.

S-Lock digitally locks voltage and current settings at the touch of a button.

True analog controls make adjustment quick and simple.

V-Span enables the full 300° rotation of the voltage control to cover any voltage range.

Safety binding post terminals can accept fixed-shroud 4mm plugs** as well as normal plugs, bare wires, and fork connectors.

Low current range gives 0.1mA meter resolution and finer low current setting.

Meter averaging reduces the jitter from rapidly varying load currents.

DC output switch enables voltage and current to be set up before connecting the load.

Voltage sensing can be changed between local and remote at the flick of a switch.

Better performance ....

- **Linear regulation:** ultra-low output noise and fast transient recovery
- **High power density:** 90 watts per output from an ultra-compact case size
- **Higher precision:** exceptional line and load regulation; easy-switch remote sense
- **Better metering:** high accuracy four digit fixed-resolution meters; low current range; current meter averaging

.... with real ease of use

- **True analog controls:** quick and intuitive adjustment of voltage and current
- **With digital convenience:** unique S-Lock and V-Span functions (see opposite)
- **See exactly what's happening:** dc output switch - check your settings before applying them; 'view settings' button - check and adjust limits at any time
- **Safe and secure to use:** lockable voltage and current settings (using S-Lock); connect via safety binding-post terminals

QM models - PL303QMD (quad-mode dual), PL303QMT (quad-mode triple)

Compact Dimensions

The PL303QMD is a dual output power supply with the same high power density as the single output models - 180 watts from a half rack 3U sized casing (214mm x 131mm).

Four Modes of Operation

The PL303QMD is more than just two PL303 single power supplies in one box. It has four modes of operation: Independent, Isolated Tracking, Isolated Ratio Tracking, and True Parallel.

90% of actual size



Independent Mode: The two outputs are completely independent and electrically isolated from each other.

Isolated Tracking Mode: The two outputs remain electrically isolated, but the voltage control of the Master output sets an identical voltage on the Slave output.

Note: Isolated Tracking enables the user to create two rails of either polarity and to reference them to different grounds if necessary (e.g. digital ground and analog ground).

Isolated Ratio Tracking Mode: As normal tracking, but the Slave voltage can be set to any percentage of the Master voltage and retains that ratio as the Master voltage is varied.

True Parallel Mode: All of the power is channelled to the Master output which can then supply up to 6 amps.

Note: In Parallel mode the Master side becomes a single 180 watt power supply, with the current meter operating to 6 amps. The slave output is disabled and its displays are turned off.

Simultaneous Output Control

The Both On/Both Off buttons are in addition to the individual switches for each output, and allow both outputs to be turned on or off synchronously by a single button press.

Synchronous switching of the outputs is of increasing importance for circuitry which can be damaged if one voltage rail is present without the other.





* Safety interlocks

A key requirement in a power supply is to prevent the wrong voltage or current being accidentally applied to the circuit-under-test.

Consequently all operations that could result in an unexpected change in voltage or current settings have intelligent interlocks to prevent this.

** Safety terminals

The use of fixed-shroud 4mm plugs is becoming mandatory within an increasing number of laboratories for safety reasons.

Standard binding post terminals can not accept these fixed-shroud plugs.

See final page for New QMT Triple

New PL-P Series

Interfacing to every application

RS-232 RS-423 USB UNIVERSAL SERIAL BUS LAN ETHERNET LXI

ANALOG REMOTE CONTROL GPIB IEEE-488 OPTIONAL - Option (G)

Bench and System use

The New PL-P series includes all of the manual control features of the New PL series, but adds comprehensive remote control facilities.

The ultra-compact rack-modular sizing makes it ideally suited to rack mounted system applications, while its user-friendly manual controls are retained for bench top applications.

Rear Power Terminals

Power and sense terminals are duplicated on the rear panel for rack mount applications or other situations where rear connection is more appropriate.

Digital Remote Control

To meet the varying needs of today's engineers, a comprehensive array of interfaces is provided. RS-232, USB and LAN (Ethernet) with LXI support are provided as standard. An additional GPIB interface is also optionally available.

Each of the digital bus interfaces provides full control of voltage, current, and output on/off, plus read-back of voltage, current and status. The interfaces are at ground potential and are opto-isolated from the output terminals.

RS-232

An RS-232/RS-423 interface is provided for use with legacy systems. This type of serial interface remains in common useage and is perfectly satisfactory for the control of power supplies because data speed is not an issue.

USB

USB provides a simple and convenient means of connection to a PC and is particularly appropriate for small system use. A USB driver is provided which supports Windows operating systems from Windows 2000 onwards.

LAN-Ethernet with LXI

The LAN interface uses a standard 10/100 base-T Ethernet hardware connection with ICMP and TCP/IP Protocol for connection to a Local Area Network or direct connection to a single PC. This interface supports LXI and is the most appropriate for larger system use because of its scalable nature.

LXI Compliance

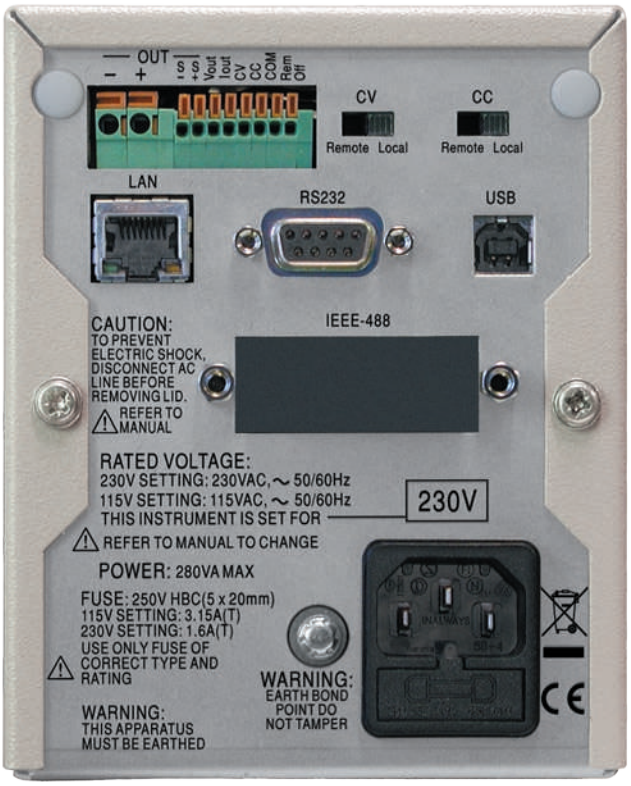
The LAN interface is compliant with LXI-C. LXI (LAN eXtensions for Instrumentation) is the next-generation, LAN-based modular architecture standard for automated test systems managed by the LXI Consortium, and is expected to become the successor to GPIB in many systems. For more information on LXI and how it replaces GPIB, or operates along side it, go to: www.tti-test.com/go/lxi

IVI Driver

An IVI driver for Windows is included. This provides support for common high-level applications such as LabView*, LabWindows*, and HP/Agilent VEE*.

GPIB (option G)

Further versions of the products which are fitted with a GPIB (IEEE-488) interface in addition to USB, RS232 and LAN.



New PL-P Additional Facilities

From the front, New PL-P models are identical to standard New PL models and retain all of their manual control features. On the dual and triple output versions, a single digital interface controls all outputs.

The rear panel carries RS-232, USB and LAN (Ethernet) connectors, together with analog in and out, remote on/off control, and duplicate output and sense terminals. All models can be additionally fitted with a GPIB interface (option G - factory fit only).*

** Note: analog in/out and remote on/off are not fitted to multi-output versions.*

Analog Remote Control

Single output PL-P units include analog voltage control of voltage and current (non-isolated). Analog control outputs are also incorporated to enable easy parallel connection of multiple units in a master-slave configuration.

Terminals for remote on/off control are also provided.

Rack Mounting

Up to four single output units can be fitted into one rack width.

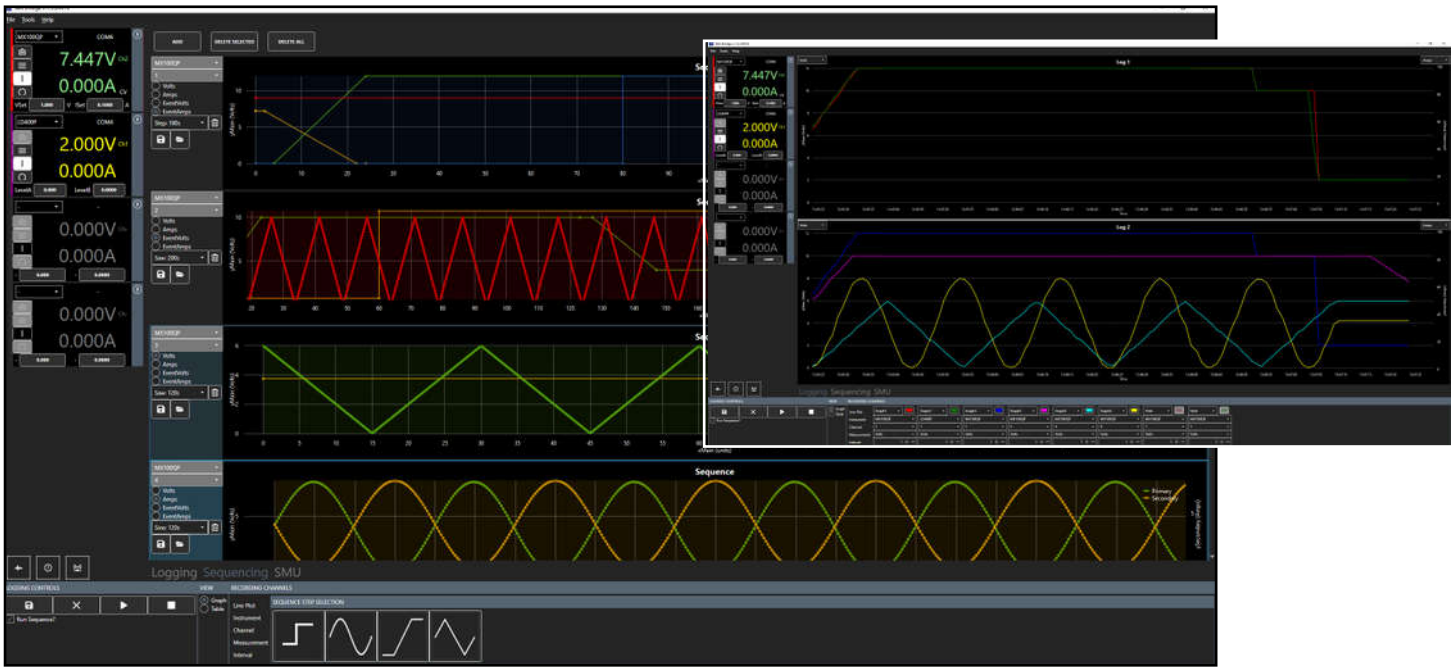
Alternatively, any combination of singles and duals can be used - as in the example shown.

The TTi RM450 rack mount (shown) is 4U high and incorporates limited ventilation space above and below the power supplies. Blanking plates are provided for unused positions.



TEST BRIDGE SOFTWARE

- MULTI INSTRUMENT CONTROL
- LOGGING TO TABLE AND GRAPH FORMAT
- TIMED SEQUENCE CONTROL ACROSS ALL INSTRUMENTS AND CHANNELS
- USB, LAN AND RS232 COMPATIBLE





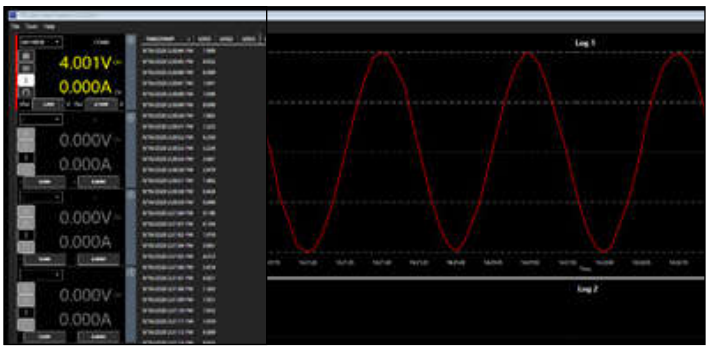
MULTI INSTRUMENT CONTROL

Up to four instruments can be connected at one time, each one can be controlled by the instrument panel; settings and limits can be viewed and amended in the settings menu. Live and set data can be displayed for all channels on a multiple channel instrument, each one colour coded for ease of identification.

Compatible with Aim-TTi PSU and Loads: PL, QL, MX, CPX, TSX, QPX, and LD.

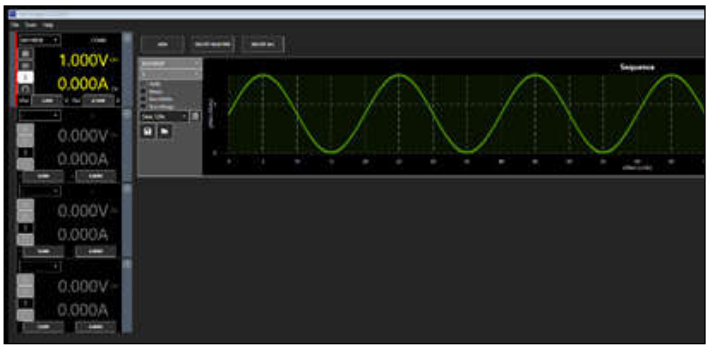
LOGGING TO TABLE AND GRAPH

Logging channels capture live data, they can be set to record values from any output on an active instrument at specified time intervals. Varying measurement intervals can be set alongside units and plot line colour. The results are plotted on one of the two available graphs and can also be viewed in a table. The graph provides advanced zooming and panning functions, allowing efficient data analysis. The data can be exported as a .TSV file.



TIMED SEQUENCE CONTROL

Each sequence is allocated to a specified channel on an instrument. Two different units can be added to each sequence, along with two events. A range of built in step options are available including: sine, triangle, ramp and step.



Test Bridge software can be downloaded from:
https://www.aimtti.com/support

New PL series - Technical Specifications

MODEL RANGE:

PL068	0 to 6V at 0 to 8A
PL155	0 to 15V at 0 to 5A
PL303	0 to 30V at 0 to 3A
PL601	0 to 60V at 0 to 1.5A
PL303QMD	2 x (0 to 30V at 0 to 3A), or 1 x (0 to 30V at 0 to 6A)
PL303QMT	As PL303QMD plus 0 to 6V at 0 to 8A
PLH120*	0 to 120V at 0 to 750mA
PLH250*	0 to 250V at 0 to 360mA

* The PLH series are a higher voltage variant of the PL series whose specifications differ in certain areas. They are covered in a separate brochure (PLH and PLH-P series).

OUTPUT SPECIFICATIONS

Voltage/Current Levels

PL068	0V to 6V/0.1mA to 8A (48W max.)
PL155	0V to 15V/0.1mA to 5A (75W max.)
PL303	0V to 30V/0.1mA to 3A (90W max.)
PL601	0V to 60V/0.1mA to 1·5A (90W max.)
PL303QMD	Dual outputs of 0V to 30V/0.1mA to 3A or single output of 0V to 30V/0.2mA to 6A (180W max.)
PL303QMT	As per PL303QMD plus third output 0V to 6V/0.1mA to 8A (228W max.)

Note: Actual maxima for voltage and current are typically 1% greater than the figures given above.

Output Setting & Control

Voltage Setting:	By coarse and fine controls.
Current Setting:	By single logarithmic control.
Output Mode:	Constant voltage or constant current with automatic cross-over. CC indicator lit in constant current mode.
Output Switch:	Electronic, non isolating. Preset voltage and current limit displayed when Output is off. Output rise time no load <15ms.
View Settings:	With the output On, the meters show actual voltage and current. The preset levels can be viewed and adjusted at any time by pressing the View Settings button.

V-Span *

(Voltage Span Control)
The voltage adjustment range can be controlled by digital setting of the end-stop values of the coarse voltage control to any desired values. The range for Vmax is 0.1V to 15V/30V/60V depending on model. The range for Vmin is 0 to (Vmax – 0.1V).

S-Lock

(Settings Lock)
Voltage and current settings can be locked by a single button press. Lock accuracy is equal to the meter accuracy (see Meter Specification).

Output Performance

Ripple & Noise *:	Normal mode voltage: <0·4mV rms and 2mV p-p Normal mode current: <0·2mArms; <40uA on 500mA range. Common mode current: <5uA rms
Load Regulation:	Voltage - <0·01% + 2mV. Current - typically 0·01% + 500µA.

Voltage specification applies for any load change, measured at the output terminals. When using remote sense add 0.5mV per 0.1V drop in the +ve output lead (max. sense lead resistance 0.5 Ω).

Line Regulation:	Voltage <0·01% + 2mV for 10% line change. Current <0·01% + 250µA. for 10% line change.
Transient Response:	<50µs to within 50mV of setting for a 90% load change.
Temp. Coefficient:	Voltage: typically <(50ppm + 0·5mV)/°C Current: typically <(100ppm + 1mA)/°C; <(100ppm + 0.1mA)/°C on 500mA range.

Output Protection

Output Protection:	Output will withstand forward voltages of up to 20V above rated output voltage. Reverse protection by diode clamp for currents to 3A.
OVP and OCP Trips:	Voltage or current measured to be in excess of 105% of the rated maximum will cause the output to trip off.
Over-temperature:	Output trips off for over-temperature.
Safety Interlocks:	Operations that could cause an unexpected change in voltage or current settings are interlocked with the output switch.

Output Connections

Output Terminals: Universal 4mm safety binding posts on 19mm (0·75") spacing.
Terminals can accept fixed shroud 4mm plugs, standard 4mm plugs, fork terminals and bare wires.

Remote Sense

Sense Selection:	Voltage sensing is selected as Local or Remote by front panel switch.
Sense Terminals:	Sprung loaded screw-less terminals.

METER SPECIFICATIONS (except PL068)

Display Type: Dual 4-digit meters, 10mm (0·39") LED.

Voltage Meter

Resolution:	10mV
Accuracy:	± (0·1% of reading + 10mV)

Current Meter *

Resolution:	1mA (0·1mA on 500mA range)
Accuracy:	± (0·3% + 3mA) to 3A; ± (0·5% + 3mA) to 6A; ± (0·3% + 0·3mA) on 500mA range
Meter Damping:	Normally 20ms, switchable to 2 sec for averaging rapidly varying loads.

METER SPECIFICATIONS PL068

Display Type: Dual 4-digit meters, 10mm (0·39") LED.

Voltage Meter

Resolution:	1mV
Accuracy:	± (0·1% of reading + 3mV)

Current Meter

Resolution:	1mA (0·1mA on 500mA range)
Accuracy:	± (0.3% + 3mA) to 8A, ± (0.3% + 0.3mA) on 800mA range
Meter Damping:	Normally 20ms, switchable to 2 sec for averaging rapidly varying loads.

ADDITIONAL SPECIFICATIONS - QUAD-MODE DUAL (PL303QMD)

The PL303QMD has four modes of operation:

Independent Mode

Each output is fully independent and isolated. Operation is equivalent to two single output power supplies.

Tracking Mode

The two outputs remains isolated, but the Slave voltage controls are disabled and the Slave voltage is set equal to the Master voltage. This can be used to generate tracking bipolar voltages, or tracking unipolar voltages relative to different grounds. When voltages greater than 30V are required, the outputs can be wired in series to generate 0 to 60V using only the Master voltage controls.

Track Accuracy: Slave voltage = ± (0·1% of Master voltage setting + 10mV)

Ratio (%) Tracking Mode

As Tracking, but the Slave voltage controls set an output voltage between 0% and 101% of the Master voltage. Once the Slave voltage has been set, varying the Master voltage will create the same percentage change in the Slave voltage setting.

Track Accuracy: % change in Slave voltage = % change of Master voltage ± 0.1% ± 10mV

Parallel Mode

In this mode, the Master operates as a single output power supply with double the current capability (0.2mA to 6A). The Slave is disabled and its displays are turned off.

Both On / Both Off

Each output has an independent DC On/Off control, however, additional control buttons are provided which turn both outputs on or off simultaneously. These buttons operate in all four modes.

ADDITIONAL SPECIFICATIONS - QUAD-MODE TRIPLE (PL303QMT)

The PL303QMT has identical specifications and features to the PL303QMD plus:

Third Output

Full performance third output of 0 to 6V at 0 to 8A. Specifications as per PL068.

All On / All Off

The Both On / Both Off buttons of the PL303QMD are replaced by control buttons which turn all three outputs on or off simultaneously.

GENERAL SPECIFICATIONS

Input

AC Input:	230V AC or 115V AC ± 10%, 50/60Hz. Installation Category II
Input Power:	Single output models - 280VA max.; Dual output models - 560VA max. Triple output models - 840VA max.

Temperature & Environmental

Operating Range:	+5ºC to +40ºC, 20% to 80% RH
Storage Range:	-40ºC to + 70ºC
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree 2.
Cooling:	Intelligent variable-speed low noise fan assists convection.

Safety & EMC

Safety:	Complies with EN61010-1
EMC:	Complies with EN61326

Physical

Size:	Single output models - 107mm x 131mm (¼ rack 3U) x 288mm, Dual output model - 214mm x 131mm (½ rack 3U) x 288mm Triple output model - 321mm x 131mm (¾ rack 3U) x 288mm (sizes exclude feet, knobs and terminals).
Weight:	Single output models - 4·5kg; Dual output - 8.5kg; Triple output - 13kg

OPTIONS

Rack Mount (RM450)

19 inch 4U rack mount suitable for up to four single power supplies, two dual power supplies, or any mixture. Blanking plates are provided for unused positions. The 4U height provides limited ventilation space above and below the power supplies.

Accuracy specifications apply for the temperature range 18°C to 28°C after 1 hour warm-up. Thurlby Thandar Instruments Ltd. operates a policy of continuous development and reserves the right to alter specifications without prior notice.

New PL-P Series specifications (remote control models)

Additional specifications applying to the New PL-P Series are on the following page.

New PL-P series - Additional Technical Specifications

MODEL RANGE

General

New PL-P series units offer remote control and read-back using analog, RS232, USB, LAN (LXI) interfaces. They retain all of the capabilities of the New PL Series when under manual control. All of the specifications from the previous page therefore apply to the equivalent models in the New PL-P series. The following specifications are additional.
Versions with a GPIB interface are also available - see below.

Model Range

PL068-P	0 to 6V at 0 to 8A
PL155-P	0 to 15V at 0 to 5A
PL303-P	0 to 30V at 0 to 3A
PL601-P	0 to 60V at 0 to 1.5A
PL303QMD-P	2 x (0 to 30V at 0 to 3A), or 1 x (0 to 30V at 0 to 6A)
PL303QMT-P	As PL303QMD-P plus 0 to 6V at 0 to 8A
PLH120-P*	0 to 120V at 0 to 750mA
PLH250-P*	0 to 250V at 0 to 360mA

* Details and specifications are covered in a separate brochure (PLH and PLH-P series).

DIGITAL BUS INTERFACES - RS-232, USB, LAN (LXI)

The standard PL-P product offers full remote control and read-back using RS-232, USB or LAN (LXI-C). All interfaces are at ground potential and opto-isolated from the output terminals.
Note: Remote/Local Sense, and Operational Mode (PL303QMD/T-P) are manually selectable only.

RS-232

Standard 9-pin D connector. Baud rate 9,600.

USB

Standard USB 2.0 connection (backwards compatible with USB 1.x). Operates as a virtual COM port.

Ethernet (LAN)

Standard 10/100 base-T hardware connection. ICMP and TCP/IP Protocol for connection to Local Area Network or direct connection to a single PC.

LXI Compliance

LAN interface is compliant with LXI-C. (LXI is the abbreviation for Lan eXtensions for Instrumentation). For more information visit: www.tti-test.com/go/lxi

GPIB INTERFACE (Option G, factory fit only)

Option G adds a GPIB (IEEE-488) interface.
This is in addition to the RS-232, USB and LAN interfaces of the standard PL-P product. The interface conforms with IEEE-488.1 and IEEE-488.2.

DIGITAL PROGRAMMING PERFORMANCE

Voltage Setting

Setting Resolution:	1mV
Setting Accuracy:	± (0.05% +10mV)

Current Setting

Setting Resolution:	0.1mA (0.01mA on 500mA range)
Setting Accuracy:	± (0.3% +0.005A) to 3A, ± (0.5% +0.005A) to 6A, ± (0.3% +0.5mA) on 500mA range

Programming Speed

Command Delay:	Typically <80ms (this must be added to any of the figures below)
Voltage Up Time:	Typically <45ms* to 1%
Voltage Down Time:	Typically <20ms* to 1% (full load); typically <150ms* to 1% (no load)

* The up and down times vary with model, current range and voltage step size. More information is within the operating manual which can be downloaded from our web site.

OVP and OCP PROTECTION

Measure-and-compare over-voltage and over-current protection are implemented in firmware and can be set via the remote interfaces only. Output trips Off for OVP and OCP conditions.

Setting resolution:	10mV and 1mA.
Response time:	typically 500ms

ANALOG REMOTE CONTROL (single output models only)

Non-isolated analog voltage control of voltage and current. Analog control outputs are also provided to enable easy parallel connection of multiple units in a master-slave configuration.
Note that the PL303QMD-P and PL303QMT-P do not have analog remote control.

Scaling

Reference Point:	All control voltage are referenced to the positive output terminal
Set Voltage Input:	0V to 10V sets 0 to 100% of rated output (e.g. 0 to 30V for PL303-P). Alternative scaling of 0V to 5V (selectable using internal link).
Set Current Input:	0V to 10V sets 0 to 100% of rated output (e.g. 0 to 3A for PL303-P). Alternative scaling of 0V to 5V (selectable using internal link).
Voltage Output:	0 to 100% of rated output voltage generates 0V to 5V.
Current Output:	0 to 100% of rated output current generates 0V to 5V.

Accuracy

Set Voltage Input:	± (0.3% +10mV); Input Impedance = 100kΩ
Set Current Input:	± (0.5% +0.005A); Input Impedance = 64kΩ
Voltage Output:	± (0.3% +10mV); Output Impedance = 125Ω
Current Output:	± (0.5% +0.005A); Output Impedance = 125Ω

Note that Analog control of current can not be used with the low current range selected.

REMOTE ANALOG ON/OFF CONTROL (single output models only)

Non-isolated terminal which sets the output to Off when pulled low by gate signal or relay closure. Signal is reference to the positive output terminal.
Note that the PL303QMD-P and PL303QMT-P do not have this facility.

REAR TERMINALS

Power and sense connections are duplicated on the rear panel using a screw-less connector block.

GENERAL SPECIFICATIONS

Input

AC Input:	230V AC or 115V AC ± 10%, 50/60Hz. Installation Category II
Input Power:	Single output models - 280VA max.; Dual output models - 560VA max. Triple output models - 840VA max.

Temperature & Environmental

Operating Range:	+5ºC to +40ºC, 20% to 80% RH
Storage Range:	-40ºC to + 70ºC
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree 2.
Cooling:	Intelligent variable-speed low noise fan assists convection.

Safety & EMC

Safety:	Complies with EN61010-1
EMC:	Complies with EN61326

Physical

Size:	Single output models - 107mm x 131mm (¼ rack 3U) x 343mm, Dual output model - 214mm x 131mm (½ rack 3U) x 288mm Triple output model - 321mm x 131mm (¾ rack 3U) x 288mm (sizes exclude feet, knobs and terminals).
Weight:	Single output models - 4·9kg; Dual output model - 8.6kg; Triple output model - 12.8kg

DRIVER SOFTWARE SUPPLIED

IVI Driver

An IVI driver for Windows is supplied. This provides support for common applications such as LabView*, LabWindows*, HPVEE* etc.

USB Driver

An installation file is supplied which calls a standard Windows* USB driver.

** LabView and LabWindows are trademarks of National Instruments.*
HPVEE (now Agilent VEE) is a trademark of Agilent Technologies.
** USB interface is supported for Windows 2000, XP, Vista, Windows 7, Windows 8.*
Windows is a trademark of Microsoft.

OPTIONS

Rack Mount (RM450)

19 inch 4U rack mount suitable for up to four single power supplies, two dual power supplies, or any mixture. Blanking plates are provided for unused positions. The 4U height provides limited ventilation space above and below the power supplies.

GPIB Interface (Option G)

Option G adds a GPIB (IEEE-488) interface. This is a factory-fit option only.

Accuracy specifications apply for the temperature range 18°C to 28°C after 1 hour warm-up.
Thurlby Thandar Instruments Ltd. operates a policy of continuous development and reserves the right to alter specifications without prior notice.

Remote Control Interfaces Table

Model	Analog	RS-232	USB	LAN (LXI)	GPIB
PL068					
PL155					
PL303					
PL601					
PL303QMD					
PL303QMT					
PL068-P	•	•	•	•	
PL155-P	•	•	•	•	
PL303-P	•	•	•	•	
PL601-P	•	•	•	•	
PL303QMD-P		•	•	•	
PL303QMT-P		•	•	•	
PL068-P(G)	•	•	•	•	•
PL155-P(G)	•	•	•	•	•
PL303-P(G)	•	•	•	•	•
PL601-P(G)	•	•	•	•	•
PL303QMD-P(G)		•	•	•	•
PL303QMT-P(G)		•	•	•	•

Latest Models

New models for 2013

The New PL and PL-P series has been extended by the introduction of a triple output model, and a low-voltage/high-current single.

New PL068 and PL068-P

These models have been introduced to meet the need for a high current linear regulated laboratory power supply.

The PL068 can provide current up to 8 amps whilst retaining the very low noise and fast dynamics common to the rest of the PL range.

Voltage is variable between 0V and 6V with a resolution of 1mV. Selectable remote sense ensures perfect regulation at the load.

Current meter resolution is 1mA right up to 8A, and a low-current range provides an optional resolution of 0.1mA.



New PL303QMT and PL303QMT-P

These new triple output models build upon the success of the PL303QMD and also offer an enhanced replacement for users of the PL330QMT from the previous PL series.

The PL303QMT has identical features to the PL303QMD but has a full performance third output with specifications as per the PL068 detailed above.

The size is ¾-rack, so that one triple plus one single could be accommodated within a standard rack width.



Laboratory power supply series from TTi

TTi offers an extensive range of manual and remote control power supplies for both bench and system applications.

PLH & PLH-P series

Higher voltage (up to 250V) linear regulated power supply series in similar format to PL series. Single output. 90 to 94 watts. RS-232, USB and LAN controlled models with GPIB optional (PLH-P).

EL-R series

Compact linear regulated power supply series with analog controls. Single, dual and triple outputs. 30 to 130 watts.
RS-232 controlled model available (EL302P).

QL & QL-P series II

High precision digitally controlled linear regulated power supply series with advanced features. Single and triple outputs. 105 to 220 watts. RS-232, USB, GPIB & LAN controlled models (QL-P).

EX-R series

Compact mixed-mode regulated power supply series with analog controls. Single, dual and triple outputs. 175 to 420 watts
RS-232 controlled model available (EX355P).

EX752M

Dual output multi-mode mixed-mode regulated power supply of 300 watts providing up to 150V in single output mode.

TSX & TSX-P series

High performance mixed-mode regulated single output power supply series with analog or digital controls. 360 watts.
RS-232 and GPIB controlled models (TSX-P).

CPX and CPX-P series

Compact 'PowerFlex' regulated series with analog controls. Single or dual outputs 350 to 840 watts. RS-232, USB, LAN and GPIB controlled models (CPX-P)

QPX and QPX-P series

High power 'PowerFlex' regulated power supplies with digital controls. Single or dual outputs. 750 to 1200 watts. Analog, RS-232, USB, GPIB and LAN interfaces (QPX-P).

MX and MX-P series (new products for 2013)

Digitally controlled multi-output power supplies incorporating a large graphic LCD. Power in excess of 300 watts, range switching for increased flexibility. RS-232, USB and LAN controlled models with GPIB optional (MX-P).

Designed and built in Europe by:

TTi ltd

Thurlby Thandar Instruments Ltd.
Glebe Road, Huntingdon, Cambridgeshire. PE29 7DR United Kingdom
Tel: +44 1480 412451 Fax: +44 1480 450409
Email: sales@aimtti.com **Web: www.aimtti.com**

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AIM & THURLBY THANDAR INSTRUMENTS

Aim-TTi

Product Summary

Laboratory Power Supplies

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



Waveform Generators

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



Precision Measurement Instructments

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



RF and EMC Test Equipment

Spectrum analyzers, signal generators, frequency counters, power meters, emc measurement instruments.



Company name and product brands

Thurlby Thandar Instruments Ltd. (TTi) is one of Europe's leading manufacturers of test and measurement instruments.

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

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

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

Web Addresses (URLs)

The preferred URL for obtaining information concerning Aim-TTi products is:

www.aimtti.com (international customers)

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

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

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

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Glebe Road, Huntingdon, Cambridgeshire PE29 7DR England (United Kingdom)
Tel: +44 (0)1480 412451 Fax: +44 (0)1480 450409
Email: info@aimtti.com **Web: www.aimtti.com**