



THURLBY THANDAR INSTRUMENTS

## TS Series



### *Laboratory dc power supplies*

- *Simultaneous metering of voltage & current with LCD meters*
- *True constant voltage or constant current operation*
- *Excellent stability, resolution and setting accuracy*
- *Remote sense facilities for high-current precision*
- *Precise control and monitoring of current limits*

# TS Series laboratory dc power supplies

The Thurlby Thandar TS series of laboratory bench power supplies has become highly regarded throughout the world for its performance and reliability.

High resolution controls enable precise setting of voltage and current levels whilst high accuracy digital meters provide clear, unambiguous readings.

## Digital accuracy and convenience

TS series units incorporate digital meters with 3.5 digit LCD displays to provide greater accuracy and resolution than other PSUs.

Separate meters are used for voltage and current, eliminating the need for meter function switches with their attendant problems of misinterpretation.

## Greater resolution and control

The TS series sets a standard for simple and comprehensive control. Voltages are set with coarse and fine controls for speed with precision. Currents are set with a semi-logarithmic control for increased resolution at low currents.

With the output switch 'off' the current limit set point is displayed. With the output switch 'on' the actual output current flowing is displayed. This invaluable feature allows delicate circuits to be protected by accurately setting the current limit level (down to milliamps if necessary) before connecting the circuit under test.

## Constant voltage or constant current

TS series units can operate in constant voltage or constant current mode (not TS3023 logic output).

## Remote sense for high current precision

TS series units incorporate integrated band-gap reference diodes as the basis for stabilisation of both voltage and current.

Remote sense terminals enable the precision to be maintained at high currents by eliminating the effects of connection lead resistance.

Without remote sense, lead resistance of just a few tens of milliohms can seriously degrade regulation and produce misleading results.

## Safety and protection

TS series PSUs are designed and built to meet the latest safety and EMC requirements. All outputs are fully protected against short circuits, external overvoltage and reverse voltage.

## Model range

MODEL	MAIN OUTPUT(S)	LOGIC OUTPUT
TS3021S	0 - 30V at 0 - 2A	
TS3022S	(2) 0 - 30V at 0 - 2A each	
TS1541S #	0 - 15V at 0 - 4A	
TS1542S #	(2) 0 - 15V at 0 - 4A each	
TS3023S #	(2) 0 - 30V at 0 - 2A each	4 - 6V at >4A

**Note:** Models marked # will be discontinued during 2003. Their capabilities will be covered by other models within the extensive TTI power supply range.

## MAIN OUTPUTS

Output Voltage Setting:	By coarse and fine controls; resolution better than 5mV across the range.
Output Current Setting:	By single logarithmic control.
Output Mode:	The outputs operate in constant current or constant voltage mode with automatic cross-over. A display annunciator indicates constant current mode.
Output Switch:	Isolates the output and permits voltage and current limits to be set up before connecting the load. 4mm terminals on 19mm (.75") spacing.
Output Terminals:	
Output Impedance:	
Constant Voltage	Typically <5mOhm at 1kHz.
Constant Current	Typically >50kOhm.
Output Protection:	Up to maximum output voltage +20 Volts forward; diode clamped for reverse voltages at up to 3A.
Load Regulation:	<.01 % of maximum output for 50% load change.
Line Regulation:	<.01 % of max. output for 10% line voltage change.
Ripple and Noise:	Typically <1mV rms.
Transient Response:	<20usec to <50mV of setting for 90% load change.
Temp. Coefficient:	Typically <100ppm/°C.
Meter Type:	Independent autoranging 0.5" 3.5-digit LCDs for voltage and current indication.
Meter Resolution:	Voltage - 10mV up to 20V, 100mV above 20V Current - 1mA up to 2A, 10mA above 2A.
Meter Accuracy:	Voltage - 0.2% of reading ± 1 digit. Current - 0.5% of reading ± 1 digit.

## LOGIC OUTPUT (3023S only)

Output Voltage Range:	4 to 6 Volts
Output Current:	4 Amps minimum; current limit approximately 5 Amps.
Output Switch:	Isolates the output and permits output voltage to be set before connecting the load. 4mm terminals on 19mm (0.75") spacing.
Output Terminals:	4mm terminals on 19mm (0.75") spacing.
Over-voltage Protection:	Dual-speed circuit giving typically 20msec to 7 Volts and typically 2usec above 7 volts. Automatically reset by mains switch.
Output Protection:	Clamped by the over-voltage protection circuit for forward voltages over 7 Volts and up to 3 Amps. Diode clamped for reverse voltages at up to 3 Amps.
Load Regulation:	<0.5% for 50% load change.
Line Regulation:	<0.5% for 10% line voltage change.
Ripple and Noise:	<20mV rms, <50mV pk-pk.
Meter Type:	0.5" 3.5 digit LCD for voltage or current.
Meter Resolution:	Voltage - 10mV, Current - 10mA.
Meter Accuracy:	Voltage - 0.5% of reading ± 1 digit Current - 0.5% of reading ± 1 digit.

## GENERAL

### Power Requirements

Input Voltage:	Internally set for 110, 120, 220 or 240V AC 50/60Hz.
Input Voltage Range:	± 10% of voltage setting.
Power Consumption:	150VA for single units, 300VA for dual and triple units.

### Environmental

Operating Range:	5°C to 40°C, 20% to 80% RH.
Storage Range:	-20°C to +60°C.
Electrical Safety:	Complies with EN61010-1.
EMC:	Complies with EN61326.

### Mechanical

Size:	160mm wide x 160mm high x 238mm deep, single unit. 308mm wide x 160mm high x 238mm deep, dual unit. 386mm wide x 160mm high x 238mm deep, triple unit
Weight:	4.9kg single unit, 9.6kg dual unit, 11.0kg triple unit.

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

Designed and built in Europe by:



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