THURLBY THANDAR INSTRUMENTS

TSP3222 Programmable dual DC power supply (GPIB)

As a bench instrument

- Dual isolated outputs (0-32V at 0-2A each)
- Constant voltage or constant current operation
- Independent, Tracking, Series, Parallel modes
- Set points and actual values shown together
- Fully variable OVP setting, thermal protection
- True linear operation, remote sense terminals
- Direct keyboard setting of all parameters
- Setting resolution of 10mV and 1mA
- 25 non-volatile setting memories

As an ATE component

- GPIB interface fitted as standard
- Conforms fully with IEEE-488.2
- Single GPIB address controls both outputs
- All functions can be controlled from the GPIB
- Fast response and slew (active sink on 3222H)
- Output voltage and current readback to 12 bits
- Full serial and parallel poll capabilities
- Comprehensive status and error reporting
- Compact half-rack 3U size, rack mount kit available

Output Voltage (each output)

Range:	0V to 32V (2V to 64V in series mode).
Resolution:	10mv.
Accuracy:	0.05% ±10mv.
Temp. coefficient:	<50ppm/°C (typically 20ppm/°C).
Line regulation:	0.001% for 10% line change
Load regulation:	0.005% for 50% load change
Ripple and noise:	Typically <1mV.
Transient response:	<100us to within 50mV of setting for 50% load change.
Output impedance:	Typically <10mΩ at 1kHz.
Remote Sensing:	Corrects for up to 0.5V of drop per lead.

Output Current (each output)

Range:	1mA to 2A (1mA to 4A in parallel mode),
Resolution:	1mA.
Accuracy:	0.1% ±1mA.
Temp. coefficient:	<75ppm/°C (typically 40ppm/°C).
Ripple and noise:	Typically <0.2mA.
Output impedance:	Typically 50kΩ wlth voltage limit at max.

Output Mode

Each output can operate in constant voltage or constant current mode with automatic crossover. A display annunciator (flashing delta sign) indicates constant current mode.

Output Configuration

Isolated:	Two independently set isolated supplies (0 to 32V. 1mA - 2A).
Isolated tracking:	Two isolated supplies as above, voltage settings track.
Series:	Higher voltage output (2V to 64V, 1mA to 2A).
Parallel:	Higher current output (0V to 32V, 1mA to 4A).
Isolation:	±300V DC max.

Voltmeter (each output)

Resolution:	10mV.
Accuracy:	±(0.05% of reading + 10mV).

Current Meter (each output)

Resolution:	1mA.
Accuracy:	±(0.1% of reading + 1mA).

Over-voltage Protection (each output)

Range:	1V to 35V (3.2V to 70V in series mode).
Resolution:	0.2V,
Accuracy:	±(2% +0.2V).

Output Protection (each output)

Forward Voltage:	Inherently protected up to OVP setting. Output trips off above OVP setting (70V max.)
Reverse Voltage:	Diode clamped (0.7V) for reverse voltages. Max. reverse current 3A continuous.

Output Terminals

Front panel:	4mm terminals on 19mm (0.75") spacing.
Rear panel:	Screw terminals for output and sense.

Output On/Off

Independent switches for each output isolate the terminals and allow voltage and current limits to be set before connecting to load. Master on/off connects/isolates both outputs simultaneously

Non-Volatile Memory

25 memory locations are provided, Each location can store the full instrument set-up including voltage, current, OVP, output configuration etc. The power down settings are also stored and are restored when the unit is turned back on.

GPIB Response Times

Interface:	<15ms (single command, buffer empty).
Output TSP3222:	Up - <5ms for a 10V step. Down - <5ms for a 10V step at full load, <200ms for a 10V step at zero load.
Output TSP3222H:	Up - <5ms for a 10V step. Down - <5ms for a 10V step at any load.

Note that the total response time to a GPIB command is the sum of the interface and output response times.

GPIB Implementation (conforms to IEEE-488.1 and IEEE-488.2)

Multiline commands:	DCL, LLO, SDC, GTL, UNT, UNL, SPE, SPD, PPU, PPC
Interface functions:	SH1, AH1, T6, L4, SR1, RL1, PP1, DC1, DT0, C0, E2
Programmable params.:	Set volts, set current, set OVP, set output on/off, set master on/off, set mode (series/parallel etc.), set meter damping, store/recall instrument settings, read back set volts/set current/set OVP/output volts/output current, up/down load learn string, up/down load all stores, set SRQ response, configure parallel poll response, execute self-test.
SRQ modes:	Event registers and SRQ mask as defined by IEEE-488.2
SRQ available on:	Command error, execution error, time-out error, query error, OPC, change of output mode CV to Cl or Cl to CV, MAV, FAULT.
PP configurations:	ist, bit position and sense of response bit.

Power Requirements

Input voltage:	Internally set for 110V, 120V, 220V, 230V or 240V ±10%, user resettable.
Power consumption:	300VA max.

Environmental & Safety

Electrical safety:	Complies with EN61010-1
EMC:	Complies with EN50081-1 and EN50082-1
Operating range:	5°C to 40°C, 20% to 80% RH. Thermal trips for each output to protect against over temperature.
Storage range:	-20°C to +60°C.

Mechanical Details

Size:	210mm x 129 mm x 380mm (W x H x D)
Weight:	11 kg.

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

Note: *This is a faxable data sheet, a colour brochure is also available.*

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