TENNELEC

TC 953
Dual High Voltage Power Supply

DESCRIPTION

The **TENNELEC TC 953** Dual High Voltage Power supply offers **two, completely independent, 0 to ± 100 volts or 0 to ± 1000 volts at 0 to 100 μA** power supplies with **separate digital multimeter (DMM) displays for either voltage or current.** It is a highly reliable, well-regulated power supply that is ideally suited for use with silicon surface barrier detectors, ion-implanted silicon detectors, lithium-drifted silicon, Si(Li), detectors, cadmium telluride (CdTe) or proportional detectors.

Current measuring capabilities down to 1 nanoampere are incorporated in the **TC 953**. This is especially useful in alpha spectroscopy work as it allows for easy compensation of the voltage drop in the bias resistor network due to detector leakage currents. No interpolation is necessary because the DMM reads leakage current directly in full scale ranges of 1, 10, or 100 μA. An exclusive, **current limit** feature protects expensive systems from excessive currents and is **adjustable** from 10 to 120% of full scale.

The **TC 953** has a **built-in voltage ramp circuit** that applies voltage at a rate of approximately 300 volts/second on the 1000V range and 30 volts/second on the 100V range. **Output voltages** may be **computer controllable**; a 0 to - 10 volt signal on a rear-panel BNC connector corresponds to a 0 to full scale voltage output. A **disable input** is available to reduce the voltage to zero as in a vacuum interlock application where the bias voltage should be disabled when the spectrometer is vented to atmosphere. In addition, **overload, short-circuit, overvoltage, and overcurrent protection** features are built-in the **TC 953.**

- **Two completely independent channels; 0 to ± 100 volts or 0 to ± 1000 volts at 0 to 100 μA outputs**
- **Separate DMM displays for output voltage or current**
- **Adjustable current limit**
- **Built-in voltage ramp circuit**
- **Output voltages computer-controllable**
- **Disable input**
- **Overload, short-circuit, overvoltage, and overcurrent protected**

+10Volts

SPECIFICATIONS

The following PERFORMANCE, CONTROLS, and CONNECTORS specifications apply to each high voltage channel.

PERFORMANCE

OUTPUT VOLTAGE 0 to ± 100V or 0 to ± 1000V dc.

OUTPUT CURRENT 0 to 100 μA.

OUTPUT POLARITY Positive or negative, selectable through left side panel and independent for each channel.

REGULATION ≤0.001% or 1 mV (whichever is greater) variations in output voltage for load changes within operating range.

INSTABILITY Long-term drift of output voltage less than 0.001%/24 hr. period at constant temperature and load.

RIPPLE ≤1 mV peak to peak 5 Hz to 50 MHz (typically <300 μV at full load).

TEMPERATURE INSTABILITY ≤ ± 30 ppm/°C, 0 to 50°C (typically <± 10 ppm).

CALIBRATION INACCURACY Output voltage will differ from front panel settings by less than 0.25%.

RESOLUTION 0.5V or better on 1000 volt range; 0.05V on 100 volt range.

RESETTABILITY Resettable to within 1 volt (1000V range); 0.1 volt (100V range).

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OVERLOAD PROTECTION Overload, short-circuit, over-voltage and adjustable current limit with automatic output restoration.

DISPLAY INACCURACY ≤±.05% ±1 Least Significant Digit (LSD) for current and voltage.

CONTROLS AND INDICATORS

NEG Red front-panel LED illuminates to indicate that negative high voltage is selected for this channel.

POS Red front-panel LED illuminates to indicate that positive high voltage is selected for this channel.

ON Red front-panel LED illuminates to show that the high voltage section is active for this channel.

DIS Red front-panel LED illuminates to indicate the high voltage section is disabled for this channel.

DISPLAY Two-position toggle switch selects V (volts) or μA (current) for display on DMM.

VOLTAGE Continuously variable 10-turn potentiometer varies output voltage from 0-1000 or 0-100 volts full scale.

RANGE Two-position locking toggle switch selects either 1000 volts or 100 volts full scale.

CURRENT RANGE Three-position toggle switch selects 1 μA, 10 μA, or 100 μA full scale current range for display on DMM.

CURRENT LIMIT Continuously variable single-turn potentiometer sets output current limit from 10-120 percent of selected full scale.

VOLTAGE Two-position toggle switch enables or disables the high voltage output.

CONNECTORS

INPUTS

DISABLE Rear-panel BNC type connector accepts a short to ground, or a NIM positive logic zero, to disable the power supply.

REMOTE Rear-panel BNC type connector accepts 0 to +10 volts input voltage to control the output voltage from 0-1000 volts or 0-100 volts, depending upon range selection. Z_{in} = 10k ohms.

OUTPUT

OUTPUT Rear-panel SHV type connector supplies 0 to ±1000 volts, or 0 to ±100 volts, depending upon range selection.

ORDERING INFORMATION

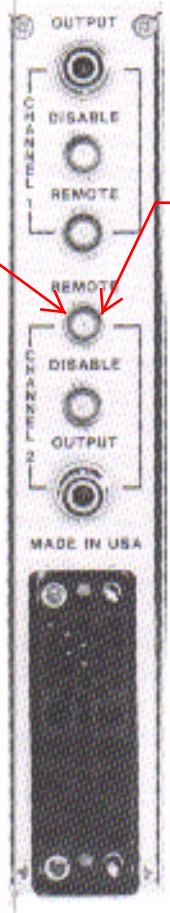
POWER REQUIREMENTS
(Both channels at 1000V, 100μA)
-24 V, 70 mA; +12 V, 270 mA
-24 V, 40 mA; -12 V, 120 mA

Note: At high load currents this module exceeds NIM specification current limits for +12V. Depending upon your NIM power supply, you may not be able to power a fully-loaded bin of these units.

WEIGHT (SHIPPING) 5.0 lbs. (2.28 kg)
(NET) 3.0 lbs. (1.37 kg)

DIMENSIONS Standard single-width NIM module (1.35 x 8.714 in.) per TID-20893 (Rev.).

INSTRUCTION MANUAL One provided with each instrument ordered.



See Note.

Remote accepts 0 to +10Volts. You must also change the jumper under the side panel from **INT**ERNAL to **EXT**ERNAL. EXT mode will disable the INT mode and visa versa. -- M. Bier

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