FLUKE

DC TRANSFER STANDARD

Fluke 730A

- FOUR INDEPENDENT REFERENCE SUPPLIES
- TERMINALS PROVIDED FOR EXTERNAL NULL DETECTOR
- OUTPUT TERMINALS PROVIDE:
  - INDIVIDUAL SUPPLY OUTPUTS
  - MEAN OUTPUT OF UP TO FOUR REFERENCES
  - SERIES OUTPUT OF UP TO FOUR REFERENCES
- 2 PPM TRANSFER ACCURACY
- 10 PPM PER MONTH STABILITY
- 3½" PANEL HEIGHT
- FULLY GUARDED

The Fluke 730A is a versatile instrument providing standard cell accuracy in a solid-state D. C. transfer standard. It will furnish a variety of precision voltages with specific voltage outputs of 1.000, (1.018 + ΔE), (1.019 + ΔE), 10.000 and Δ E Volts. Shorted and open outputs are also included. The 730A consists of 4 identical reference supplies that can be interconnected in a variety of ways to furnish output voltages. It may be used as a 1 volt, or 10 volt standard output, electronic standard cell, or 0 to 1000 uv standard source and a standard cell comparator.

The ΔE control is a precision 10 turn linear potentiometer which has a 3 digit direct reading dial. The control is equipped with a locking lever which prevents accidental changing of the ΔE setting. The ΔE resolution is 1 uV, thus allowing 1 uV steps (0 - 1000) to be added to the 1.018 or 1.019 outputs by appropriate function selection. The ΔE output may be selected independently as well.

The primary instrument reference is a reference amplifier with precisely known characteristics. This device is a zener diode with active circuitry added to provide a voltage reference with a very low temperature coefficient over a 55°C temperature range. The reference amplifier is the principal contributor to the outstanding stability characteristics of the 730A. Output voltage stability is within 10 PPM per month. Transfer or accuracy is 2 PPM between standard cells.

The internal reference supplies may be connected in series or parallel to provide a variety of output voltages. This is accomplished by pushbuttons located on the front panel. In parallel, the arithmetic mean output will be within 1 PPM of a straight line for 90 days. To obtain such stability, it is not only necessary to use a reference amplifier, but also output dividers that have exactly the same temperature coefficients. By winding output dividers on a single bobbin with the same wire and tension we are able to obtain this necessary characteristic.

The 730A is a fully guarded unit with all internal cabling, and all outputs switched at front binding posts.

The guard allows complete isolation of the circuitry and a guard connection is available at a front panel binding post. Chassis ground is also available on the front panel. Additional terminals for connecting a voltmeter or null detector and an external reference are also located on the front panel. The 5 way binding posts used on the 730A are solid copper with gold flash, for low thermal performance.

Each supply is powered by its own regulated rechargeable battery pack. The state of charge is indicated on a front panel meter. The batteries are trickle charged during line operation, but may be fast charged via a front panel switch.

The 730A weighs 15 lbs and is packaged in an attractive 3½" high rack width case. Total power consumed is 4 watts, again contributing to the long life and stability of the 730A. The 730A may be quickly and conveniently rack mounted, with the addition of optional brackets, in a standard 19" EIA rack.

SPECIFICATIONS

OUTPUT VOLTAGE:	10.000V, 1.000V, 1.018 + ΔE, 1.019 + ΔE,ΔE, Open Output, Shorted Output. NOTE: ΔE position offers +(0. to 999 uv in 1 uv steps)
TRANSFER ACCURACY:	2 PPM between standard cells. 3 PPM between standard cell and 1V output. 5 PPm between standard cell and 10V output.
ΔE RESOLUTION & ACCURACY:	1 uv
REFERENCE STABILITY:	Better than 10 PPM per month after 30 minutes warm up. Mean of four outputs within 1 PPM of a straight line for 90 days.
LINE REGULATION:	Less than 1 PPM/±10% line variation.
OUTPUT IMPEDANCE:	Less than 1.1K Ω
RIPPLE & NOISE:	Less than 1 PPM P-P DC to 1 Hz Less than 20 uv RMS 1 Hz to 1 MHz
COMMON MODE REJECTION:	120 db at DC 100 db at 60 Hz 85 db at 400 Hz
OUTPUT CURRENT:	0.9 Ma to 10 Ma per Reference element, proportional to output voltage. No instrument damage from shorted output.
ISOLATION:	Output may be floated up to 1000 VDC between chassis ground and guard.
CALIBRATION ADJUSTMENT:	Separate internal adjustments for the 5 output voltages. Front panel adjustment common to all voltages including the 10.000 V output. Calibrate at 90 day intervals. Basic reference adjustments accessible from front panel.
TEMPERATURE RANGE:	+0°C to +55°C operating −40°C to +60°C non-operating
TEMPERATURE COEFFICIENT:	Less than 1 PPM/C°, 10°C to 45°C Less than 2 PPM/C°, 0°C to 10°C and 45°C to 55°C
SHOCK & VIBRATION:	Meets requirements of MIL-T-21200H
TERMINALS	Eight five-way binding posts for positive, negative, guard, chassis ground, positive and negative external reference, and positive and negative external voltmeter. All positive and negative terminals are solid copper with gold flash.
BATTERY OPERATION:	Rechargeable nickel-cadmium batteries provide at least 50 hours of continuous operation.
INPUT POWER:	115V or 230V ±10 VAC, 50 to 400 Hz single phase or internal battery operation. 15 watts maximum, 200 Ma maximum
SIZE:	3½" high x 17" wide x 15½" deep. (8.8 x 43.1 x 39.3 cm)
WEIGHT:	20 lbs (9.07 kg)
PRICES:	Model 730A: **$1395.00** Rack Mounting Kit M03-205-600: $15.00