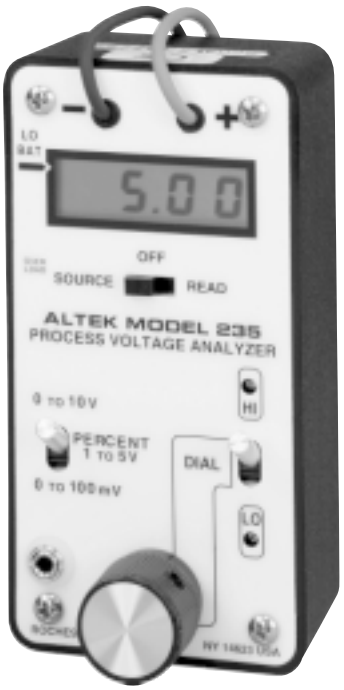
ALTEK

PROCESS VOLTAGE ANALYZER
MODEL 235

DATA SHEET 235 Additional Voltage Calibrators: See Data Sheets 222A & 934



- **CALIBRATE VOLTAGE INSTRUMENTS**
  Simulate Inputs
  Check Outputs
- **THREE RANGES WITH 0.05% ACCURACY**
  0.0 to 199.9 Millivolts
  0.00 to 19.99 Volts
  -25.0 to 199.9% of 1 to 5 Volts
- **CALIBRATE LIVE VOLTAGE INPUT RECEIVERS**
  No need to disconnect loop
- **"QUIK-CHEK® " SWITCH**
  Set HI & LO outputs to match your Span & Zero
  Instantly switch between HI & LO outputs
- **AUTOMATIC OVERLOAD PROTECTION**
  Withstands 120V AC or DC without fuses

CE

GENERAL INFORMATION

Calibrate and check out all your DC Voltage instrumentation with Altek's Model 235 Process Voltage Analyzer. Source from millivolts to 20 VDC and measure your process voltage signals with this single pocket sized instrument

Display your readings with 0.1% resolution from 0.0 to 199.9 millivolts, 0.00 to 19.99 Volts or from -25.0 to 199.9% of the 1 to 5 Volt signal. Accuracy is ±0.05% of Span.

SOURCE MODE uses built-in batteries to calibrate high or low impedance voltage or millivolt instruments. Accuracy is maintained to devices requiring up to 30mA. Three nine volt alkaline batteries provide 100 hours of use into high impedance loads. An optional AC adapter plugs in for continuous bench use.

User adjustable QUIK-CHEK switch provides instant HI and LO settings in SOURCE MODE. DIAL position selects a continuously adjustable potentiometer. Full 10 turns with high resolution allows fast, easy setting to any exact value.

SINK MODE operates automatically in Source position to allow calibration of live circuits without disconnecting wires. Circuit sinks up to 20mA to clamp test voltage in all ranges. 1 to 5 Volt devices in live 4 to 20mA loops can be calibrated without any effect on the other instruments in the loop.

READ MODE provides precise indication of both positive and negative voltages in the 100mV and 10V ranges. 0 to 100% is displayed in the 1 to 5 Volt range for checkout of process control instruments. High input resistance (>2 Megohms) minimizes loading effect on signals. Special protective circuitry withstands misconnection to 120V AC in any mode without fuses.

DISPLAY digits are 0.35" (9mm) high for readability from across the room. Non-glare LIQUID CRYSTAL DISPLAY is readable in any light…even in direct sunlight. The digital measuring circuit is independent and measures the *actual* input or output.

The ALTEK MODEL 235 is rugged, yet lightweight and pocket sized. Backed by a three year warranty, the Model 235 is toolbox tough. Latest LSI circuitry and wide temperature range components make the Model 235 ideal for use in the field, control room and shop.

BENCHTOP ACCURACY in a TOOLBOX CALIBRATOR assures fast, precise setting of trips, recorders, controllers, loggers, computers and analysis instruments. ALTEK brings you the handy MODEL 235 PROCESS VOLTAGE ANALYZER at a cost low enough for every check-out and maintenance person.

SPECIFICATIONS ALTEK MODEL 235

(unless otherwise indicated, specifications are in % of Span @ 23°C)

ACCURACY: ±(0.05% of Span + 1 Least Significant Digit)
DISPLAY: Liquid Crystal; 31/2 digit, 0.35" (9.0mm) high
NEGATIVE VOLTAGES: Measured on 100mV and 10V ranges
"QUIK-CHEK" Factory preset at 0% and 100% (1 and 5V)

ADJUSTMENT RANGE	LO	HI
20 Volts	0.10V to +1.50V	0.75V to 11.00V
Percent 1 to 5 V	-25.0% to +12.0%	-10.0% to 199.9%
200 Millivolts	-2.0mV to +25.0mV	10mV to 199.9 mV

BUILT-IN BATTERIES: 3 x 9 Volt alkaline are included
BATTERY LIFE: Nominal 100 Hours, Sourcing into high impedance loads; nominal 20 Hours at 20mA Drain. Batteries should be removed when storing the unit >3 months.
SOURCE CURRENT: 30mA Maximum
SINK CURRENT: 20mA Maximum
OUTPUT IMPEDANCE: <0.3 Ohm
INPUT RESISTANCE (READ MODE): >2 Megohms
SOURCE RESISTANCE EFFECT (READ MODE): 0.1% error per 2000 Ohms
OVERLOAD PROTECTION: Protected to 120 Volts AC or DC
OVERLOAD INDICATOR: Lamp indicates high current or misconnection
SHORT CIRCUIT DURATION: Continuous
LOW VOLTAGE INDICATOR: LO BAT ARROW ← turns on at 18 Volts (approximately 10 operating hours remain)
TEMPERATURE EFFECT: ±0.01%/°C (Based on 23°C ±23°C Recommended Range)
RECOMMENDED OPERATING TEMPERATURE: 32 to 122°F (0 to 50°C)
OPERATING AMBIENT TEMPERATURE: -5 to +140 °F (- 20 to + 60 °C)
STORAGE TEMPERATURE: -22 to +175°F (-30 to +80°C)
RELATIVE HUMIDITY: 10 to 90%, non-condensing
WARM UP TIME: 3 seconds to rated accuracy
OVERALL SIZE: 21/2 x 25/8 x 51/8 inches (63.5 x 66.7 x 130 mm)
WEIGHT: 12.5 oz (0.35 kg)
AC ADAPTERS: Optional; 120 or 240V, 50/60 Hz
CARRYING CASE: Optional, zippered with belt loop

Specifications subject to change without notice

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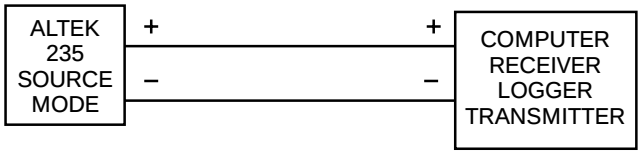
OPERATING INSTRUCTIONS

CALIBRATE VOLTAGE INPUTS

Disconnect one or both input wires from the device to be check or calibrated. Attach the red (+) lead of the ALTEK MODEL 235 to the plus input of the device to be calibrated, connect the black (-) lead to the minus terminal. Select the desired range and turn the SOURCE/OFF/READ mode selector switch to the SOURCE position. Actual voltage sent to the receiving device is shown on the LCD.

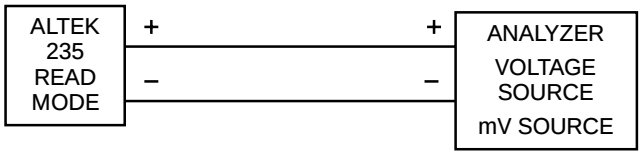
Output voltage is continuously adjustable with the QUIK-CHEK switch in the DIAL position. The source voltage can be set to any exact value from 0 to 200mV, 0 to 20V or -25 to 125% of 1 to 5V. HI and LO values are user adjustable and can be instantly selected by the QUIK-CHEK switch.



MEASURE VOLTAGE OUTPUTS

Place the leads of the MODEL 235 across the voltage signal to be measured. Place the MODE Switch in the READ position and select the range to be measured. Choose the 100mV position for signals from -199.9mV to +199.9mV. Signals from -19.99V to +19.99V can be measured with the 10V range. 1 to 5V signals can be displayed in units of 0 to 100% to monitor live process signals.

When measuring voltages from high impedance sources, the source resistance effect is 0.1% per 2000 Ohms. All ranges are fully protected to 120V AC against misconnection.



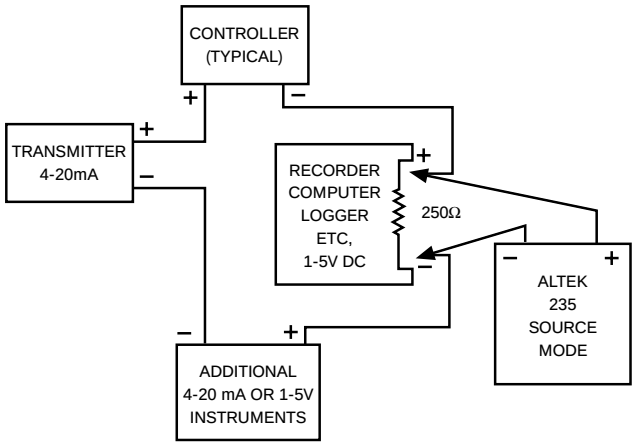
CHECK 1 TO 5V INPUTS WITHOUT DISCONNECTING WIRES

Any 1 to 5V device in a 4 to 20mA loop can be calibrated without breaking the loop or turning off the signal current. Clip the red lead to the positive input terminal and the black lead to the negative of the device to be checked or calibrated. It is not necessary to disconnect any associated 250 Ohm resistor. Make certain that changing the signal input will not disturb the process or cause unexpected alarms when checking on-line instruments.

It is important to remember the Model 235 drives only the device to which it is connected. It has no effect on other devices in the 4 to 20mA loop.

Set the RANGE switch to the 1 to 5 Volt range and the MODE switch to SOURCE. the LCD will display 0 to 100% corresponding to the 1 to 5 Volts required by the device being calibrated. The voltage is set to any exact value by the 10 turn dial. Adjust HI and LO trimmers to desired values for fastest repetitive calibration through the QUIK-CHEK switch.

Additionally, SINK MODE will clamp the selected value in the 100mV and 10V Ranges to the maximum sink current of 20mA. For example, receivers requiring 0.25 to 1.25V may be calibrated in the 10 Volt range. Connect the Model 235 across the 62.5 Ohm resistor and set the LO and HI QUIK-CHEKS for 0.25 and 1.25V.



WARRANTY

Our equipment is guaranteed against defective material and workmanship (excluding batteries) for a period of three years from date of shipment. Claims under guarantee can be made by returning the equipment prepaid to our factory. The equipment will be replaced, repaired or adjusted at our option. The liability of Altek is restricted to that given under our guarantee. No responsibility is accepted for damage, loss or other expense incurred through sale or use of our equipment. Under no condition shall Altek be liable for any special, incidental or consequential damage.

ORDERING INFORMATION:	Part No.
MODEL 235 Process Voltage Analyzer	235-0010
AC Adapter: 120V AC	28-0120
AD Adapter: 240V AC	28-0240
Carrying Case	09-3781

OTHER PRODUCTS

Altek designs and manufactures fast, accurate instruments for measurement, generation and simulation of virtually every process control signal. Consult our factory directly or contact your local stocking representative to order precise, low cost Milliamp Calibrators, Voltage Sources, Direct Thermocouple Sources, RTD Simulators and Frequency Sources. Altek also produces calibrators for custom ranges and unique applications. Additional models and ranges are frequently added to the Altek instrument family to meet all of your critical calibration requirements. Altek products are made in the USA.

AVAILABLE FROM:

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