

20 MILLIAMP SIGNAL ANALYZER MODEL 234



- **TRIPLE FUNCTION, 0 TO 20mA & -25 TO +125%**
Source, Read & 2-Wire simulate
- **PRECISE 3-1/2 DIGIT LCD**
±0.1% of 4-20mA SPAN in Milliamps or Percent
- **“QUIK-CHEK®” ZERO AND FULL SCALE**
Switch 4.00, 20.00mA or Continuous Dial
- **POCKET SIZE & LIGHTWEIGHT**
12.5 oz. (0.35 kg) with 3 Month Batteries
- **THREE YEAR WARRANTY**
Tough enough for your Toolbox

GENERAL DESCRIPTION

ALTEK's triple function MODEL 234 SIGNAL ANALYZER combines a self contained 0-24mA SOURCE, a 2-WIRE SIMULATOR and a large LCD DIGITAL READOUT in a single pocket sized instrument.

DUAL RANGE allows display of each function in PERCENT of 4-20mA signal, as well as directly in MILLIAMPS. PERCENT range displays minus 25.0% to plus 125.0% with 0.1% resolution. MILLIAMP range displays from 0.00 to 19.99mA with 10 microamp resolution. ACCURACY is ±0.1% of 4-20mA ±1/2 least significant digit.

“QUIK-CHEK” switch provides instant zero (4.00mA) and full scale (20.00mA) settings in both SOURCE and 2-WIRE modes. Output in the PERCENT range displays 00.0% and 100.0% for “QUIK-CHEK” settings. DIAL position selects a continuously adjustable 10 turn potentiometer to allow fast, easy setting to **any** exact value.

SOURCE MODE uses built-in batteries to provide 0-24mA into any load from 0-1000 ohms. 3 nine volt alkaline batteries provide over 20 hours of continuous 20mA output...more than three months of typical use. An optional AC adapter plugs in for continuous bench use. True current source maintains set output independent of load. 2-WIRE TRANSMITTERS can be POWERED and MEASURED in this mode.

2-WIRE SIMULATOR mode modulates external power to pass 4-20mA. The ALTEK MODEL 234 uses any LOOP POWER from 2 to 100 volts DC. True current design maintains set current independent of voltage or load changes.

READ mode displays either MILLIAMPS or PERCENT of 4-20mA signal. Maximum READ current is limited to (nominally) 25mA to minimize the possibility of damaging the calibrator or the loop to be calibrated. Special protective circuitry withstands accidental misconnection in **any** mode without fuses.

DISPLAY digits are 0.350" (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 of the current adjustment and measures the **actual** input or output.

The ALTEK MODEL 234 is rugged, yet lightweight and pocket sized. Latest LSI circuitry and wide temperature range components make the Model 234 ideal for use in the field, control room and shop.

BENCHTOP ACCURACY in a TOOLBOX CALIBRATOR assures fast, precise setting of current trips, recorders, controllers, loggers, computers and final control elements. ALTEK brings you the handy MODEL 234 SIGNAL ANALYZER at a cost low enough for every bench and toolbox.

SPECIFICATIONS ALTEK MODEL 234

(Unless otherwise indicated, specifications are in % of 16mA span at 23°C)

ACCURACY: ±0.1% (±1/2 least significant digit)
 DISPLAY: Liquid Crystal; 3 1/2 digit, 0.35" (9.0mm) high
 DISPLAY RANGES: 0.00 to 19.99 mA (-25.0 to +125.0%)
 RESOLUTION: 0.1% (percent mode) 0.01mA (mA mode)
 READ PROTECTION: Limited to nominal 25mA against accidental misconnection
 OVERVOLTAGE PROTECTION: Protected to 120 Volts AC or DC in all ranges without fuses
 TEMPERATURE EFFECT: ±0.01%/Degree C
 OUTPUT/2-WIRE RANGES: 0 to 24mA DC (-25 to +125%) continuous
 “QUIK-CHEK” SETTINGS: 4.00 and 20.00mA (00.0 and 100.0%)
 OUTPUT DRIVE CAPABILITY: 1000 ohms with fresh batteries or adapter, 800 ohms at first low battery warning ←
 BUILT-IN BATTERIES: 3 x 9 volt alkaline, included
 POWER TO EXTERNAL 2-WIRE TRANSMITTER: 24 volts with fresh batteries or adapter
 BATTERY LIFE: SOURCE; Nominal 20 hours at 20mA continuous. READ and 2-WIRE mode; Nominal 150 hours. Batteries should be removed when storing the unit >3 months.
 AC ADAPTERS: optional; 120 or 240V, 50/60 Hz
 LOW VOLTAGE INDICATORS: LO BAT ARROW ← turns on at 18 volts; decimal point turns off at 9 volts
 LOOP VOLTAGE LIMITS: 2-Wire Simulator Mode; minimum, 2V DC; maximum, 100V DC
 OPERATING AMBIENT TEMPERATURE: Minus 5 to plus 140 degrees F (minus 20 to plus 60 degrees C)
 STORAGE TEMPERATURE: minus 22 to plus 175 degrees F (minus 30 to plus 80 degrees C)
 RELATIVE HUMIDITY: 10 to 90%, non-condensing
 WARM UP TIME: 3 seconds to rated accuracy
 OVERALL SIZE: 2 1/2 x 2 5/8 x 5 1/8 inches (63.5 x 66.7 x 130 mm)
 WEIGHT: 12.5 oz (0.35 kg)
 CARRYING CASE: Optional, zippered with belt loop.

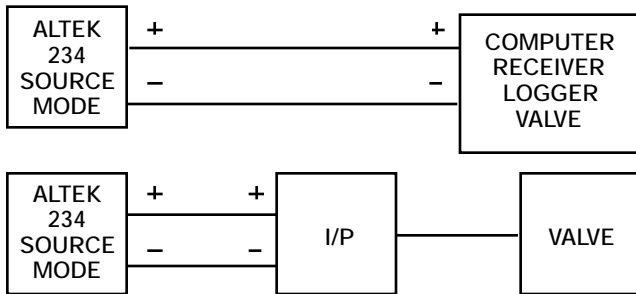
Specifications subject to change without notice

OPERATING INSTRUCTIONS

SOURCE MILLIAMPS

Disconnect one or both input wires from the device to be checked or calibrated. Attach the red (+) lead of the ALTEK MODEL 234 to the plus input of the device to be calibrated, connect the black (-) lead to the minus terminal. Turn the SOURCE/READ/2-WIRE mode selector switch to the SOURCE position. Turn on the Model 234 to the PERCENT or mA position, as desired. Actual current sent through the loop is seen as a PERCENT or MILLIAMP reading in the LCD display.

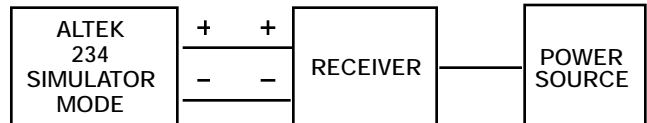
Output current is continuously adjustable with the "QUIK-CHEK" (0%/DIAL/100%) switch in the DIAL position. The SOURCE current can be set from 0.00mA (-25.0%) to 24 mA (125.0%). In the mA mode, the display reads up to 19.99 mA. For display of higher outputs, use the PERCENT position. Exact 4.00 and 20.00mA output is instantly available in either mode by the use of the "QUIK-CHEK" switch.



SIMULATE 2-WIRE TRANSMITTERS

Disconnect any existing 2-wire transmitter from the loop to be checked or calibrated. (Only one of the two wires need be disconnected.) Leave the power source and the receiver in place.

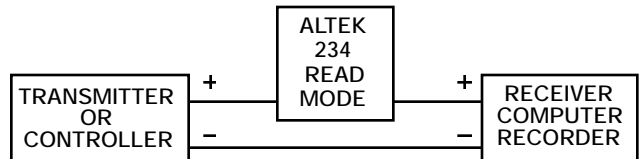
Put the mode selector in the 2-WIRE position. Connect the red lead of the ALTEK Model 234 to the plus (+) terminal of the field connections. Connect the black lead to the minus (-) terminal and turn the 234 on. The LCD display will read the loop current in PERCENT or mA, as selected. 0% (4.00mA) DIAL adjustment and 100% (20.00mA) are selected with the right hand "QUIK-CHEK" switch. Instant ZERO and FULL SCALE checks are made with the 0% and 100% positions. The DIAL mode allows continuous adjustment of the 2-wire current from 0.00mA (-25.0%) to 24mA (125%). Complete any necessary recalibration and turn the ALTEK Model 234 off. Reconnect any wires removed for checkout.



READ MILLIAMPS

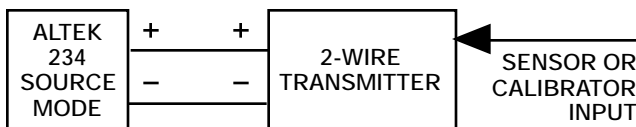
Open the current loop at any convenient point along the signal path. Connect the ALTEK Model 234 Red (+) lead to the more positive point of the break. Connect the Black (-) terminal to the more negative side of the break. Put the left hand mode select switch in the "READ" position and turn the unit on in either MILLIAMP or PERCENT display position. The Model 234 will read current in the loop from 0 to 19.99mA or -25 to +125% (24mA).

LOOP CURRENT is automatically limited to approximately 25mA to avoid any damage to the calibrator or other devices within the loop. If the Model 234 is accidentally connected in the wrong polarity, the display will read 0.00mA or -25.0% and no current will flow in the loop. Simply reverse the leads for correct operation.



POWER & MEASURE 2-WIRE TRANSMITTERS

Connect the Model 234 (+) and (-) leads to the power leads of the 2-wire transmitter to be powered and measured. Connect the appropriate signal to the input of the 2-wire transmitter. Set the "QUIK-CHEK" switch to the DIAL position. Turn the DIAL fully clockwise (maximum position). Set the mode switch to the SOURCE position. Turn the 234 on to either the mA or the PERCENT display modes. 24 volts (nominal) will be supplied to the 2-wire transmitter by the 234. The milliamp current passed by the transmitter will be accurately displayed. Calibrate the 2-wire transmitter in the usual manner and disconnect the 234.



ORDERING INFORMATION:

MODEL 234: 20 Milliamp Signal Analyzer	Part No.
AC Adapter: 120V AC	28-0120
AD Adapter: 240V AC	28-0240
Carrying Case	09-3781