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# Process Calibrator

## TechChek™ 820

## CONTENTS



## GENERAL INFORMATION

Lighten your load by taking the TechChek to every site. It's like bringing a cartload of test equipment from the shop to the control room or the field. The TechChek 820 sources & reads DC like a milliamp or voltage calibrator, simulates and measures T/Cs & RTDs like a temperature calibrator and generates and counts frequency & Counts-Per-Minute like a frequency calibrator. Your TechChek can also help you trouble shoot like a multimeter! It checks continuity and measures AC line voltage without carrying a seperate instrument.

The TechChek 820 is easy to use. Select a function, choose a range, and turn the knob for the precise output you need. Plus, you can store three output values per range for instant recall with the QUIK-CHEK® switch.

### MILLIAMP CALIBRATION

Use at every point in your 4 to 20 mA loop. You can Source & Read 0.00 to 24.00 mA, Simulate a Two-Wire Transmitter or the use the TechChek 820 to simultaneously Power & Measure your Two-Wire Transmitters.

### VOLTAGE CALIBRATION

Calibrate all your DC millivolt and voltage instrumentation. Source from 0.00 to 110.00 mV and 0.00 to 10.25 V. Read up to 110.00 mV, 11.00 V and 200.0 VDC.

### THERMOCOUPLE CALIBRATION

Source and read directly in °C and °F for T/C types J, K, T & E with 1° resolution. Cold junction compensation automatically adjusts for ambient temperature changes.

### RTD CALIBRATION

Built-in Platinum 100 Ohm DIN/IEC 751 table displays in °C or °F. No more decade box and hard-to-read tables. Also reads and sources in Ohms.

# GENERAL INFORMATION

## FREQUENCY CALIBRATION

Generate Zero Crossing square waves from 1 to 1000 Hz, 0.01 to 10.00 kHz and from 1 to 1000 CPM (Counts-Per-Minute). Also measures as a frequency counter.

## MEASURE AC VOLTAGE

Check your line voltage or mains from 0.0 to 250.0 volts AC. Great for troubleshooting power problems.

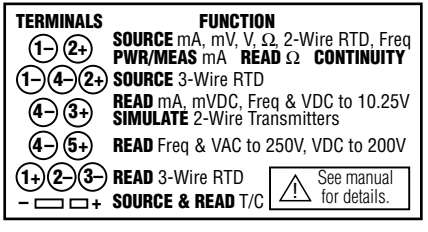
## CHECK CONTINUITY

Locate pairs of wire, open connections and shorts with the built-in beeper.

## TECHNICIAN'S LEAD KIT

Included with the TechChek 820 is a test lead kit which consists of three safety test leads with alligator clips, test probes and spade lugs.

## Rear Label - Condensed Operation Guide

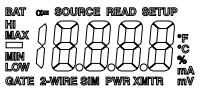





# OPERATING INSTRUCTIONS

## GENERAL

### TURN-ON

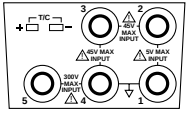



Each time you turn on the TechChek 820 the LCD will display all segments for about 1 second. It then displays the most recently selected Source or Read Setting.

SOURCE - The three QUIK-CHEK outputs will be the same as previously stored. Each time a different function is selected, the three QUIK-CHEK outputs will be recalled.

READ - The 820 is ready to measure the same signal as the last time it was turned on and is automatically updating the MAX & MIN readings for recall at any time.

### CONNECTIONS



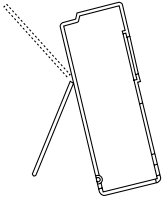

TechChek 820 has protected banana jacks compatible with standard and safety banana plugs. **Included with your TechChek are:** a pair of safety test leads with test probes, safety alligator clips standard alligator clips and spade lugs for attachment to a wide variety of instruments. An additional safety test lead and spade lug are also included for 3-Wire RTD connections. Thermocouple connections are made through a miniature thermocouple socket.

Optional KIT-1 includes T/C wires for Type J, T, E & K with miniature T/C plugs (not included).

*To prevent accidently overloading the instrument being tested, it is important to correctly set up the outputs before connecting TechChek 820 to any instruments to be calibrated.*

## GENERAL

### FIELD & BENCH USE



TechChek 820 comes with a carrying case and a built-in tilt stand/hanger. The 820 is held securely in the case by VELCRO® for use with the carrying case open. The carrying case also has a snap-on belt loop which can be looped around a pipe or rail.

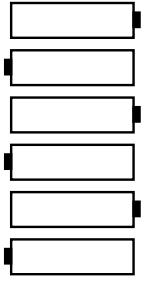
The tilt stand is easily raised by pulling the stand until it locks into place. The stand can also be reversed for use as a hanger to suspend the 820.

### AUTOCAL

**CAL**

To maintain accuracy the TechChek periodically recalibrates its measuring circuitry against internal references. While this is occuring the word CAL will appear on the display for less than 2 seconds.

### CHANGING BATTERIES



Low battery is indicated by BAT on the display. Approximately four hours of operation remain before the LCD blanks and TechChek 820 shuts itself down. Turn the 820 off, loosen the captive screw securing the battery compartment and lift off the cover from the bottom of the case. The six “AA” batteries are easily removed and replaced (alkaline supplied and recommended). Replace the battery compartment cover by inserting the tabs and tightening the screw.





## GENERAL

### CONFIGURING TEMPERATURE SCALES

The thermocouple and RTD ranges may be configured for full time use of °C, full time use of °F or selectable °C and °F operation. This configuration is part of the DEFAULT SETTINGS below.

### AUTO-OFF

TechChek 820 can be set up to turn itself off after 30 minutes of inactivity. The internal timer is reset to 30 minutes each time the digital pot is turned or a pushbutton is pressed.

### DEFAULT SETTINGS

TechChek 820 may be restored to the factory default setting. This will reset the HI and LO “QUIK-CHEK” memories according to the table below and the SET memory to midrange between HI and LO.

1) Press and hold the STORE/RESET push-button while turning the 820 on.
2) Keep pressing the push-button until the display flashes (about 5 seconds) then release.
3) The °C & °F symbols will flash on the display.
4) Press the RANGE/TYPE push-button to make your selection. With °C flashing the unit will only display in °C, With °F flashing the unit will only display in °F and with both flashing you can select °C and °F for each T/C & RTD type. °C/°F is selected if no push-buttons are pressed.
5) After five seconds the 820 will automatically store your choice and the words BAT and ON will appear on the display indicating that AUTO-OFF is selected.
6) To toggle the AUTO-OFF function on and off press the RANGE/TYPE push-button and the words oN and oFF will display.
7) After five seconds the 820 will automatically store your choice.
8) All segments on the LCD will remain displayed until the 820 has been reset.

**QUIK-CHEK DEFAULTS**

| RANGE | LO | SET | HI |
|---|---|---|---|
| mA | 4.00 | 12.00 | 20.00 |
| mV | 1.00 | 5.00 | 10.00 |
| V | 1.00 | 5.00 | 10.00 |
| T/C | All points 0°C/32°F | | |
| Ohms | 100.0 | 200.0 | 400.0 |
| RTD | All points 0°C/32°F | | |
| kHz | 1.00 | 5.00 | 10.00 |
| Hz | 100 | 500 | 1000 |
| CPM | 100 | 500 | 1000 |

## GENERAL

### SELECTING RANGES

**RANGE/TYPE**

Press the RANGE/TYPE pushbutton to select the desired range and scale.

**SOURCE RANGES**

Milliamp: mA, %mA, 2-Wire Sim, %2-Wire Sim, Pwr Xmtr, %Pwr Xmtr
VDC: mV, V
T/C: J°F, J°C, T°F, T°C, E°F, E°C, K°F, K°C
Ohms: Ohms
RTD: Pt °F, Pt °C
Frequency: KHz, Hz, CPM

**READ RANGES**

Milliamp: mA, %mA
VDC: mV, 10V, 200V
T/C: J°F, J°C, T°F, T°C, E°F, E°C, K°F, K°C
Ohms: Ohms, Continuity
RTD: Pt °F, Pt °C
Frequency: KHz, Hz, CPM
VAC: VAC

### TURN OFF

**POWER**

Press the POWER push-button to turn the 820 off. If AUTO-OFF is enabled the 820 will turn itself off after 30 minutes of inactivity.





## SOURCE MODE

Select source by pressing the SOURCE/READ pushbutton until the word SOURCE appears on the LCD display. To change the output value, turn the speed sensitive digital pot. Turning the knob slowly will cause a gradual change in the output. A faster rate of change will occur when the knob is turned faster. This function operates in all three output positions (HI, SET & LO).

### STORING QUIK-CHEK OUTPUTS

**STORE/RESET**

1) Switch to HI or LO
2) Turn the knob to desired value
3) Press the STORE push-button
   The LCD will flash once to show that the value was saved

If a value is in the SET position and you want that value stored in HI or LO, press and hold the STORE push-button while moving the switch to HI or LO. The display will flash once to indicate the value has been stored. Then release the STORE push-button.

### RECALLING QUIK-CHEK OUTPUTS

**SOURCE**


When you need a stored value just flip the QUIK-CHEK switch. Any value for the selected range may be stored in HI & LO. The TechChek 820 remembers the HI, LO and SET values for each function with the power on or off. Each time a different function is selected, the last three QUIK-CHEK values for that function will be recalled.

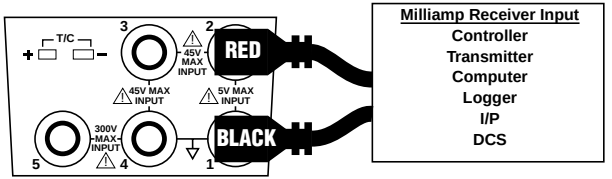
## CALIBRATE MILLIAMP INPUTS

**mA, mA % (Percent of 4 to 20 mA)**

Choose this function to provide an output from 0.00 to 24.00 milliamps. The compliance voltage is a nominal 25 VDC to provide the driving power to your milliamp receivers.

1) Disconnect one or both input wires from the device to be calibrated.
2) Connect the red SOURCE lead of the calibrator to the plus (+) input of the device and the black SOURCE lead to the minus (-).
3) Repeatedly press the RANGE/TYPE push-button until the word SOURCE and mA or SOURCE and % are displayed.

Output current is continuously adjustable with the "QUIK-CHEK" switch in the SET position. Zero & Span (or any other values) are available by using the LO and HI "QUIK-CHEKs".







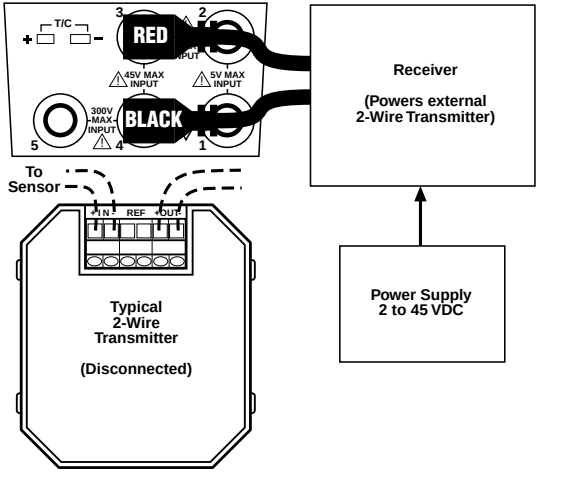

## SIMULATE 2-WIRE TRANSMITTERS

**2-WIRE SIM mA, 2-WIRE SIM % (Percent of 4 to 20 mA)**

Choose this function to simulate a 2-Wire Transmitter output from 1.00 to 24.00 milliamps. Operates in loops with power supply voltages from 3 to 45 VDC.

1) Disconnect existing 2-Wire Transmitter from the loop
2) Connect the red SOURCE lead of the calibrator to the plus (+) input of the field connections and the black SOURCE lead to the minus (-)
3) Repeatedly press the RANGE/TYPE push-button until the words SOURCE, 2-WIRE SIM and mA or SOURCE, 2-WIRE SIM and % are displayed.

The simulated output of the 2-Wire Transmitter is continuously adjustable from 1.00 to 24.00 mA with the "QUIK-CHEK" switch in the SET position. Zero & Span (or any other values) are available by using the LO and HI "QUIK-CHEKs".



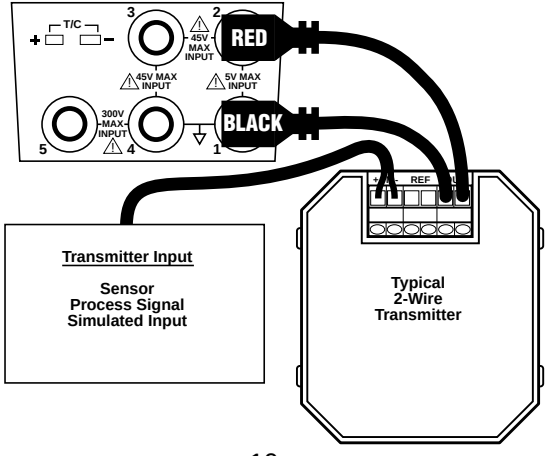
## POWER & MEASURE 2-WIRE TRANSMITTERS

**PWR XMTR mA, PWR XMTR %**

Choose this function to simultaneously supply power to a 2-Wire transmitter while displaying the 4-20 mA output of the transmitter.

1) Disconnect one or both input wires from the 2-Wire Transmitter to be calibrated
2) Connect the red SOURCE lead of the calibrator to the plus (+) input of the device and the black SOURCE lead to the minus (-)
3) Connect an appropriate sensor or calibrator to the input of the 2-Wire Transmitter
3) Repeatedly press the RANGE/TYPE push-button until the words SOURCE, PWR XMTR and mA or SOURCE, PWR XMTR and % are displayed.

TechChek 820 supplies a nominal 24 Volts DC at 24 mA to the 2-Wire transmitter. The current passed by the transmitter will be accurately displayed by the 820. Calibrate the Transmitter in the usual manner and disconnect the 820.







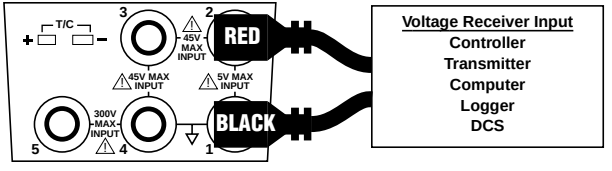

## CALIBRATE VOLTAGE INPUTS

**V, mV**

Choose this function to provide an output from 0.00 mV to 110.00 mV and from 0.00 to 10.25 VDC. Source current is a nominal 20 mA to provide the driving power to your voltage receivers.

1) Disconnect one or both input wires from the device to be calibrated
2) Connect the red SOURCE lead of the calibrator to the plus (+) input of the device and the black SOURCE lead to the minus (-)
3) Press the RANGE/TYPE push-button to switch the display between mV and V.

Output voltage is continuously adjustable with the "QUIK-CHEK" switch in the SET position. Zero & Span (or any other values) are available by using the LO and HI "QUIK-CHEKs".

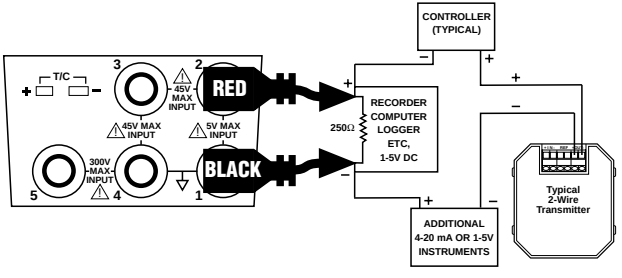


## CHECK 1-5 VOLT INPUTS WITHOUT DISCONNECTING WIRES

Most 1-5 Volt receivers in 4-20mA loops have a 250 Ohm resistor across the input of the receiver. This resistor may be mounted internally or externally. TechChek 820 is connected directly across the input of the 1-5 Volt receiver without disconnecting any field wiring. This saves a great deal of time when a large number of voltage receivers, such as chart recorders or computer systems, require calibration.

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 820 drives only the device to which it is connected.* It has no effect on other devices in the 4 to 20 mA loop. TechChek 820 will clamp the selected value in the mV and V Ranges to the maximum sink current of >16 mA.

1) Connect the red SOURCE lead of the calibrator to the plus (+) input of the device and the black SOURCE lead to the minus (-).





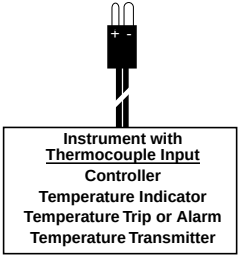


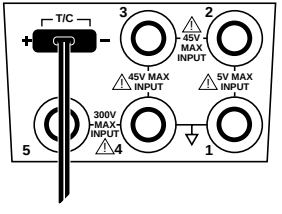

## CALIBRATE THERMOCOUPLE INPUTS

Choose this function to simulate a thermocouple signal into any instrument requiring a thermocouple input. The output of the 820 is automatically cold junction compensated.

1) Disconnect the thermocouple from the instrument being calibrated.
2) Press the RANGE/TYPE push-button until the desired T/C type and temperature scale appear.
3) Use a thermocouple wire and corresponding miniature thermocouple connector to connect the TechChek 820 to the instrument.

Output temperature is continuously adjustable with the "QUIK-CHEK" switch in the SET position. Zero & Span (or any other values) are available by using the LO and HI "QUIK-CHEKs"

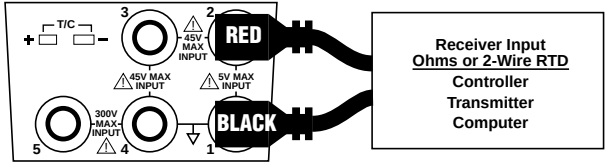


## CALIBRATE RESISTANCE INPUTS

Choose this function to simulate a resistance into a variety of instruments.

1) Disconnect one or both input wires from the device to be calibrated.
2) Connect the red SOURCE lead of the calibrator to the plus (+) input of the device and the black SOURCE lead to the minus (-).







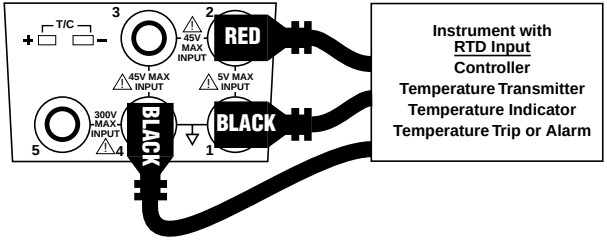

## CALIBRATE RTD INPUTS

Choose this function to simulate a temperature signal into any instrument requiring an RTD input.

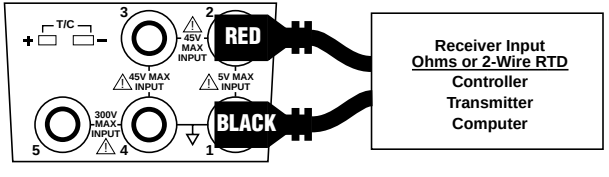
1) Disconnect the sensing RTD from the instrument being calibrated.
2) Press the RANGE/TYPE push-button until the desired RTD type and temperature scale appear.
3) Connect using 3 or 2 wires as in the diagrams below. Spade lugs are recommended to minimize any contact resistance.

Output temperature is continuously adjustable with the "QUIK-CHEK" switch in the SET position. Zero & Span (or any other values) are available by using the LO and HI "QUIK-CHEK" positions.

### Three Wire RTD Connection




### Two Wire RTD Connection

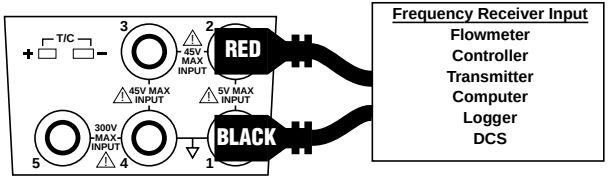


## CALIBRATE FREQUENCY INPUTS

Choose this function to provide pulses into frequency measuring instruments. The 820 output is a zero crossing square wave from -1V to +5V amplitude. Available ranges are from 0.01 to 10.00 kHz, 1 to 1000 Hz and from 1 to 1000 CPM (Counts-Per-Minute). CPM is used to simulate extremely slow frequency signals with greater resolution. For example, 10 Hz is equivalent to 600 CPM. To convert from CPM to Hz Divide by 60. To convert from Hz to CPM multiply by 60.

1) Disconnect any input from the instrument being calibrated.
2) Press the RANGE/TYPE push-button until the desired frequency range appears.
3) Connect the red SOURCE lead of the 820 to the plus (+) input of the device and the black SOURCE lead to the minus (-).

Output frequency is continuously adjustable with the "QUIK-CHEK" switch in the SET position. Zero & Span (or any other values) are available by using the LO and HI "QUIK-CHEKs"



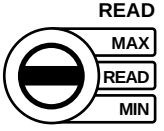





## READ FUNCTIONS

Select read by pressing the SOURCE/READ pushbutton until the word READ appears on the LCD display. The READ functions measure the desired signal. Multiple scales are available for some functions.

### MIN/MAX




To read the Maximum or Minimum INPUT since READ mode was entered, simply switch to MAX or MIN. The value will appear on the LCD along with the word MAX or MIN. The MAX/MIN values are automatically updated and may be viewed at any time without disturbing the other values.

### RESTARTING MIN/MAX

STORE/RESET

Pressing the STORE/RESET push-button will cause the 820 to store the present reading into the MAX and MIN memories. Upon releasing the STORE/RESET push-button the 820 will resume reading the input and update the MAX & MIN values as the measured signal changes.

### OUT OF RANGE SIGNALS


Signals above or below those available for the currently selected range will be indicated by Or and Ur on the display.

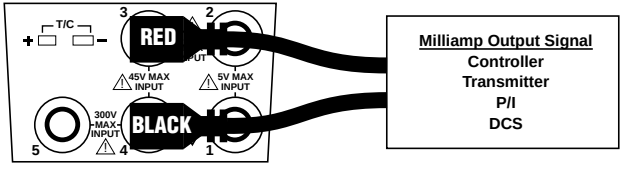
## READ MILLIAMP OUTPUTS

**mA, mA % (Percent of 4 to 20 mA)**

Choose this function to measure from 0.00 to +24.00 milliamps or -25.0 to 125.0%.

1) Open the current loop at any convenient point along the signal path
2) Connect the red READ (+) lead of the calibrator to the more positive point of the break and the black READ lead (-) to the more negative

Display the present reading, Maximum or Minimum by moving the toggle switch from READ to MAX or MIN. If TechChek 820 is connected in the wrong polarity, the word POLARITY will appear in the display. Simply reverse the leads for correct indication.








## READ DC VOLTAGE OUTPUTS

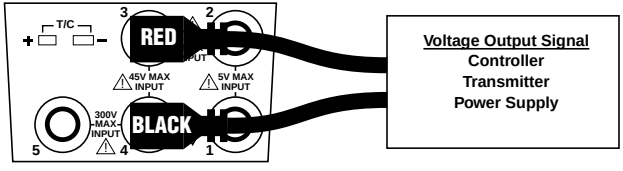
**V, mV**

Choose this function to measure from 0.00 to 10.25 DC Volts. For checking low level sensor outputs and other low levels change the input range to display from 0.00 to 110.00 millivolts. Use the high voltage connection to read from 0.0 to 200.0 VDC

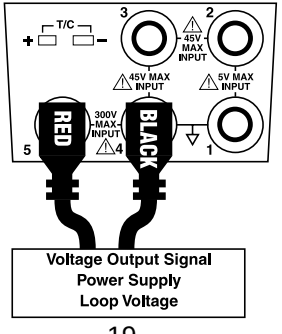
1) Connect the red READ (+) lead and the black READ (-) lead of the calibrator across the voltage to be measured.

Signals above or below those available for the currently selected range will be indicated by OVER and UNDER on the display.

**Connection for millivolts and Volts below 10.25 VDC**



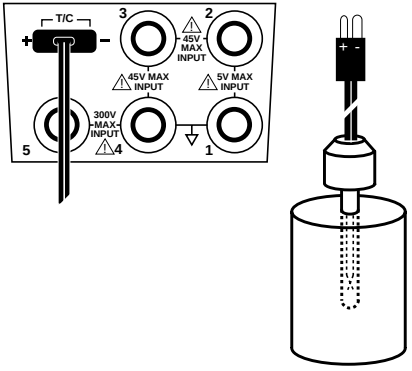

**Connection for Volts to 200.0 VDC**



## MEASURE THERMOCOUPLE SENSORS

Choose this function to read a thermocouple. The input of the TechChek 820 is automatically cold junction compensated.

1) Disconnect the thermocouple from any instrument.
2) Press the RANGE/TYPE push-button until the desired T/C type and temperature scale appear.
3) Use the proper thermocouple wire and corresponding miniature thermocouple connector to connect TechChek 820 to the thermocouple.







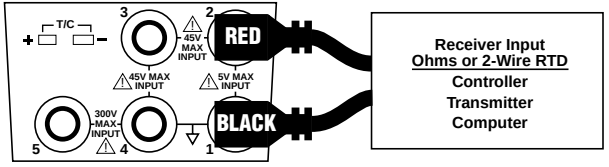

## READ RESISTANCE

**Ohms**

Choose this function to measure resistance from 0.0 to 1000.0 Ohms.

1) Connect the red READ (+) lead and the black READ (-) lead of the calibrator across the resistance to be measured.

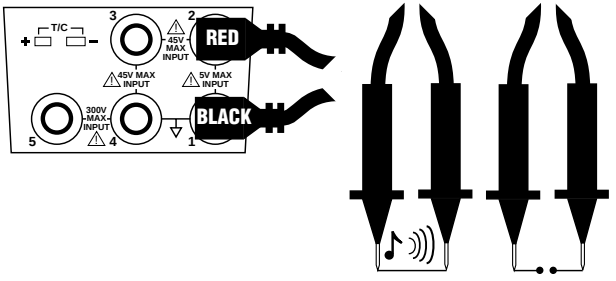
Signals above or below those available for the currently selected range will be indicated by OVER and UNDER on the display.



## CHECK CONTINUITY

Choose this function to check continuity. A tone will sound and a sound symbol will appear on the display when the resistance between the leads is less than 100 Ohms.

1) Plug the leads into the TechChek 820 as shown below.
2) Turn the selector knob to OHMs
3) Press the SOURCE/READ pushbutton until the word READ appears on the display.
4) Press the RANGE/TYPE pushbutton until the word CONTINUITY appears on the display



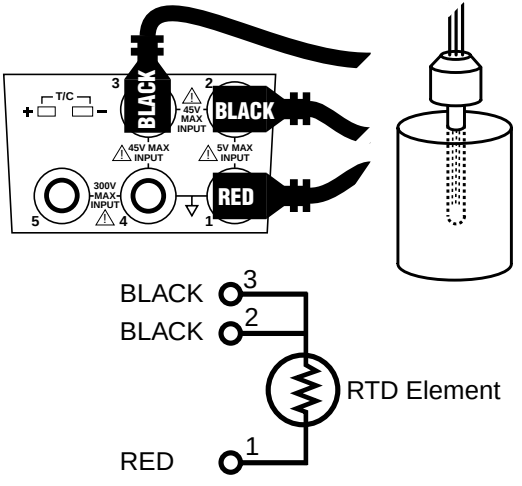





## MEASURE RTD SENSORS

Choose this function to read an RTD. Three wires must be use for both 2 and three wire RTDs.

1) Disconnect the RTD from any instrument.
2) Press the RANGE/TYPE push-button until the desired RTD type and temperature scale appear.
3) Connect using 3 wires as in the diagrams below. Spade lugs are recommended to minimize any contact resistance.

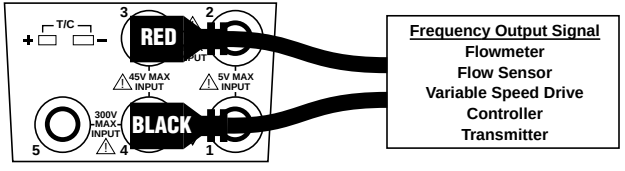


## COUNT FREQUENCIES

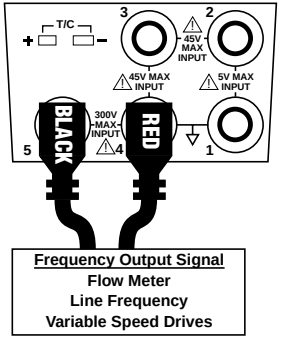
Choose this function to use the 820 as a frequecny counter. Availible ranges are from 0.01 to 10.00 kHz, 1 to 1000 Hz and from 1 to 1000 CPM (Counts-Per-Minute).

To measure waveforms with amplitudes between 1 V and 10.25 V RMS use the low level inputs. Use the high voltage connection to read waveforms with amplitudes from 10.25 to 250.0 V RMS

**Connection for signals with amplitudes below 10.25 V RMS**




**Connection for signals with amplitudes to 250 V RMS**



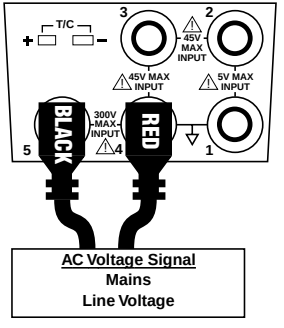





## READ AC VOLTAGES

Choose this function to measure from 0.0 to 250.0 V True RMS.

**CAUTION:** *Care should be used when measuring AC voltage. The included safety test probes or safety alligator clips should be used. Do not exceed voltage limits shown on calibrator.*



## SPECIFICATIONS

### GENERAL

**TYPICAL 90 DAY ACCURACY:** ±(0.025% of Full Scale + 1 LSD)[1]
**1 YEAR ACCURACY:** ±(0.05% of Full Scale + 1 LSD)
**WARM UP TIME:** 10 seconds to specified accuracy, 2 minutes to maximum accuracy
**TEMPERATURE EFFECT:** ±0.01%/°C based on 23°±25°C
**BATTERIES:** Six "AA", (R6) batteries (Alkaline supplied and recommended)
**BATTERY LIFE:**
MILLIAMP SOURCE & 2-WIRE MODES: Nominal 50 hours at 12 mA, 20 hours at 20 mA with 250 Ohm load
OTHER FUNCTIONS: Nominal 50 hours
**LOW BATTERY INDICATION:** "BAT" indication on the display at approximately 4 hours left
**OVERLOAD PROTECTION:** Three fuses, 250 mA [need rating]
**NOISE:** ≤1 LSD at frequencies less than 10 Hz
**NORMAL MODE REJECTION RATIO:** 50 dB @ 50/60 Hz
**OPERATING TEMPERATURE RANGE:** -5 to +130 °F (-20 to +55°C)
**STORAGE TEMPERATURE RANGE:** -13 to +130°F (-25 to +55°C)
**RELATIVE HUMIDITY:** 10 to 90%, non-condensing for 24 hours from 0 to 35°C
**OVERALL SIZE:** 158.1 x 83.1 x 49.3 mm (6.23 x 3.27 x 1.94 inches)
**WEIGHT:** 0.6 kg (1 lb, 5 oz)

### MILLIAMP SOURCE

**RANGES:**
0.00 to 24.00 mA; -25.0 to 125.0 % of 4 to 20 mA
**ACCURACY:** ±(0.05% of 24 mA Span + 0.01 mA) = 0.02mA
**TYPICAL DRIVE CAPABILITY:** 1200 Ohms @ 20.00 mA
**COMPLIANCE VOLTAGE:** nominal 25 V @ 20 mA

[1] Typical 90 day accuracy can be estimated by dividing the 1 year % of full scale accuracy by 2. Additions to the specification, such as + 1 LSD, remain constant.



## SPECIFICATIONS

### POWER & MEASURE 2-WIRE TRANSMITTERS

**RANGES & ACCURACY:** Same as for MILLIAMP SOURCE
**OUTPUT CURRENT**: up to 24.00 mA
**TYPICAL DRIVE CAPABILITY:** 1200 Ohms @ 20.00 mA
**COMPLIANCE VOLTAGE:** nominal 25 VDC @ 20 mA

### 2-WIRE TRANSMITTER SIMULATOR

**RANGES:**
1.00 to 24.00 mA; -18.8 to 125.0% of 4 to 20 mA
**ACCURACY:** Same as for MILLIAMP SOURCE
**LOOP VOLTAGE LIMITS:** Mininum, 3 VDC; Maximum 45 VDC
**OVERLOAD PROTECTION:** Current limited to 25 mA nominal

### MILLIAMP READ

**RANGES:**
0.00 to 24.00 mA; -25.0 to 125.0 % of 4 to 20 mA
**ACCURACY:** Same as for MILLIAMP SOURCE
**OVERLOAD PROTECTION:** Current limited to 25 mA nominal
**VOLTAGE BURDEN:** 0.9V at 4 mA, 1.2V at 20 mA, 1.9V at 24 mA

### DC VOLTAGE SOURCE

**RANGES:**
0.00 to 110.00 mV; 0.00 to 10.25V
**ACCURACY**:
±(0.05% of 110 mV+ 0.01mV) = ±0.07 mV
±(0.05% of 10.25 V + 0.01V) = ±0.02V
**SOURCE CURRENT:** >20 mA
**SINK CURRENT:** >20 mA
**OUTPUT IMPEDANCE**: <0.3 Ohms
**SHORT CIRCUIT DURATION**: Infinite

### MEASURE AC VOLTS

**RANGE**: 0.0 to 250.0 V True RMS
**ACCURACY:** From 10 to 250 VAC ±(2% of 250 V + 0.1 VAC) = ±5.1 VAC
**MAXIMUM CREST FACTOR:** < 3
**FREQUENCY RANGE:** 45 to 800 Hz

## SPECIFICATIONS

### MEASURE DC VOLTS

**RANGES:**

0.00 to 110.00 mV; 0.00 to 10.25 V; 0.0 to 200.0 V

**ACCURACY:**

±(0.05% of 110 mV+ 0.01mV) = ±0.07 mV

±(0.05% of 10.25 V + 0.01V) = ±0.02V

±(2% of 200.0 V + 0.1V) = ±4.1 V

**INPUT RESISTANCE**: >1 Meg Ohm to 10.25V, >5 Meg Ohm to 200V

**SOURCE RESISTANCE EFFECT:** 0.01% per 100 Ohms

### SOURCE THERMOCOUPLES

**RANGES:**

Type J -100 to 1200°C; -148 to 2192°F

Type K -100 to 1371°C; -148 to 2500°F

Type T -100 to 400°C; -148 to 752°F

Type E -100 to 1000°C; -148 to 1832°F

**ACCURACY**:

1°C for temperatures above 0°C

2°C for temperatures below 0°C

**COLD JUNCTION ACCURACY**: ±1°C

**COLD JUNCTION EFFECT**: within 0.05°C per °C change

**OVERLOAD PROTECTION:** Fused

**OUTPUT IMPEDANCE:** <0.3 Ohms

**SOURCE CURRENT:** :>20 mA

### READ THERMOCOUPLES

**RANGES & ACCURACY**: Same as for SOURCE THERMOCOUPLES

**INPUT IMPEDANCE:** > 1 Meg Ohm

**OPEN THERMOCOUPLE DETECTION:** 450 millisecond pulse. Nominal threshold, 10 K Ohms.

### SOURCE RTD & OHMS

**RANGE OHMS:** 0.0 to 400.0 Ohms

**ACCURACY:** ±0.05% of Full Scale + 0.075 mV/mA Excitation Current

**ACCURACY OHMS**: ±(0.05% of 400.0 Ohms + 0.1 Ohm = ±0.3 Ohms (At 1 mA Excitation Current)



## SPECIFICATIONS

**ACCURACY RTD:** ±1°C (At 1 mA Excitation Current)

**RTD Type:** Pt 100 Ohm DIN/IEC 751, Alpha = 1.3850 (0.00385)

**RANGE RTD**: -100 to 850°C; -148 to 1562°F

**TEMPERATURE EFFECT:** ±((0.035 mV/°C)*(1/mA Excitation Current))

**ALLOWABLE EXCITATION CURRENT:** 0.125 to 2.0 mA continuous DC

### READ RTD & OHMS

**RANGE OHMS:** 0.0 to 1000.0 Ohms

**ACCURACY:** ±(0.05% of 1000.0 Ohms + 0.1 Ohm) = ±0.6 Ohms

**RTD RANGE & ACCURACY:** Same as for SOURCE RTDs

**EXCITATION CURRENT SUPPLIED:** 1 mA, nominal

### FREQUENCY SOURCE

**RANGES**: 1 to 1000 CPM (Count-Per-Minute); 1 to 1000 Hz, 0.01 to 10.00 kHz

**ACCURACY:**

±(0.05% of 1000 CPM + 1 CPM) = ±2 CPM

±(0.05% of 1000 Hz + 1 Hz) = ±2 Hz

±(0.05% of 10.00 kHz + 0.01 kHz) = ±0.02 kHz

**OUTPUT WAVEFORM:** Square Wave, Zero Crossing, -1V to +5V ±10%

**RISETIME:** Hz <5 microseconds; CPM <100 microseconds

**OUTPUT IMPEDANCE:** <100 Ohms

**SOURCE CURRENT:** >1 mA at 10 kHz

**SHORT CIRCUIT DURATION:** Infinite

### MEASURE FREQUENCY

**RANGES & ACCURACY:** Same as for FREQUENCY SOURCE

**TRIGGER LEVEL:** 1 V RMS, DC coupled

**INPUT IMPEDANCE:** > 1Meg Ohm + 60 pF

### CONTINUITY CHECKING

**TEST CURRENT:** Nominal 1 mA

**THRESHOLD:** 100 Ohm ±20%

**INDICATION:** Steady tone & Symbol on LCD plus Ohm Reading

## WARRANTY

Altek products are warranted to be free from defects in material and workmanship (excluding fuses, batteries and leads) for a period of three years from the date of shipment. Warranty repairs can be obtained by returning the equipment prepaid to our factory. Products will be replaced, repaired, or adjusted at our option. *Altek gives no other warranties, including any implied warranty of fitness for a particular purpose.* Also, Altek shall not be liable for any special, indirect, incidental or consequential damages or losses arising from the sale or use of its products.



## NOTES

## NOTES



| ORDERING INFORMATION | Part No. |
|---|---|
| **MODEL 820 TechChek PROCESS CALIBRATOR** | **820** |

Included with each Model 820 are:
Carrying Case with belt loop and shoulder strap
Test Lead Kit

PN 1839053 Rev A April 2002