



## Portable Hand Held Service Manometer

For pressure, temperature, and flow

Type 909.40.500 - Standard

Type 909.40.600 - EX Intrinsically Safe

### Tronic

- Microprocessor controlled
- Peak, valley, and hold memory function
- Pressure ranges from 10 INWC to 60,000 PSI
- Temperature from -392 °F to +1100 °F



The portable manometer is a microprocessor-based, hand-held system for measuring pressure, temperature, and flow. DC voltage, current and pulse frequencies can be measured. The display unit features a dust and waterproof foil-type keyboard. Either of the two ports can be individually set to any available engineering unit. For example, port 1 can indicate pressure in PSI and port 2 in BAR, and the pressure differential across both ports can be displayed in mmHg. Units (pressure or temperature) and the range of the connected transducers are set automatically. The microprocessor also sets the decimal point to achieve the best possible resolution for the selected range.

#### Features

The manometer accepts pressure transducers type 891.13.591 (ranges up to 25 INWC), 891.13.590 (ranges to 250 PSI) and 891.23.590 (ranges to 60,000 PSI). The serial interface in the transducer automatically transmits the range and pressure unit to the manometer. The transducer wetted parts are 316 stainless steel. The standard process connection is 1/2" NPT with adapters available. Other pressure ranges and connections (flush diaphragm or sanitary seal) are available.

#### Complete Systems

The basic service kit consists of an aluminum carry case, the hand held display, two connecting cables for transducers, battery charger, and instruction manual. A wide range of accessories are available for specific applications. Pressure measurements require 891.13.591, 891.13.590, or 891.23.590 pressure transducers. Temperature applications require the TR-590 resistance thermometer. Other options include a plug-in adapter for flow measurement, pressure fittings, mini-mess snap-fit couplings, extension cables, and RS-232 serial interface.

#### Measurement of Flow and RPM

A plug-in adapter contains an EEPROM that is programmed at the factory or by personal computer to accept the signal of turbine type flow meters and rotary encoders from other manufacturers. Up to twelve paired values reflecting the frequency/flow ratio may be entered. The microprocessor interpolates the value measured to be indicated in gallons per minute or liters per minute. Ratio values may be spread or condensed as needed to compensate for non-linearity of the coder. For measurement of RPM, the EEPROM can be programmed to convert an optional number of pulses into indication of one RPM (1/s).

#### Specifications - Display unit

Digital liquid crystal display, 0.5" (12.7mm) high with a display range of +/- 10000. Selectable to indicate MBAR, BAR, mmH<sub>2</sub>O, mmHg, kg/cm<sup>2</sup>, kPa, PSI, PSI x10, inH<sub>2</sub>O, inHg, °C, °F, K, V, mA, L/min, gal/min, 1/s. The display automatically changes to "-" when negative values are measured. Decimal point sets automatically depending on the selected range. Zero adjustment is self monitoring when on.

#### Accuracy

+/- 0.06 +/- 1 digit % of span

#### Error Prompts

-01- for A/D converter, -02- incorrect unit entered, -03- range overflow, LoBat (for low battery)

#### Pick Up Rate

1000 per second, LCD display refreshes twice per second

#### Memory

**Hold:** Digital memory, no data loss as long as power is on. Individual memory for each channel. **Minimum and Maximum:** Digital memory, no data loss as long as power on. Each channel holds individual memory for minimum and maximum. Pick up rate is <1 millisecond. Individual reset keys.

#### Analog Output (mV)

0.1 digit (1000 max) minimum output impedance 50KW, polarity changes with negative values. Also minimum, maximum and differential values available.

#### Differential Pressure

Measurement of pressure or temperature differential, using transducers of the same or different range. The resolution is established by the higher range.

#### Temperature Measurement

Resistance thermometers Pt 100, quadrupole, digital linearity per DIN. Range -200° C to +600° C, resolution 0.1° C

#### Flow (gal/min) and Frequency (Pulse) Measurement (1/s)

0-10000 with plug in adapter

#### Voltage (DC V) Current Measurement (DC mA)

50 max. Resolution to 10mV or 0.01mA

#### Power Supply (DC V)

6, uses 5 1.2V rechargeable batteries (WIKA part # 1147315) for 12 hour operation. Battery compartment in bottom of case.

## Specifications - Transducer

**Ranges** (specify exact range required)  
 891.13.590: 0 to 25 INWC (for inert, gaseous media only)  
 891.13.590: 0-50 INWC to 250 PSIG (PSIA available)  
 891.23.590: 300 psig to 60,000 psig  
 {custom ranges available}

### Process connections

1/2 " NPT {others available}

### Wetted parts material

316 stainless steel

### Body material

304 stainless steel

### Power supply

5 VDC, from manometer

### Signal output

0-500mV nominal

### Response time (10..90%)

<1 millisecond

### Accuracy (% of span)

Linearity (B.F.S.L.)	≤0.25% FS
Hysteresis	≤0.1% FS
Repeatability	≤0.05% FS
1-Year Stability	≤0.2% (at reference conditions)

### Temperature

Maximum medium	-22°F to +212°F (-30°C to 100°C)
Ambient	+14°F to +176°F (-10°C to 80°C)
Storage	-40°F to +212°F (-40°C to 100°C)
Compensated range	+32°F to +176°F (0°C to 80°C)

### Temperature error (reference temperature 70°F )

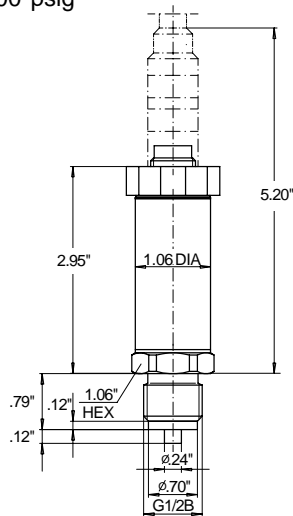
Effect of temperature	
on zero	<0.2% of span per 18° F (10°C)
on span	<0.2% of span per 18° F (10°C)

**Wiring** 8-pin DIN plug

**Weather protection** IP 65

**Dimensions** See drawings

**Weight** 0.15 Kg (0.33 lbs)



## Model TR 590-T1 -200°C to 600°C, 5.9 in. long

Dip sensor suitable for liquids and gases. Response time is approximately 10 seconds. The stem is made of stainless steel. Plastic handle and 1 meter cable with 8-pin plug.

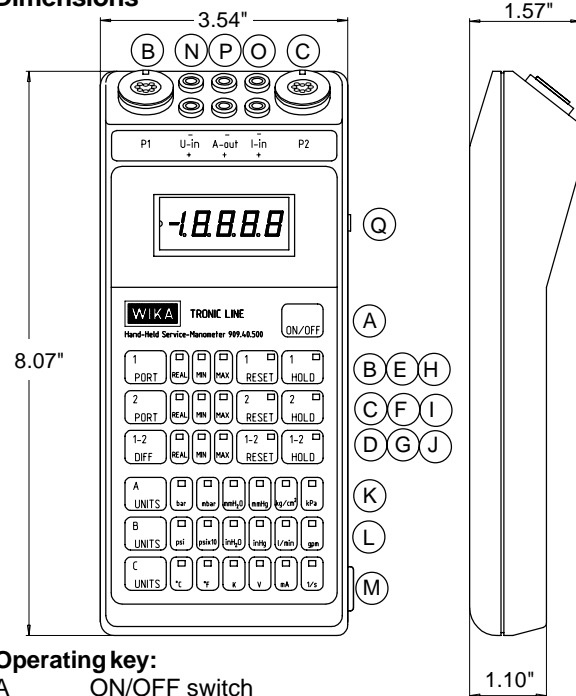
## Model TR 590-E1, -200°C to 600°C, 5.9 in. long

Needle sensor suitable for media of plastic consistency. Response time is approximately 10 seconds.

## Model TR 590-O1, -50°C to 400°C, 5.9 in. long

Surface sensor suitable to measure surface temperature of solids. Response time is approximately 55 seconds. It includes a rigid stem with pivoting Pt 100 ceramic sensor.

## Dimensions



### Operating key:

A	ON/OFF switch
B	Port 1 -- select channel 1
C	Port 2 -- select channel 2
D	Diff 1-2 -- differential across 1-2
E	Reset 1 -- Erase memory 1
F	Reset 2 -- Erase memory 2
G	Reset 1-2 -- Erase differential memory
H	Hold 1 -- Hold value channel 1
I	Hold 2 -- Hold value channel 2
J	Hold 1-2 -- Hold differential value
K	Units A -- Select Bar, mbar, mmH <sub>2</sub> O, kg/cm <sup>2</sup> , kPa
L	Units B -- Select PSI, PSI x 10, inH <sub>2</sub> O, l/min, gpm
M	Units C -- Select °C, °F, K, V, mA, 1/s
N	U-in -- Voltage input
O	I-in -- mA input
P	A-out -- Analog output
Q	DC-in -- Receptacle for line adapter

REAL mode displays true value measured, MIN and MAX recalls memory, RESET erases memory.

HOLD and RESET keys correspond to the memory that was selected with PORT keys.

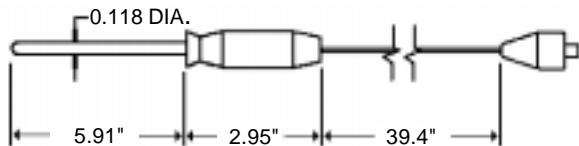
MIN and MAX will be memorized if HOLD of a non-selected channel is depressed. MIN and MAX will be erased if RESET of a non-selected channel is depressed.

## Resistance Thermometer Model TR 590

### Features

The manometer accepts PT 100 resistance thermometers. The WIKA hand-held temperature sensor TR 590 with an 8-pin DIN plug is designed to match the instrument.

### Specifications and dimensions (in.)



### Ordering Information:

State computer part number (if available) / type number / size / range / connection size and location / options required.

Specifications given in this price list represent the state of engineering at the time of printing. Modifications may take place and the specified materials may change without prior notice



### WIKAL Instrument Corporation

1000 Wiegand Boulevard

Lawrenceville, Georgia 30043-5868

Tel: 770-513-8200 Fax: 770-338-5118

http://www.wika.com e-mail: info@wika.com