4 Digit Flowrate Indicator 97R

INSTALLATION AND OPERATION

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GENERAL DESCRIPTION

The 97R (200 series) is a versatile, four decade, fully programmable, digital flowrate indicator with a large 14mm display.

Based on the Intel 80C31 microprocessor, the circuitry is protected against mains born interference and therefore has good noise immunity and maximum reliability.

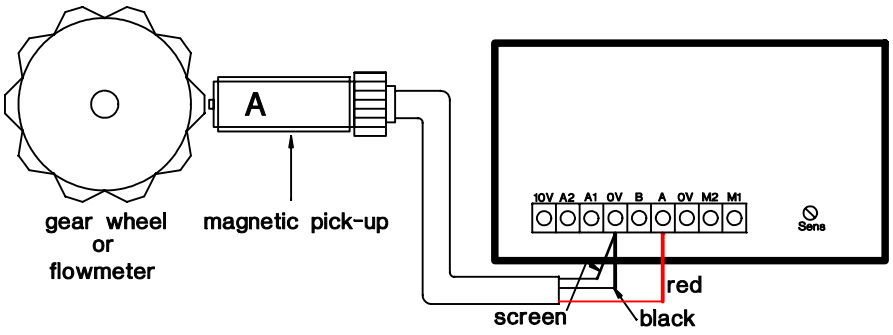
The unit operates in a recipromatic mode, measuring the time interval between edges and displaying 1/t.

The display is then scaled by a multiplication factor in the range 0.001 to 9999.

An independent positioning of the decimal point in the resultant display gives maximum flexibility.

FREQUENCY

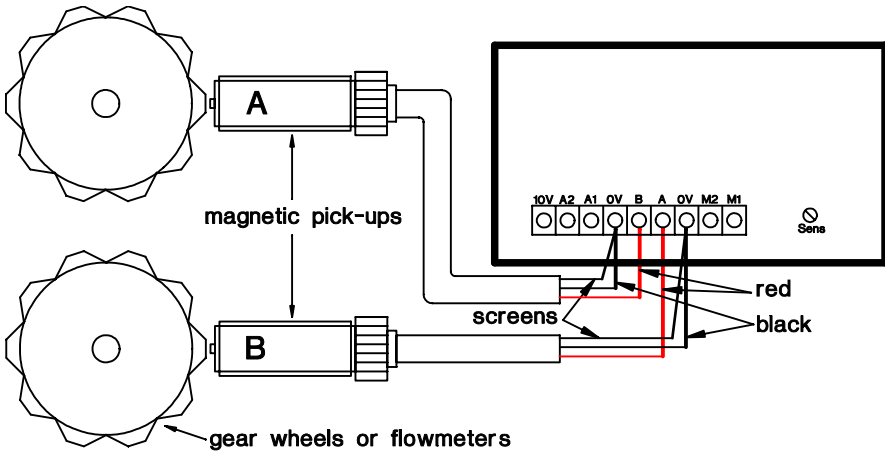
Although two inputs are provided, for single signal operation input 'A' must be used. Input 'B' is only active when input 'A' has a signal applied.



If the display reads '-SIG' it indicates that no signal is connected. Should the instrument still read '-SIG' when a signal is applied then the sensitivity must be increased by adjusting the control in a clockwise direction.

RATIO

In order to read ratio, the user must connect A & B inputs as shown in the diagram. When power is applied the instrument will read RATIO A/B, both inputs having the same scaling factor. If the instrument reads '-SIG' then input connections should be checked. If both signals are applied and the display still shows '-SIG' then the sensitivity control should be adjusted as above.



SETTING A SCALING FACTOR

When power is first applied to the instrument it will be in the RUN mode. In order to engage the SET mode remove the bezel and front cover to reveal the switches. Hold switch 'A' depressed and press switch 'B' once. On releasing switch 'A' the display will show SET for one second followed by the scaling factor contained in the memory. The L.S.D. will now flash and the scaling factor can be set using switch 'B' to set the value of each digit and switch 'A' to select the digit.
When the M.S.D. has been set the next depression of switch 'A' will cause the decimal point to flash in the L.S.D. position. The position of the decimal point in the scaling factor can now be set using switch 'B'.

On depressing switch 'A' once more, the position of the decimal point in the final display can be set using switch 'B' again. To switch back into the RUN mode, hold switch 'A' depressed and press switch 'B' twice.

The display will now read the measured value multiplied by the scaling factor (x).

FOR EXAMPLE

Display readout required (l/min)
Frequency at max. flowrate (Hz) = Scaling factor

INCREASING THE DISCRIMINATOR OF THE DISPLAY

Having set the scaling factor it may be an advantage to increase the discrimination of the displayed value (Ax). This can be achieved by moving the decimal point when setting the scaling factor as shown in the example below:

Assume an input frequency of 50Hz and a scaling factor of 1.00, then Ax = 50.

By moving the decimal point in the scaling factor one place to the right an extra decade of discrimination can be achieved. Thus if we make x = 10.0 then Ax will read 500. It is now necessary to position the decimal point in the final display, in this case it is moved one place to the left.

The instrument will now read 50.0 giving an extra decade of discrimination.

If two decades of discrimination are required, simply move the decimal point two places to the right in the calculated scaling factor, and position the decimal point accordingly in the final display.

The only limit to the amount of discrimination available is if the display goes beyond 9999 in which case it will read HIGH and it is then necessary to reduce either the scaling factor or the input frequency.

A.C. SUPPLIES

The 97R can be operated from either 240V or 120V, 50/60 Hz A.C. supplies. Instruments are set to operate from mains voltages specified at time of ordering.

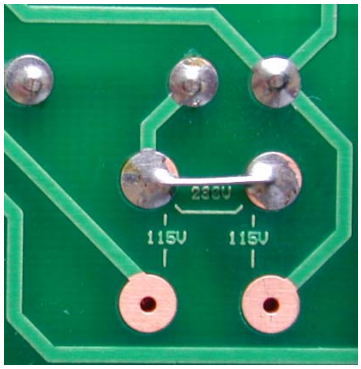
Should the user wish to change the mains operating voltage for any reason, the following procedure must be adhered to:

i) Disconnect the mains supply.

ii) Gently prize off the front panel surround and allow the front panel to fall forward and out.

iii) Remove the two screws in the rear of the case, then push the tachometer out through the case front.

iv) The pads which select the operating voltage are located on the underside of the P.C.B. Links should be soldered across the appropriate pads and the instrument should be reassembled.



D.C. OPERATION

The 97R may be operated from a D.C. supply in the range 8-13 volts by connecting 0V to Terminal 4 or 7 on the rear panel and +voltage to terminal 1.

Should a higher voltage be applied, it must have a suitable resistor in series.

e.g. For 24V operation a 100 ohm resistor.

SPECIFICATION

DISPLAY:-	4 Decade 7 Segment L.E.D. 14mm high	
DECIMAL POINT:-	Variable by Front Panel Switches	
INPUTS:-	) Sens.:-	200 mV to 10V (protected to 110V
	) Freq:-	1Hz to 10KHz
	) Impedence:-	15K.ohm
OUTPUT:-	) D.C. Volt:-	10V unregulated
	) Current:-	80mA max.
ACCURACY:-	0.05%	
SCALING:-	0.001 – 9999	
CONNECTIONS:-	Screw Terminals on rear panel	
POWER REQ.:-	120/240V A.C. 50/60Hz or 8-13V D.C. 6VA	
TEMP. RANGE:-	Operating: -	0 to 50oC
	Storage:-	-20 to +80 oC
DIMENSIONS:-	48 x 96 x 104 mm (panel cut out 92 x 43 mm)	
WEIGHT:-	0.5 Kg	

WARRANTY

This instrument carries a two year warranty which is only valid where there is no damage caused by accident, negligence, mis-application, or repairs or modifications attempted by any unauthorised person.

This warranty is only valid with the original purchaser.