COX INSTRUMENTS
FLOW MEASUREMENT
Proven Performance for Over 50 Years

MODELS 1061/1062

PRECISION RATEMETER/TOTALIZER

INSTALLATION
AND
PROGRAMMING MANUAL

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MODELS 1061 & 1062 SPECIFICATIONS

POWER
Internal Battery : 3V, Lithium
Life expectancy: 5 years +

PHYSICAL
Operating Temp.: -20ºC to 70ºC
Storage Temp.: -40ºC to 70ºC
Operating Humidity:
90% Non-condensing
Weight: 2.2 oz. net
Display Size: 0.43" high
Front Panel Rating: Nema 4X when mounted with gasket provided
Case Material: Cycolac X-17

TOTALIZER
Type: UP counting
Digits: 8.
Scaler: 0.0001 – 100.0000
(0.0000 scales by 100 in the Courier Series)
Decimal Point: 5 positions, programmable

RATE INDICATOR
Type: 1/Tau
Digits: 4/5, (4 calculated, 5 displayed with fixed 0 in LSD)
Scaler Range: .001 to 9999
Decimal Point: 5 positions, programmable
Accuracy: ± 0.20 %
Update Time: 0.7 seconds
Zero Time: 10 seconds

DC COMMON (Terminal 1)

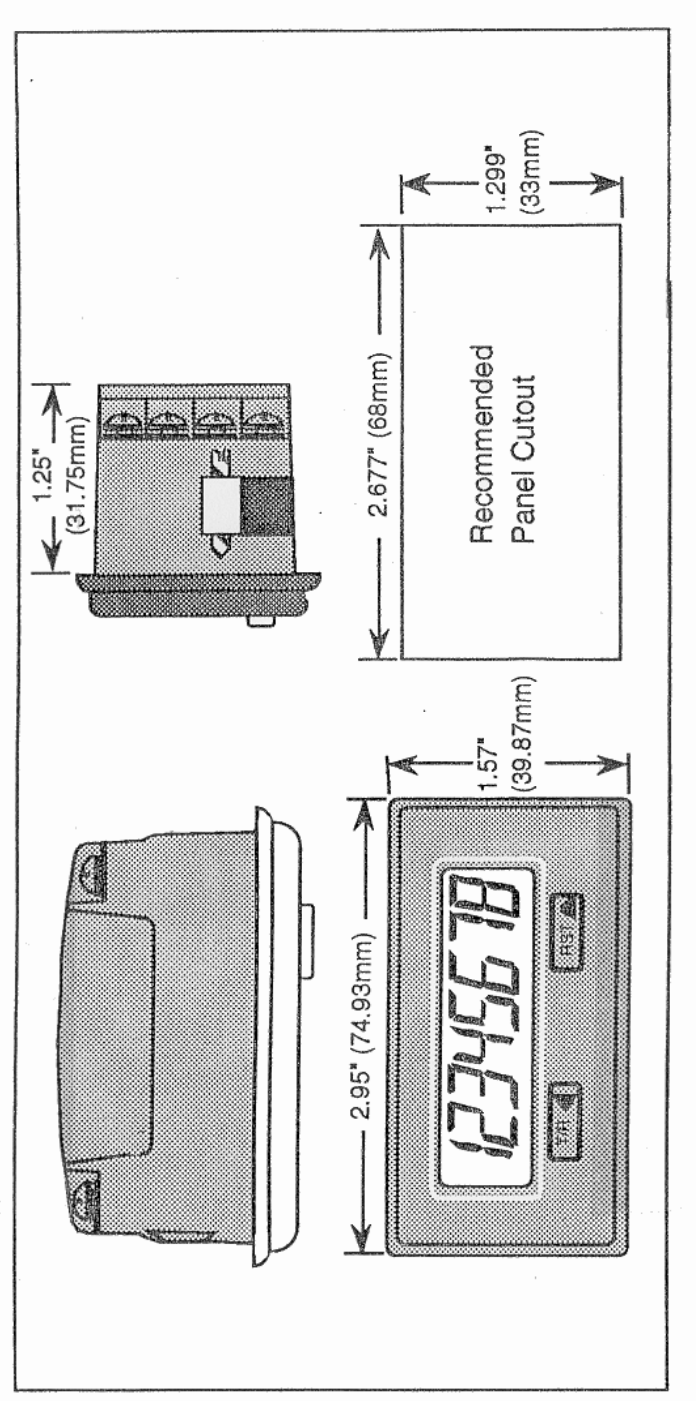
COUNT/RATE INPUTS
INPUT A
(TERMINAL 2 AND TERMINAL 3)
MAGNETIC PICKUP/ PULSE
Speed: Varies depending on unit
Voltage Range: Varies depending on unit

RESET INPUT (TERMINAL 4)
Resets totalizer to zero when connected to DC common
Min. Low Time: 0.25 to 1.0 sec. (maintained)
The required pulse width varies with count speed, scale factor and number of digits displayed
Voltage Thresholds:
Low: 0 to 0.4 VDC
High: 2.0 to 28 VDC

PROGRAM ENABLE INPUT (Terminal 5)
Operation: Level sensitive (maintained)

COUNT ACCURACY
100% when operated within specifications

DIMENSIONS


1.25"
(31.75mm)
2.677" (68mm)
Recommended
Panel Cutout
1.299"
(33mm)
1.57"
(39.87mm)
2.95" (74.93mm)
RST
F1

Programming Mode

To enter the programming mode, a jumper connection must be made between terminals 1 and 5.

Programming Screens

There are six programming functions.

Programing Screens	
Screen	**Function**
1	Totalizer Scaling Factor
2	Totalizer Decimal Point Factor
3	Rate Scaling Factor
4	Rate Decimal Point Display
5	Rate Scaling Multipier

1. Totalizer Scaling Factor

The totalizer scale factor, *TSF* is used to convert the incoming pulses to the desired units of measurement to be displayed. (i.e. lbs., gallons, etc.)

Scale factor range: 0.0001 to 99.9999

The following formula is used to calculate the proper scale factor setting:

$$\textbf{\textit{TSF}} = \frac{DPF}{K\text{-}factor}$$

Where *DPF* is the Decimal point factor. See program section 2., and the *K-factor* is retrieved from the calibration data sheet for the flow turbine.

- When the far right digit is flashing, press the RTS▲ key until the desired value is reached.
- Next, momentarily pressing the T/R◄ key will move the flashing digit one place to the left.
- Repeat the above steps to set for the desired value at that place and repeat for all digits requiring changes.
- Pressing and holding the T/R◄ key and momentarily pressing the RTS▲ key will move to the next programming screen.

Note: Pressing and holding either of the keys during these functions will cause them to autoscroll.

2. Totalizer Decimal Point Factor

The *DPF* is the decimal point factor number corresponding to the desired decimal point location used in the display of the totalizer. These are set using the following table.

Unit Display		*DPF* number
XXXXXX	=	1
XXXXX.X	=	10
XXXX.XX	=	100
XXX.XXX	=	1,000
XX.XXXX	=	10,000

EXAMPLE: A flow sensor produces 5520 pulses per gallon (*K-factor*), and has an equivalent flow rate of 9.77 GPM. Choosing a DPF to be XXXX.XX the following calculation would be done:

$$\textbf{\textit{TSF}} = \frac{100}{5520} = 0.0181 \text{ (}\textit{gal per 100 counts}\text{)}$$

- Press the RTS▲ key to move the decimal point to the desired position.
- Pressing and holding the T/R◄ key and momentarily pressing the RTS▲ key will move to the next programming screen.

3. Rate Scaling Factor

The third program mode screen allows you to enter the rate scale factor, *RS*.

Calculating the Rate Scale Factor

The ratemeter calculates rate by measuring the time interval between input pulses (T_0), and converting that period to a frequency ($1/T_0$ = freq.), then multiplying the frequency by the rate scale factor to produce a calculated flow rate. The rate scale factor (*RS*) is user programmed to convert the count input frequency into the desired rate units for display. (i.e. feet/minute, Lbs/hour, gallons/minute)

Rate Scale Factor (*RS*): 0.001 to 9999

The following formula is used to calculate the proper rate scale factor (*RS*):

- When the far right digit is flashing. Press the RTS▲ key until the desired value is reached.
- Next momentarily pressing the T/R◄ key will move the flashing digit one place to the left.
- Repeat the above steps to set for the desired value at that place and repeat for all digits requiring changes.
- When the "d" appears, press the RTS▲ key until the decimal point is in the desired location.

  Note: This decimal point is used for the rate scale factor only and will not appear on the screen. The decimal point on the screen is programmed using program location number 4 in conjunction with the DPF number.

- Pressing and holding the T/R◄ key and momentarily pressing the RTS▲ key will move to the next programming screen.

4. Rate Decimal Pt. Display

Unit Display		***DPF* number**
XXXX	=	1
XXX.X	=	10
XX.XX	=	100
X.XXX	=	1,000

$$\textbf{\textit{RSF}} = \frac{\text{SEC} * \text{DPF}}{\text{K – factor} * \text{RM}}$$

where: *SEC* is the number of seconds in the rate time unit
(i.e. gal/sec = 1, gal/minute = 60, gal/hr = 3600)

DPF is the decimal pt. factor, similar to above in the *TSF* but with new scale factor numbers. Note above chart.

- Press the RTS▲ key until the desired DPF display is reached.

Pressing and holding the T/R◄ key and momentarily pressing the RTS▲ key will move to the next programming screen.

5. Rate Scaling Multiplier

RM is the rate scale multiplier which has a programmable value of 1 or 10. This gives the programmer the ability to scale the *RSF* for better resolution to the *RSF* number.

- Press the RTS▲ key to choose the multiplier you want.

6. Reset Enable / Disable

The last screen in the program mode is used to determine whether the front panel reset key RTS▲ will function. The screen will show a number 6 on the left, for the screen number, and a R on the right, meaning that the unit's RTS▲ key is enabled and will reset the totalizer.

- Pressing the RTS▲ key will choose the desired setting. When the display shows 'no R' the RTS▲ is disabled.

Exit Program Mode

To exit the program mode, remove the jumper connection between terminals 1 and 5.

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ISO
9001:2000
Certified