Model IN62

Pulse Input
Totalizer/Ratemeter

Installation & Operating Instructions

WATER SPECIALTIES
PROPELLER METER ™

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APPLICATION

Batch control, cut to length, packaging, blending. The display may be toggled between total, rate, and grand total. Programmable K-factor makes keying - in engineering units easy. Unit accepts pulse or contact closure input and provides two separate preset controls.

FEATURES

* Pulse Input (DC Pulse or Contact Closure)
* Display Total, Rate or Grand Total
* 2 Presets - User Selectable for Total, Rate or Grand Total
* Pulse Input to 20 KHz Count Frequency
* K - Factor Programmable to 8 Places
* Security Lockout
* NEMA 4X Front Panel

DESCRIPTION

Featuring 8 digits of bright, .55", alphanumeric display, the pulse input version of the unit can accept up to 20,000 pulses per second. The unit has two separate, 8 digit, floating decimal, "K" factors to convert the inputs to meaningful count and rate data. The user, with the push of a button, can toggle back and forth to view the total of the batch, the rate of flow and the grand total count.

Two controls outputs can be assigned independently by the user to activate at preset batch count, rate or grand total for .1 to 9.9 seconds or until reset externally.
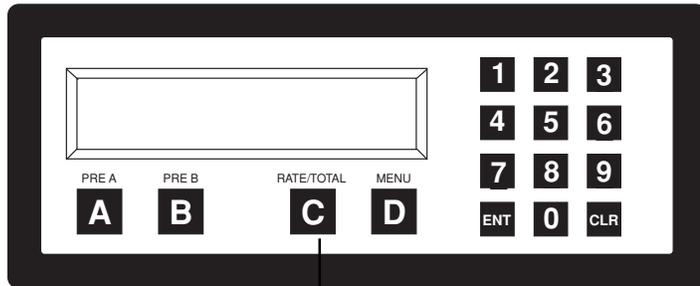
PRESS "C" TO SEE RATE
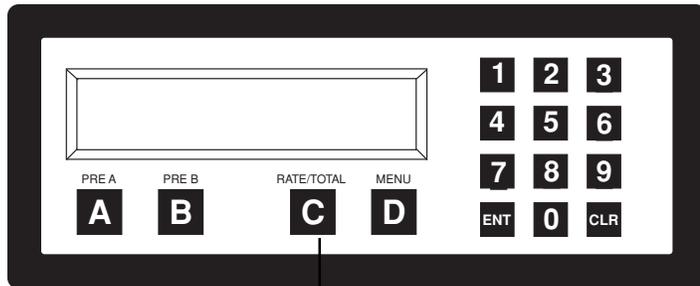
PRESS "C" AGAIN TO SEE BATCH TOTAL.
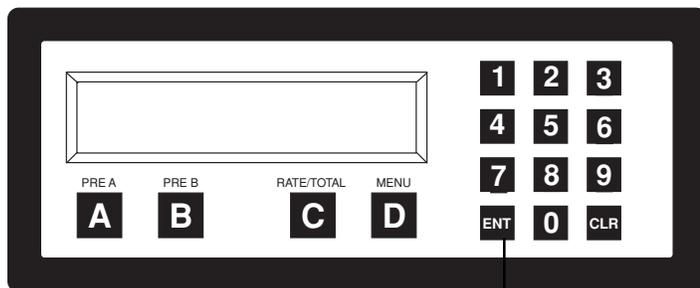
PRESS "ENT" TO SEE GRAND TOTAL

Part Number Breakdown

Part#	Description
IN-62	0-40Hz Pulse Input, 110 VAC or 12-27 VDC, 2 Control Output Relays
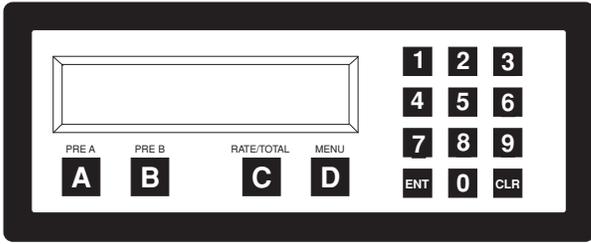
COUNTER

K-FACTOR __ __ __ __ __ __ __ __

Reset to 0 ☐

Set to Preset ☐

DECimal LOCation (0-8)

8   7   6   5   4   3   2   1   0
☐   ☐   ☐   ☐   ☐   ☐   ☐   ☐   none☐

RATEMETER

K-FACTOR __ __ __ __ __ __ __ __

WINDOW (02-24) __ __

SIGnificant FIGures (1-6) __ __

WEIGHT (00-99) __ __

WORKSHEET

MODEL # _____

SERIAL # _____

UNIT # _____

LOCKOUT CODE __ __ __ __

PR-LCK☐   PR-UNLK☐

PRESET A __ __ __ __ __ __ __ __

PRESET B __ __ __ __ __ __ __ __

RELAY ☐

   ☐ A TOTAL

   ☐ A GRand TOTal

   ☐ A RATE

DURation of A (0.0-9.9) __ . __

   ☐ B TOTAL

   ☐ B GRand TOTal

   ☐ B RATE

DURation of B (0.0-9.9) __ . __

1- NOT USED
2- SCALED OUTPUT O.C.
3- NOT USED
4- INPUT A (PULSE/ANALOG)
5- RESET INPUT
6- NOT USED
7- NOT USED
8- NOT USED
9- NOT USED
10- NOT USED
11- GROUND (-DC)
12- GROUND (-DC) INPUT COMMON
13- +12 VDC OUT
14- +DC POWER IN
15- ISOLATED -12VDC
16- ISOLATED +12VDC
17- AC IN
18- AC IN
19- NOT USED
20- NOT USED

R1- N.O
R2- N.C.   — A
R3- COMMON
R4- N.O
R5- N.C.   — B
R6- COMMON
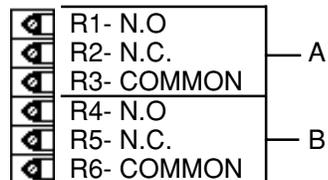
SETUP PROCEDURE

NOTE: Start here and finish to the end. If you make a mistake, press ENT until you reach the beginning.

	PRESS	DISPLAY
STEP 1 **SETTING PRESET A**	`A` (FINAL PRESET)	**PRESET A** THEN FLASHING PRESET #
	`CLR`	**0** FLASHES
	`1` `2` `3` `4` (SAMPLE PRESET)	**1 2 3 4** PRESET FLASHES
	`ENT`	**1 2 3 4** IS ENTERED
STEP 2 **SETTING PRESET B**	`B` (PREWARN)	**PRESET B** THEN FLASHING PRESET #
	`CLR`	**0** FLASHES
	`1` `2` `0` `0` (SAMPLE PREWARN)	**1 2 0 0** PRESET FLASHES
	`ENT`	**1 2 0 0** IS ENTERED
STEP 3 **SETTING THE COUNTER**	`D`	**MENU** FLASHES TO **DEV TYP**↓
	`ENT`	**RT**↓ **CNT**↓ (RATE OR COUNT)
	`D` (SET UP COUNTER)	**K FACTOR** FLASHES; THEN SHOWS CURRENT K-FACTOR
	`CLR`	**0** FLASHES
	`1` `D` `2` `7` `8` (PRESS D FOR DECIMAL POINT) K FACTOR IS DIVIDER. IT CONVERTS INPUT TO ENGINEERING UNITS.	**1 . 2 7 8** FLASHES
	`ENT` (K FACTOR ENTERED)	**R0**↓ **SP**↓ (RESET TO 0 "ADD" OR SET TO PRESET "SUBTRACT")
	`B` OR `D`	SELECTS **R0** OR **SP**
	`ENT` SELECTION ENTERED	**DEC LOC** (DECIMAL LOCATION)
	PRESS ANY NUMBER	DECIMAL POINT MOVES TO THAT POSITION
	`ENT`	LAST COUNT READING

PRESS		DISPLAY

<table>
<tr><td rowspan="14">STEP 4

SETTING THE RATEMETER</td></tr>
<tr><td>D</td><td></td><td>MENU FLASHES TO DEV TYP↓</td></tr>
<tr><td>ENT</td><td></td><td>RT↓   CNT↓ (RATE OR COUNT)</td></tr>
<tr><td>B</td><td>(SET UP RATEMETER)</td><td>K FACTOR FLASHES; THEN SHOWS CURRENT K-FACTOR</td></tr>
<tr><td>CLR</td><td></td><td>0 FLASHES</td></tr>
<tr><td>1 7 D 8</td><td colspan="2">1 7 . 8 FLASHES
(PRESS D FOR DECIMAL POINT)
K FACTOR IS DIVIDER. IT CONVERTS INPUT TO ENGINEERING UNITS.</td></tr>
<tr><td>ENT</td><td>(K FACTOR ENTERED)</td><td>WINDOW ##</td></tr>
<tr><td>CLR</td><td></td><td>WINDOW 00</td></tr>
<tr><td>5</td><td colspan="2">(AS AN EXAMPLE)   WINDOW 05
(EXTENDS THE SAMPLING WINDOW TO 5 SECONDS)</td></tr>
<tr><td>ENT</td><td>(WINDOW ENTERED)</td><td>SIG FIG ##</td></tr>
<tr><td>CLR</td><td></td><td>SIG FIG 00</td></tr>
<tr><td>6</td><td colspan="2">(AS AN EXAMPLE)   SIG FIG 06
(SIG FIG INDICATES HOW MANY MEANINGFUL DIGITS ARE SHOWN
TRAILING ZEROS ARE INSERTED IF NECESSARY)</td></tr>
<tr><td>ENT</td><td>(SIG FIG ENTERED)</td><td>WEIGHT #.#</td></tr>
<tr><td>CLR</td><td></td><td>WEIGHT 0.0</td></tr>
</table>

9 9	(AS AN EXAMPLE)	**WEIGHT 9.9**

WEIGHT IS AN AVERAGING FACTOR. HIGHER SETTINGS PROVIDE MORE AVERAGING, FOR A MORE STABLE DISPLAY. DERIVED FROM: $\dfrac{(\text{OLD DATA} \times \text{"WEIGHT"} + \text{NEW DATA})}{(\text{"WEIGHT"} + 1)}$

ENT	(WEIGHT ENTERED)	LAST COUNT READING

		MENU FLASHES TO **DEV TYP** ↓

<table>
<tr><td rowspan="8">STEP 5

SETTING LOCKOUT CODE</td></tr>
<tr><td>D</td><td></td><td>LOCKOUT ↓</td></tr>
<tr><td>ENT</td><td>(LOCKOUT SELECTED)</td><td>CODE FLASHES; THEN SHOWS OLD CODE #.</td></tr>
<tr><td>CLR</td><td></td><td>0 FLASHES</td></tr>
<tr><td>1 1 1 1</td><td>(AS AN EXAMPLE)</td><td>1 1 1 1 FLASHES</td></tr>
<tr><td>ENT</td><td>(CODE ENTERED)</td><td>PR LCK
(LOCKOUT OF FRONT PANEL) ↓   PR UNLK ↓
(LOCKOUT OF ALL FRONT BUTTONS EXCEPT PRESETS A, B AND CLR)</td></tr>
<tr><td>ENT</td><td>(LOCKOUT SELECTION ENTERED)</td><td>LAST COUNT READING</td></tr>
<tr><td>1 1 1 1</td><td></td><td>LOCK ON FLASHES
(APPROPRIATE PANEL CHANGES LOCKED OUT)</td></tr>
</table>

1 1 1 1		**LOCK OFF** FLASHES (PANEL CHANGES ALLOWED)

	PRESS		DISPLAY	
	D		**MENU** FLASHES TO **DEV TYP** ↓	
STEP 6	**D**		**LOCKOUT** ↓	
	D		**OUTCARD** ↓	
SETTING OUTPUT PULSE FREQUENCY	**D**		**ALG OUT** ↓	
	D		**OUT FREQ** ↓	
SKIP IF NOT USED	**ENT**	(OUT FREQUENCY SELECTED)	**2000** ↓	(DISPLAYS LAST SELECTION)
	D		**200** ↓	
	D		**10** ↓	
	D		**20000** ↓	(PRESS D TO GO TO 2000)
	ENT	(PRESS AS DESIRED)	LAST COUNT READING	

PRESS		DISPLAY
D		**MENU** FLASHES TO **DEV TYP** ↧
D		**LOCKOUT** ↧
D		**OUTCARD** ↧
D		**ALG OUT** ↧
D		**OUT FREQ** ↧
D		**RELAY** ↧
ENT	(RELAY SELECTED)	**A GR TOTAL**↧ (RELAY A SET TO GRAND TOTAL)
D		**A RATE** ↧ (IF RATE SELECTED, DURATION IS DISABLED)
D		**A TOTAL**↧ (RELAY A SET TO TOTAL)
ENT	(PRESS AS DESIRED)	**DUR A #.#**
CLR		**DUR A 0.0**
1 **2**	(AS AN EXAMPLE)	**DUR A 1.2** (RELAY ACTIVATES FOR 1.2 SEC.)
ENT	(ON TIME ENTERED)	**B RATE** ↧ (IF RATE SELECTED, DURATION IS DISABLED)
D		**B TOTAL**↧ (RELAY B SET TO TOTAL)
D		**B GR TOTAL**↧ (RELAY B SET TO GRAND TOTAL)
ENT	(PRESS AS DESIRED)	**DUR B #.#**
CLR		**DUR B 0.0**
5 **5**	(AS AN EXAMPLE)	**DUR B 5.5** (RELAY ACTIVATES FOR 5.5 SEC.)
ENT	(ON TIME ENTERED)	LAST COUNT READING

STEP 7 — **SETTING RELAY FUNCTION AND ON TIMES**

PRESS	DISPLAY
C	**R ######** (RATE READING)
C	**########** (BATCH TOTAL) PRESS C TO GO BACK TO RATE AGAIN
ENT	**GR TOTAL** FLASHES THEN THE GRAND TOTAL VALUE FLASHES
ENT	**########** (BATCH TOTAL) PRESS C TO GO BACK TO RATE AGAIN PRESS ENT TO GO BACK TO GRAND TOTAL

VIEWING RATE, BATCH TOTAL, GRAND TOTAL

SPECIFICATIONS

Display
8 Digit, .55" Segment, Red Orange, LED.

Input Power
A: 110 VAC ±15% or 12 to 27 VDC

Current
Maximum 5.3 VA at rated AC voltage.

Output Power
 +12 VDC at 100mA. Separate isolated 12 VDC at 100mA
to allow +12 VDC or +12 VDC regulated ±5% worst case.

Memory
EEPROM stores all program and count data for minimum of
10 years if power is lost.

Pulse Inputs
Standard, High impedance pulse input. Open or 0 to 1 VDC
(low) 3 to 30 VDC (high) 10K Ohm impedance 20 KHz max.
input speed (min. on/off 25 usec.).

Reset
Front push button: "CLR" resets displayed number and
control output.
Remote: 3 to 30 VDC positive edge resets batch counter
and control output.
Impedance: 10K to ground (-DC)
Minimum pulse: 5 msec

Temperature
Operating: +32ºF (0ºC) to +130ºF (+54ºC)
Storage: -40ºF (-40ºC) to+200ºF (+93ºC)

Control Outputs
2 SPDT Relays: 10A 120/240 VAC or 28 VDC (Standard)

TERMINATIONS

1- NOT USED
2- SCALED OUTPUT O.C.
3- ANALOG OUTPUT (SINK)
4- INPUT A (PULSE/ANALOG)
5- RESET INPUT
6- NOT USED
7- NOT USED
8- NOT USED
9- NOT USED
10- NOT USED
11- GROUND (-DC)
12- GROUND (-DC) INPUT COMMON
13- +12 VDC OUT
14- +DC POWER IN
15- ISOLATED -12VDC
16- ISOLATED +12VDC
17- AC IN
18- AC IN
19- PRESET B OPEN COLLECTOR
20- PRESET A OPEN COLLECTOR

R1- N.O
R2- N.C.   — A
R3- COMMON
R4- N.O
R5- N.C.   — B
R6- COMMON

OPERATIONS

Presets

Two control presets are provided on the unit. The preset numbers can be made to flash without interrupting the control function by pressing "A" (Preset A) or "B" (Preset B). Press "ENT" to return to rate or total display. Change the preset by clearing the flashing preset number and keying in a new number before pressing the "ENT" button. (Count pulses may be lost if the preset is changed while pulses are coming in.) In the "Relay Set-Up" the user selects either one or both preset outputs to be activated the total, grand total, or rate. If selected for total or grand total the outputs can be set to activate the preset relay for 0.1 to 9.9 seconds or latch (0.0 setting) until reset. If selected for rate control, the rate will be compared with the preset at each display update and the output activated if the rate is equal or grater than the preset. The output drops out again only if the rate drops below the preset. If the rate goes out of scale, the display will show all "F" and the output will remain in the state prior to going out of scale.

Lockout

Unauthorized front panel changes can be prevented by entering a user selected 4-digit code, in the "LOCKOUT" mode. A (2) level "LOCKOUT" offers the user the option to "LOCKOUT" all front panel changes or "LOCKOUT" all but preset A, B, and CLR. The status of the unit can be observed but, "LOCK ON" appears if changes are attempted. Entering the code returns the unit to "LOCK OFF" status.

RATEMETER

Accurate to 5 1/2 digits ($\pm$1 display digit). The rate meter can be programmed to accept almost any number of pulses per unit of measurement, sample from 2 to 24 seconds maximum, and autorange up to 6 digits of significant information. The rate meter with a "K" factor of 1 displays the rate of pulses per second. Simply dial in the proper "K" factor to display in minutes, hours or other units of measurement.

Press the "C" button while the units is displaying the batch to display the rate; "R" is displayed on the left side of the display.

K-FACTOR

The K-Factor is used to convert the input pulses to engineering units. The 8 digit K-Factor dividers, with decimal keyed into any position, allow easy direct entry of any K-Factor greater than 0.0001 to 99999999.

Separate K-Factors may be entered for the count and rate section. Thus, you may batch and total in gallons and display rate in liters per hour. The maximum factored count speed is 20,000 Hz. The maximum factored rate is 7 digits.

COUNTER

Each of the total and grand total counters have 8 digits. In the set-up mode choose "RO" (reset to zero) for adding operation or "SP" (set to preset) for subtracting operation. While viewing the count, the display can be made to flash the grand total. While flashing the grand total, CLR resets the grand total counter.

APPLICATION
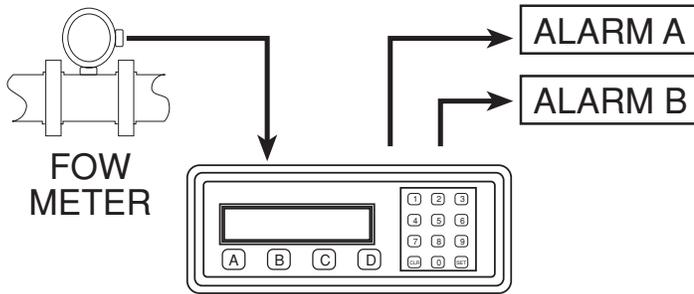
The unit monitors the Flow and displays the rate, total or grand total usage. Either control Relay A or Relay B can be activated by rate, total or grand total readings. If Relay A is set for rate, it can activate an alarm for load management if the preset usage is exceeded. Relay B can be set to activate at any rate, total or grand total alarm setting.

MOUNTING DIMENSION

Dimensions are in inches (mm)
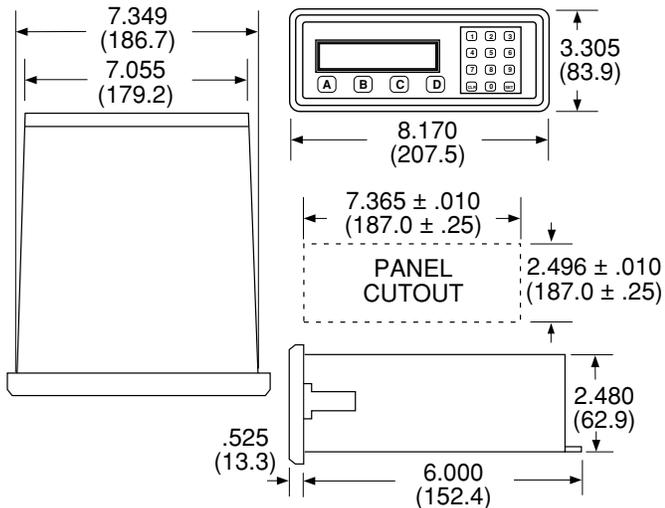
PULSE INPUTS

The unit accepts output pulses from most encoders, prox. switches or contactors. Connect the pulse to Input A Pin 4.

The unit counts on the negative edge of a pulse: Low: 0 to 1 VDC, High: 3 to 30 VDC.

SINKING INPUT- Has a 4.7K Ohm resistor to +12 VDC and must be driven low by a sinking device such as a NPN transistor or a contact to ground (Pin 12).

PULSE SPEED
The Max input speed is specified by the 8th digit of the part number based on a 50% on/off pulse. Although the unit can accept pulses as short as 25 usec on/off if speed "E" is selected, it is advised that only the maximum speed needed be ordered. When lower speeds are specified, additional filtering is added that make the inputs more immune to electrical noise. "A" input speed should always be used when pulsing with a switch contact to prevent additional erratic count inputs.

INPUT SWITCH SELECTION
Inputs use an input signal conditioning board which is plugged onto the main board just behind the display. It has dip switches which set the debounce filtering (max. count speed). (See section for "Removing Case" to get to the input modules if changes on the pulse input board are needed.)
S1, S2 determine debounce filtering and control max. input speed,
(A) S1, S2-ON, 0-40 Hz (min. 12.5 msec on/off)
(C) S1-ON, S2-OFF, 0400 Hz (min. 1.25 msec on/off)
(E) S1, S2-OFF, 0-20K Hz (min. 25 usec on/off)

S3, S4 set the input characteristics as designated by the 5th and 6th digits of the part number.
SOURCING INPUT: S3, S4-OFF (needs sourcing input)
SINKING INPUT: S3-OFF, S4-ON (needs sinking input)

CALCULATING THE K- FACTORS

The K-Factors are used to convert the pulses into the correct units of measurement.

Rate K- Factor: 10000/R, where R = high output rating (20mA or 5V) of transmitter. 10000 divided by 20mA or 5V rating of transmitter. Eg. 20mA rating of transmitter is 250 gal. per min. The rate K - Factor to key into the unit for gal. per min. is 40 (10000 divided by 250).

If a rate is desired in a different unit of measure or a different timebase, factor the transmitter rating to the unit of measure and timebase desired and use the formula above. Eg. 5V output rating of a transmitter is 300 gal. per min. and rate desired is liters per hr. The factored rate for this transmitter for liters per hr. is 68135.94 (300 x 3.78533 [gal. to liters] x 60 [min. to hr.]. The rate K - Factor for liters per hr. is 0.1467654 (10000 divided by 68135.94).

Counter K-Factor: = 10,000/R/Sec, where R = High output rating (20mA or 5V) of transmitter factored to rate per second. Eg. 20mA rating of transmitter is 500 gal. per min. Rate per sec. is 8.3333333 (500 divided by 60). Counter K-Factor to key into unit is 1200 (10000 divided by 8.3333333.
If a different unit of measure is desired, factor the given transmitter rating to the desired unit of measure in units per second and use the formula above. Eg. 5V rating of transmitter is 250 gal. per hr. and it is desired to totalize in liters. Rate in liters per second is .2628701 (250 x 3.78533 [gal. to liters] divided by 3600 [hr. to sec]). Counter K-Factor to key into unit to totalize in liters from 250 gal. per hr. transmitter is: 38041.603 (10000 divided by .2628701).

RESET
REMOTE
The reset is positive edge active; once reset, the unit will accept new data even if reset is held. Applying a 3 to 30VDC pulse of minimum 5 msec resets the batch counter and control output. Impedance 10K to ground (-DC).

FRONT PUSH BUTTON RESET
Pressing the front CLR button will reset the control output and any displayed number (load the "Preset A" number into the display if "SP", subtracting mode of operation, has been selected).

AUTO RESET
To recycle the unit, choose the preset which is to activate the reset and set it's "Relay Duration" as short as possible. Place a 10K Ohm resistor between reset (Pin 5) and the chosen transistor output for the preset chosen (Pin 19 or Pin 20). The relay acts as a pull up resistor and the unit resets after the control output "times out". After the unit is reset it will operate even though the reset is high. The reset is edge triggered and only resets when the input goes high. Note that if Pin 5 is pulled high by a resistor, it must be pulled low a min. of 5 msec and then allowed to go high to reset the unit.

FACTOR/"DATALOST"/"RFFF..."
The K- Factor is used to convert the frequency generated internally by the analog input to engineering units. The 8 digit K -Factor dividers, with decimals keyed into any position by use of the "D" button, allows easy direct entry of the desired K - Factor. A separate K - Factor may be entered for the count and rate section. Thus you may batch and total in gallons and display rate in liters per hour.
NOTE: If the counter K - Factor is .0001 or less or if the factored count speed exceeds 20000 CPS, "DATALOST" flashes. If the input divided by the rate K - Factor exceeds 7 digits "RFFF..." flashes. These alarms indicate that the factored speed has been exceeded and data is invalid. Increase the K - Factor divider.

COUNTER
The unit accumulates up to 8 digits of batch and grand total count. In the setup mode choose "R0" (Reset to Zero) for adding operation or "SP" (Set to Preset) for subtracting operation. While running display can be made to display an 8 digit grand total by pressing "ENT" while the unit is running. Activating "CLR" while the grand total is flashing, resets the grand total counter.

PRESETS
The unit has two independent presets. In the setup mode the user selects whether the Counter, Rate Meter or Grand Total counter activates either or both Preset A and Preset B outputs. The preset numbers can be displayed or updated at any time by pressing "A" (Preset A) or "B" (Preset B). Enter the flashing preset number or press "CLR" and key in a new number and "ENT" to enter it.

If the Total or Grand Total counter is set to control an output, that output will activate for the time duration selected under "RELAY" when the counter reaches the selected preset number.

If the Rate is set to control and output, that output will be activated when the rate equals or exceeds the preset rate and drop out again when the rate goes below the preset rate. Note that the preset for rate can be entered with decimal when keying in the rate preset number.

RELAY - OUTPUT TIMING

Control output timing is selected by pressing D until the RELAY mode is selected and entered. Any time duration from .1 to 9.9 seconds or latch until reset (0.0 setting) may be entered for the A and B outputs. Once the output has been activated, the unit must be reset before another output will occur.

RATE METER

Accurate to 5 1/2 digits (+ one display digit); the ratemeter is autoranging and can be programmed by the K - Factor to display almost any engineering unit of measurement. To display the rate press the "C" (RATE/TOTAL) button while the unit is displaying the batch. "R" is displayed on the left side of the display to indicate that rate is being displayed. The unit calculates the rate from the period between pulses. The unit measures the average time between pulses, divides this by the K - Factor and a reciprocal math calculation to find the rate per second. As long as pulses come in faster than 3 per second the unit will update each second. The 2 to 24 second "WINDOW" time, selected at set up, is the maximum time the unit will wait for sufficient pulses to make an accurate calculation before it displays zero.

1 to 6 "SIG FIG" (significant figures) can be selected in the set up mode. The unit will normally display the number of digits selected. The unit is auto ranging and will place the decimal within these digits to display the true factored rate. If the rate, scaled by the K - Factor, has more digits to the left of the decimal point than the number of significant digits selected, additional zeros will be added to fill in digit spaces to the left of the decimal place. Eg. Factored rate is 123.456. A: "SIG FIG" set 4, display reads 123.4 B. "SIG FIG" set 2, display reads 120. This allows the user to show either the exact rate with the least significant digits changing with only a slight rate change or to create a more stable display by showing zeros in the less significant digits.

NOTE: If the rate exceeds 7 digits, the display shows "RFF..." indicating speed has been exceeded.

SETTING RATE K - FACTOR FOR PULSE INPUT

K - Factor (rate per sec.) = pulses per unit (gallon, foot, revolution)

K - Factor (rate per min.) = $\dfrac{\text{pulses per unit}}{60}$

K - Factor (rate per hr.) = $\dfrac{\text{pulses per unit}}{3600}$

The rate meter with a K - Factor of 1 displays the rate of incoming pulses per second. To display the frequency or rate per second simply key in the number of pulses per gallon, revolution, foot or other unit of measurement. This will usually be the same as the K - Factor used for the count. If it is desirable to display the rate per minute, or hour, divide the pulses per unit of measurement stated on the sensor by 60 (rate per minute) or 3600 (rate per hour). Example: A sensor generates 850 pulses per gallon and you want to display gallons per hour. Set the counter K - Factor at 850 to batch in gallons. Set the rate K - Factor at 0.2361111 (850 divided by 3,600). To convert to other units of measurement calculate the number of pulses for the desired unit of measure and use the formula above. Example: Sensor give 850 pulses per gallon and you want to batch in liters and display in liters per minute. (Example uses conversion 1 gallon equals 3.78533 liters). Counter K-Factor = 224.55109 (Sensor gives 224.55109 pulses per liter - 850 divided by 3.78533). To find the rate per minute K - Factor divide the count K - Factor for liter (224.55109) by 60 (seconds per minute) = 3.7425181.

LOCKOUT

Unauthorized front panel changes can be prevented by entering a four digit code chosen by the user in the LOCK-OUT setup mode. The unit leaves the factory with code 1,000. (If a code of less than 4 digits has been entered, the unit adds prefix "0's" to make a four digit code.) The selected code should be recorded in a safe place. A choice of two level lockout offers the user the option to lockout all front panel changes or lock out all but presets A, B and CLR. Entering the code in the set up mode does not disable the keypad, but keying in the four digit code while in the run mode will activate "LOCK ON". The status of the presets, rate and grand total can be viewed but "LOCK ON" appears if changes are attempted. Only by keying in the four digit code into the keypad while the unit is in the run mode will the unit return to the "LOCK OFF" status.

REMOVING THE CASE

To install or change the input or data interface cards, the case must be removed. Before opening case, remove all power. CMOS logic is used. Use standard precautions against damage by static discharge. Remove the six (6) flat head 4-40 x 1/4" screws behind the panel and lift off the panel/lens assembly. Slide the main board display out the front of the case. Once modifications are made, reverse the procedure to re-assemble the unit, insuring that the main board is in the track. The six (6) screws that hold the panel must be tight to seal the rubber keypad panel assembly, approximately 0.6 in" lb. torque.