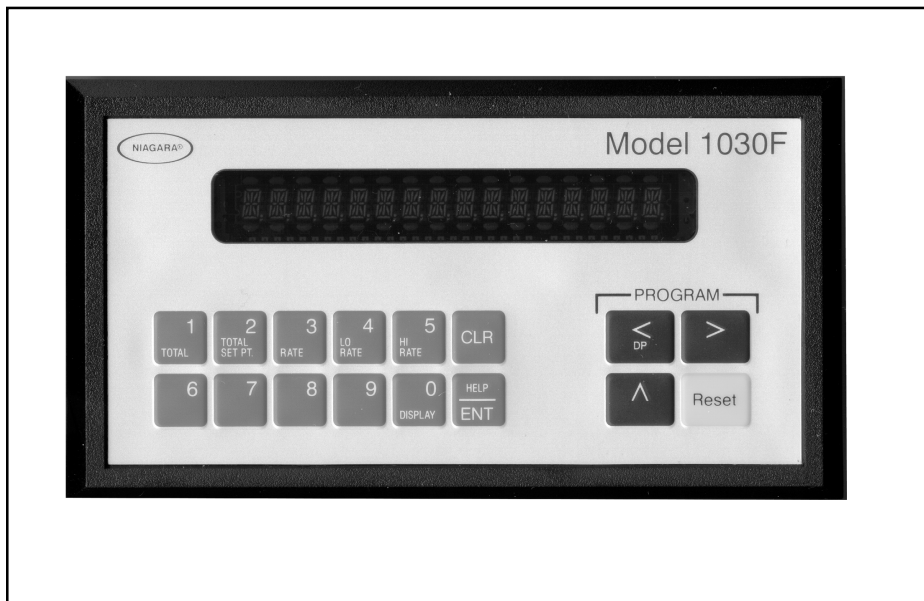




*Model 1030F*  
*Indicator-Totalizer*

**Installation, Operation  
and Maintenance Manual**



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## *Installation, Operation & Maintenance*

### **GENERAL**

The Model 1030F is a microprocessor based indicator-totalizer. It gives you the ability to display important process parameters such as rate, total, and set points. It also supplies outputs for driving lights, alarms, chart recorders, and totalization for remote operations.

A special mode gives you the capability of simultaneously viewing two flow parameters such as rate and total. The 1030F also contains a set point lock out system to prevent unauthorized changes from the front panel.

The 1030F may be completely factory programmed for your application. It is easy to operate and to program when changes are required. Programming is accomplished through an easy-to-use menu system. There are built-in scrolling help messages that explain each program step. A 10-year memory backs up all program settings and parameters in case of a power failure.

### **INSTALLATION**

**Panel mounts:** See dimensions for panel cut-out. Completely install the unit into the panel.

**Wall mounts:** Mount unit to wall. Wires should be 18 inches long inside the enclosure from the point of entry to the point of termination. This will provide ample length so the hinged door will swing freely and allow access to the terminals.

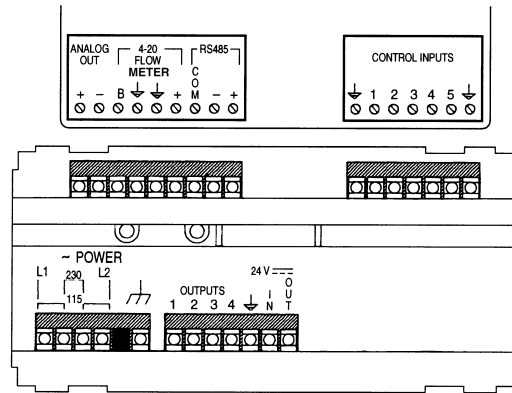
After installing unit, place the three adhesive cable clamps (enclosed) on the bottom rear of the unit near the wiring terminals as needed. Loop the three cable ties through the clamps and around the wires to transfer the strain from the terminal blocks to the clamps.

### **Wiring Notes**

The following points should be kept in mind when wiring the unit:

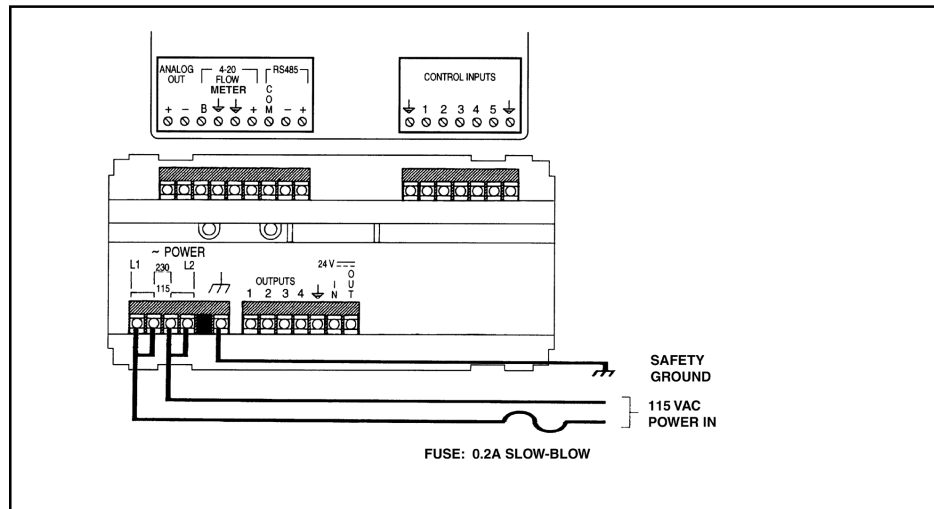
- All connections should be made to the instrument with the power off.
- Improper wiring may cause damage to the instrument. Double check all connections before powering.
- Do not exceed the power ratings of the components. Observe the maximum current and voltage ratings as applicable. See Specifications section.
- An in-line fuse should be installed in the input power supply line. See the Applications Wiring section.
- Sensor, control, and AC power lines should not be routed in the same conduit.
- *AC power input*  
**L1,L2** Terminals L1 and L2 are used for connecting the 115V or 230 VAC power input. L1 uses the two left terminals. L2 uses the next two terminals to the right.

## Wiring Control Inputs

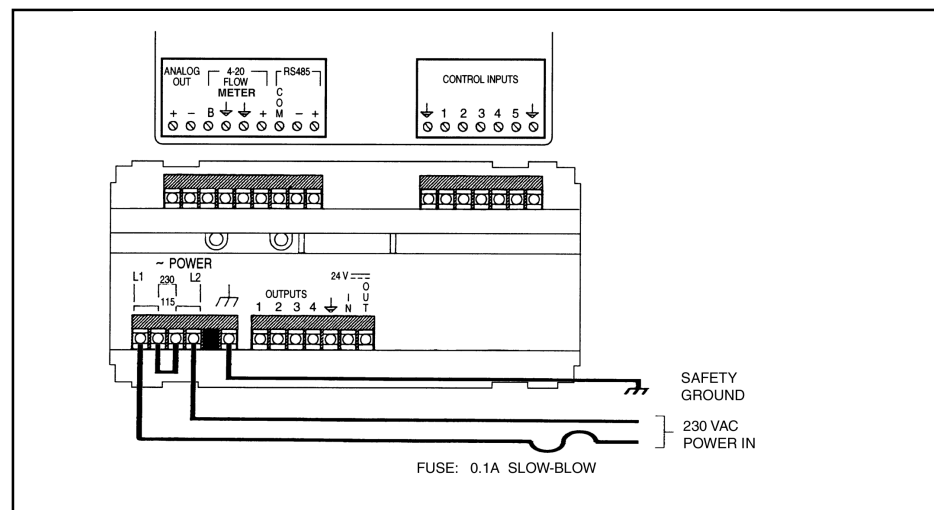


All grounds  $\perp$  (common) are connected internally.

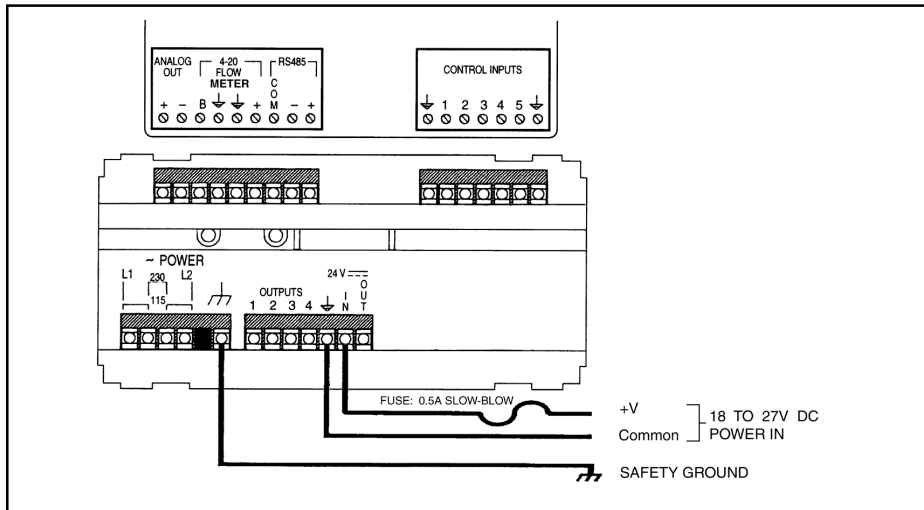
## Applications Wiring



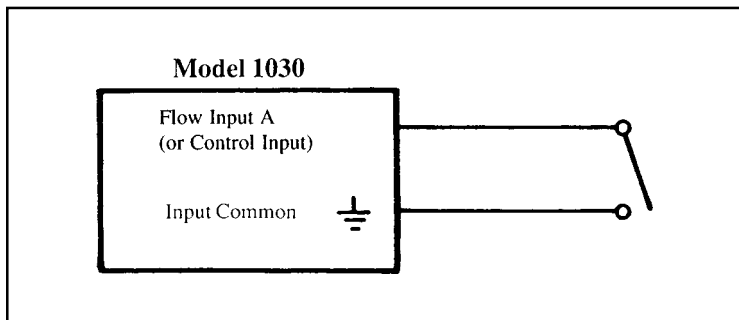
Powering the Model 1030F – 115 VAC version



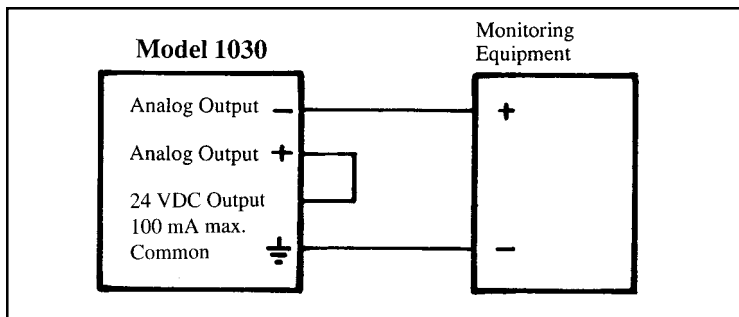
Powering the Model 1030F – 230 VAC version



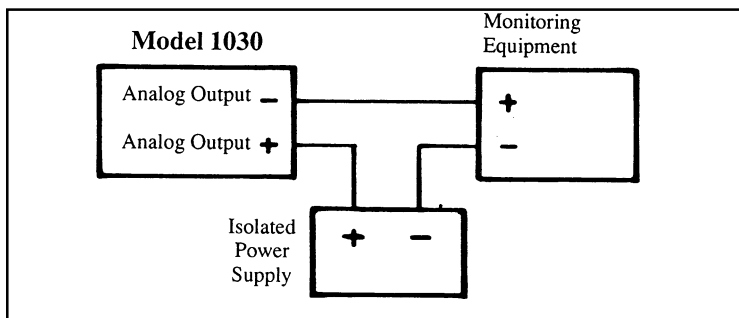
Powering the Model 1030F with DC supply



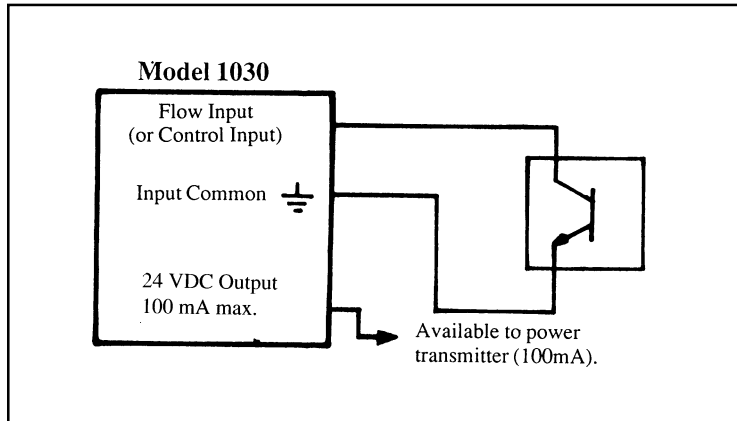
Flow input or control input using switch contact closure



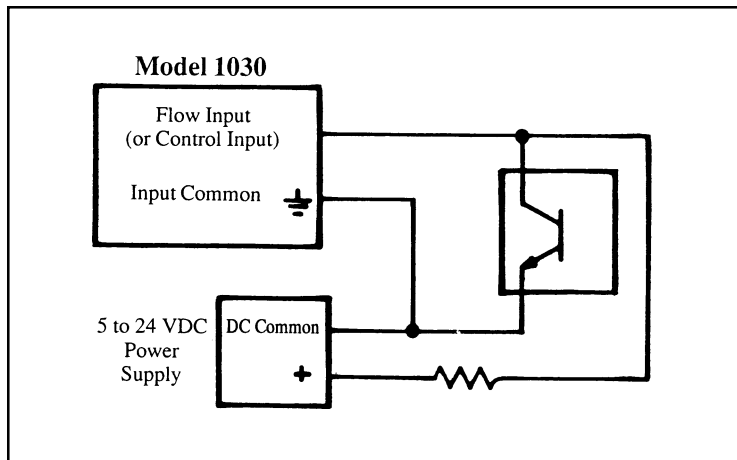
4-20 mA rate output (non-isolated)



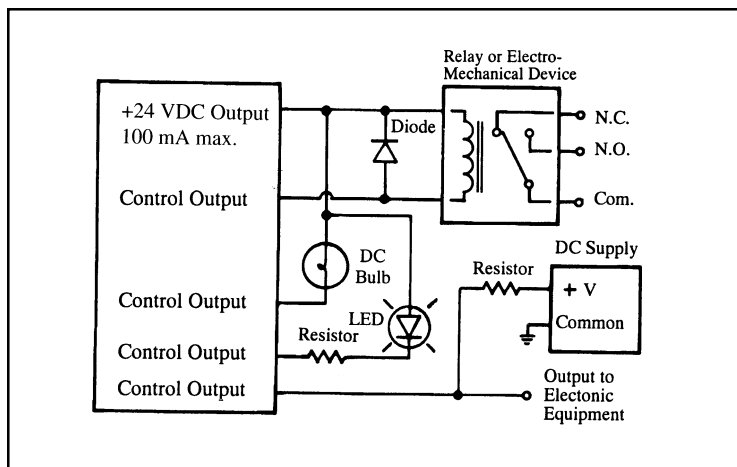
4-20 mA rate output (isolated)



Flow input or control input utilizing open-collector npn transistor

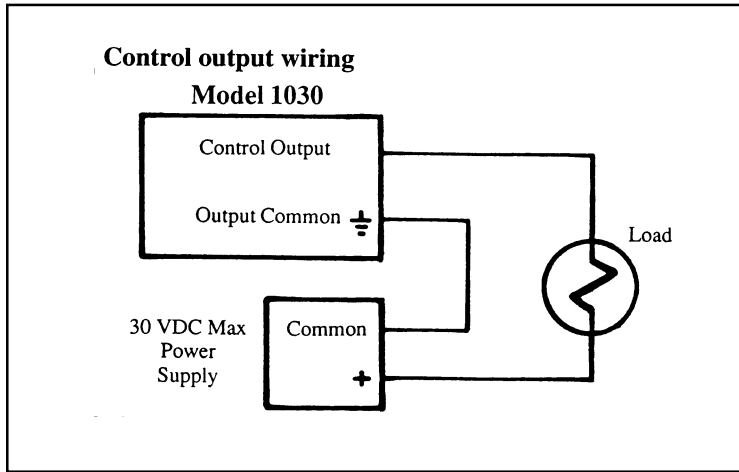


Flow input or control input using open-collector npn transistor with pull-up resistor



Control output application examples

# Model 1030F Indicator-Totalizer



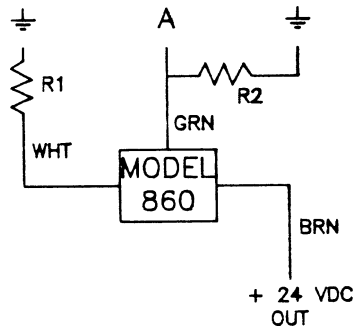
Control output wiring

## Wiring Aaliant Transmitters to the Model 1030F

**Model 840                      Model 1030F**  
 black \_\_\_\_\_ Input A  
 brown \_\_\_\_\_ Input Common  $\perp$   
 white \_\_\_\_\_ No connection

**Model 860                      Model 1030F**  
 green \_\_\_\_\_ Input A  
 white \_\_\_\_\_ Input Common  $\perp$   
 brown \_\_\_\_\_ +24 V output

**Note:** Place a 1200 to 1500 ohm resistor (3/4 watt or greater) in series with the white wire as R1. Place a 1500 ohm resistor between the green wire and ground as R2. In some cases, it may be necessary to substitute a resistor for R2 in the range of 1200 to 2000 ohms. Input speed is 7500 Hz.



**Model 1050                      Model 1030F**  
 V in \_\_\_\_\_ 24 V output  
 P out \_\_\_\_\_ Input A  
 Ground \_\_\_\_\_ Input Common

**R-11 or R-12 with Reed Switch,  
 R-15, R-39 \_\_\_\_\_ Model 1030F**  
 white \_\_\_\_\_ Input A  
 black \_\_\_\_\_ Input Common  $\perp$

**R-11 or R-12**

**with micro-switch Model 1030F**

blue \_\_\_\_\_ Input A  
black \_\_\_\_\_ Input Common  $\perp$

**R-22A**

**Square Wave Model 3030**

black \_\_\_\_\_ Input A  
white \_\_\_\_\_ Input Common  $\perp$   
red \_\_\_\_\_ V out

(see note at R-38)

**R-22A Form A Model 3030**

black \_\_\_\_\_ Input A  
black \_\_\_\_\_ Input Common  $\perp$   
green \_\_\_\_\_ No connection

(see note at R-38)

**R-25 Model 1030F**

T1 \_\_\_\_\_ Common  $\perp$   
T2 \_\_\_\_\_ +24 V output  
T3 \_\_\_\_\_ No connection  
T4 \_\_\_\_\_ Input A

**R-37A Model 1030F**

red \_\_\_\_\_ +24 V output  
black \_\_\_\_\_ Input Common  $\perp$   
white \_\_\_\_\_ Input A

**R-38 Model 1030F**

black \_\_\_\_\_ Input Common  $\perp$   
red \_\_\_\_\_ See note  
white \_\_\_\_\_ Input A

**Note:** For proper hookup:

- Use a 15 V regulator (7815 or LM340T15 in a T0-220 package) to obtain power for R-38.
- Connect pin 1 (regulator input) of the regulator to the +24 V output of the Model 1030F.
- Connect pin 2 (regulator ground) of the regulator to common on the Model 1030F.
- Connect pin 3 (15 V output) of the regulator to the red wire of the R-38.
- Connect the black wire of the R-38 to the Input Common terminal of the Model 1030F.

**Mag Meter Model 3030**

P out  
(0 to 10 K Hz) \_\_\_\_\_ input A  
Ground \_\_\_\_\_ DC Common  $\perp$

Input speed on 1030F is 7500 Hz.

## Model 1030F Indicator-Totalizer

### OPERATION

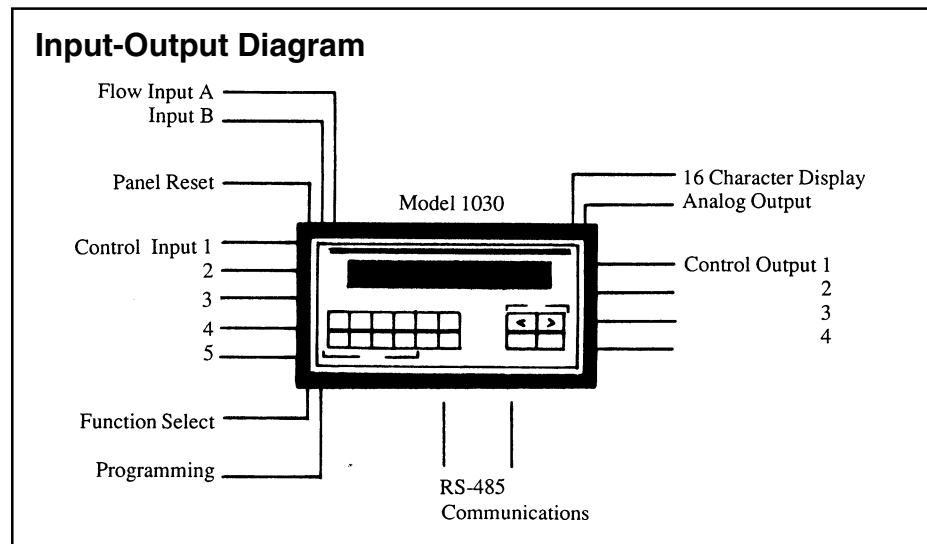
The indicator and the totalizer portions of the Model 1030F can be thought of as two separate instruments in a single case. They act mostly independent of each other, and their functions are best understood with this in mind.

#### Indicator

The indicator provides 6-digit rate indication with three alphabetical characters for rate units such as gpm, lps, etc. A decimal point may be specified anywhere within the six digits. The indicator may provide a rate smoothing operation which averages pulsating flow rates. Smoothing provides “software dampening” of incoming flow signals.

There are two set points that may be used to signal the conditions of high and low flow rates. An open-collector transistor switches to ground upon set point activation. The set points may act in three modes. They may follow the flow rate, be latched, or activate for a specified amount of time (select from 0.1 to 999.9 seconds). When set up for latched or timed operation, the set points may be reset with front panel reset key or by wired control input.

The Model 1030F has a 4-20 mA current loop output. The current output follows the flow rate display. The output is calibrated through programming by a special menu. The active range of the current output is normally from zero to the full scale flow rate of the flow meter. However, the output range may be specified for any flow range — either within the meter’s range, or greater than the meter’s range. The range does not have to begin at a zero flow rate.



#### Totalizer

The Model 1030F has a ten-digit totalizer. A decimal point may be specified within the ten digits. The totalizer may be reset from the front panel or by a wired control input.

The totalizer makes use of two control outputs. One output is a scaled pulse output that may be used for a remote totalizer or as input to another computer. The pulse width may be specified from three choices. A certain output frequency must not be exceeded for each choice. Naturally, a longer pulse width dictates a slower pulse rate output.

The second totalizer control output is for the totalizer set point. This output activates when the totalizer reaches a preset value. The output may be latched or timed and may be reset from the front panel or by a wired control input.

**Front Panel Value Display**



Key	Key Label	Description
1	Total	Totalizer
2	Total Set Pt.	Totalizer set point value
3	Rate	Flow rate value
4	Lo Rate	Rate low set point value
5	Hi Rate	Rate high set point value
0	Display	Dual display values

**Hidden values**

Keys	Function	Description
^, then 1	K factor	Pulses input per unit volume value
^, then 2	Calculated kmf hi	Portion greater than or equal to one
^, then 3	Calculated kmf lo	(Portion less than one) Kmfi and kmflo values may be added to tell the operator the "unit volume per pulse input" or the reciprocal of the K factor.
^, then 4	R factor	Rate multiplier
^, then 5	Analog fraction	Percentage between 4-20 milliamps at which the analog output is operating
^, then 0	Software version	Lets the customer and Aaliant personnel know the version of software used

**Front Panel Display**

Flow parameter displays may be accessed by pressing a single key. When **Display** is pressed, two values are displayed simultaneously. An abbreviated label will accompany the value displayed. To see the full label, momentarily press the key labeled **DP** or < left arrow and the full labels will be shown for about a second. For dual display, you may choose from any values except the totalizer and the totalizer set point which require ten digits. In addition to rate, a decimal proportion of the analog output may be displayed.

To change the function, press and hold the **DP** key or < left arrow key until the left half of the display begins to flash. Then, press the ^ up arrow key until the desired parameter is displayed. Now, press the > right arrow key to select the right half of the display and press the ^ key until that desired parameter is displayed. Press the **Display** key to end the dual function display set up routine.

Note: It is recommended that when the totalizer is selected for dual display, it should be selected for the left side of the display. If the magnitude of the total becomes over 7 digits, the "T" header will not be displayed. It is possible that the display be completely full of numbers without spaces. If the totalizer reaches 10 digits and the right half display selection is showing 6 digits, it is recommended that the totalizer be reset before reaching 10 digits, or the right half display entity be restricted to 4 digits if display of both entities is desired.

## ***Model 1030F Indicator-Totalizer***

There are other “hidden values” that may be displayed from the front panel that may be useful for some applications. The reason they are termed “hidden” is because they are not labeled. To see the hidden value, press the ^ key and immediately press the number key that corresponds to the parameter desired for viewing. See table on page 8.

### **Changing Set Point Values**

Rate and totalizer set point may be easily changed from the front panel. First, press the function key desired as if to view the set point.

To change the value, press the **CLR** key, enter the new value using the number keys, then press **ENT**. If you change your mind before pressing the **ENT** key, just press the **CLR** key and the original value will be retained.

It is possible to selectively “lock out” the set point values so they cannot be changed from the front panel. This is done from within the program mode. See the Programming section.

### **Front Panel Control – Reset Key**

The **Reset** key may be used to unlatch the rate or totalizer set point outputs, or to reset the totalizer count. Any combination of these functions may be chosen from within the program mode. Standard factory setting is “None.”

### **Flow Inputs**

There are two terminals for flow inputs (plus associated ground terminals):

**Input A** accepts electrical pulses from the flow meter or flow transmitter.

**Input B** is a flow inhibit input. When Input B is connected to ground, the Model 1030F will ignore any incoming pulses on Input A. When Input B is not used or connected to a logical positive voltage (see Specifications), Input A is active as normal.

### **Wired Control Inputs**

There are five wired control inputs that perform single or multiple functions similar to the Reset key. When switched to ground, the specific function is performed. Each control input has a specific function or functions which cannot be altered.

#### **Input #    Function**

1	Unlatch totalizer set point output
2	Reset totalizer count
3	Unlatch rate hi/lo set point outputs
4	Unlatch totalizer and rate hi/lo set point outputs
5	Reset totalizer count and unlatch totalizer and rate set point outputs

### **Control Outputs**

Four control outputs are available. These are npn transistors that will switch a load to ground when activated. They may be used for electro-mechanical devices such as counters or relays, turning on lamps, or used to signal an automated processing device. The maximum current sinking capability is 150 milliamps and the maximum DC voltage is 30 volts.

#### **Output #    Function**

1	Scaled totalizer pulse output
2	Totalizer set point output
3	Rate low set point output
4	Rate high set point output

The totalizer set point output may be specified from within the program mode to have latched or timed (from 0.1 to 999.9 seconds) operation.

The rate set points have three modes of operation. One mode is for the set points to follow the flow rate. That is, the outputs activate and deactivate as the flow rate passes above and below the set values. The two rate set points may act independently by being latched or timed from 0.1 to 999.9 seconds.

In either case, latched or timed, an output that has been activated will remain activated as long as the responsible condition exists. When the condition ceases to exist, the output may either time out or be unlatched by a control input.

#### **RS-485 Communications**

The Model 1030F has an RS-485 communications link for two-way communication with other computers. This link may be used to make programming changes, set point changes, query flow data, and perform control functions. The Model 1030F may occupy a communication line with up to 100 units — each having a unique identification number (0 to 255). A single two-wire line may be up to 4000 feet long without the use of signal repeaters. The communications link is specified as RS-485 multi-drop. Baud rates of 300, 600, 1200, 2400, 4800, 9600, and 19200 are possible. Parity may be specified as space, even, or odd. The protocol is Opto-22 compatible. For communication command specifics, please contact your Niagara representative.

### **PROGRAMMING**

#### **See Programming Chart.**

Programming the Model 1030F may be done from the front panel by two methods. The preferred method is using the menu that may be stepped through for making changes. The second method makes use of a rapid access technique that may be quicker for a simple change but requires the programming diagram to be in hand.

#### **Enter the Programming Mode**

Simultaneously press the < left arrow and the > right arrow keys. Notice that these keys have "Program" labeled immediately above them. A password may be requested if an operator has specified a password during a previous programming session. The Model 1030F comes from the factory with no password set. Setting of the password is explained on page 17. Enter the correct password and press the **ENT** key. If an incorrect password is entered the message "PW ERROR" will be flashed and the unit will again ask for a password. The user may try again if he desires. He may leave the password entry mode and return to the run mode by simultaneously pressing the < and > keys. If the password display is left idle, the unit will return to run mode automatically after 15 seconds.

Once the program mode is entered, "PROGRAM ?" will be displayed.

#### **Rapid Access Programming Method**

Program cells may be accessed directly from the "PROGRAM ?" screen by entering the row number and the column number from the Programming Chart on page 14. Other cells may be accessed by pressing < and > to get the "PROGRAM ?" display and entering another row and column number.

#### **Sequential Menu Programming Method**

Once the "PROGRAM ?" display is obtained, main menu items may be selected by pressing the ^ up arrow key. These menu items all contain the word "PROG." See Programming Chart on page 14. Once the main menu selection has been made, the > and < keys may be used to move to submenu items and to move back to the main menu. Then use the ^ key to select another main menu item.

#### **Help Messages**

When positioned at any submenu item, the **Help** key may be pressed, and a helpful programming message will scroll across the display. After the message has completed, the display will return to the submenu item. If you do not want to read the entire message, pressing any key will end the message.

#### **Returning to Run Mode**

The operator may return to the running mode by simultaneously pressing the < and > keys to obtain the "PROGRAM ?" display. Then, press the **Reset** key to exit the programming mode.

## **PROGRAM MENU DESCRIPTIONS**

See Programming Chart, page 14.

### **PROG. CALIBRATION**

#### **K Factor**

The K factor is the ratio of the number of input pulses from the flow meter or transmitter per unit of volume.

$$\text{K factor} = \frac{\text{Full Scale Freq.} \times 60}{\text{GPM}}$$

Example: 2.485 pulses per gallon

The value entered as the K factor affects both the totalizer and the rate meter calibrations. One way to increase resolution for the totalizer and rate meter is to change the K factor by a multiple of 10. Example: 0.2485. If this is done, the decimal point in both the totalizer menu and the rate meter menu should be moved one place to the left. See PROG. TOTALIZER and PROG. RATEMETER.

Note: The totalizer scaled pulse output will also be 10 times greater.

Operation: Use the **CLR** key to enable a new entry. Use the **0-9**, **DP** (decimal point), and **ENT** keys to enter a new K factor.

#### **Rate Multiplier**

The rate multiplier is a factor used for scaling the pulse input rate into a time unit for flow rate indication such as "per minute" or "per day." To calculate the rate multiplier factor required for a unit, multiply the full scale flow rate by the K factor and divide by the full scale frequency.

Example: A given meter has a flow rang of 0-10 gpm and a K factor of 570 pulses per gallon. First, calculate the frequency (pulses per second) of the flow input signal at the full scale flow rate.

FS Freq.:

$$\frac{10 \text{ gal.}}{1 \text{ min.}} \times \frac{570 \text{ pulses}}{1 \text{ gal.}} \times \frac{1 \text{ min.}}{60 \text{ sec.}} = \frac{95 \text{ pulses}}{1 \text{ sec.}}$$

Next, multiply the full scale flow rate by the K factor and divide by the full frequency.

$$\text{RM} = (\text{FS flow rate}) \times (\text{K factor}) / (\text{FSFreq.})$$

or

$$\text{RM} = 10 \times 570 / 95 = 60$$

The readout will be in unitary gallons and unitary gpm. To obtain higher resolution for the rate meter, change RM to 600 instead of 60. Change the rate meter decimal point to 00000.0 instead of 000000. Note that the high and low rate set point decimals will also shift a place to the left. These values may have to be reentered. See PROG. RATEMETER.

Operation: Use the **CLR** key to enable a new entry. Use the **0-9**, **DP** (decimal point), and **ENT** keys to enter a new rate multiplier.

#### **4 mA Out Start**

This display is used when calibrating the analog output of the unit.

## ***Model 1030F Indicator-Totalizer***

Operation: To calibrate the analog output, connect the analog output “+” terminal to +24 VDC out. Connect the analog output “-” terminal to ground through a current meter. Press the **CLR** key. Use the < and > keys to adjust the output current to 4 mA and then press the **ENT** key. Use the ^ key to select the 20 mA level and repeat the process.

### **4 mA Rate**

This display is used to select the active range of the analog output. Enter the flow rate that is supposed to be represented by 4 milliamps, normally zero (0). Press the ^ key and enter the flow rate that is to be represented by 20 milliamps, normally the rated full scale flow rate of the meter.

Operation: Use the ^ key to select the 4 or 20 mA rate. Use the **0-9** and **ENT** keys to enter a new rate.

### **Diagnostics**

Two items may be tested when the diagnostics are run — the display and the computer itself. You may check for missing character segments in the display by pressing the ^ key. All “8”s and decimal points should be displayed. Press the ^ key again and all “\*”s will be displayed. Again, you should check for missing segments. Pressing the ^ key again will start the computer’s self-diagnostics test. Any errors will be flashed on the display.

Operation: Press the ^ key three times to cycle through the diagnostic tests.

## **PROG. TOTALIZER**

### **Output Pulse**

Fast 125 microsecond pulse width, output 1500 pulses/second max.  
Medium 2 millisecond pulse width, output 200 pulses/second max.  
Slow 50 millisecond pulse width, 10 pulses/seconds max. frequency

Operation: Use the ^ key to select the function of the totalizer output.

### **Output Set Point**

Decide the totalizer set point output. If 0.0 is entered, the output will be latched. If 0.1 to 999.9 is entered, the output will be timed. The output will remain on, if timed, for as long as the totalizer condition exists and for the timeout period. The timeout period may be preempted by unlatching the output.

Operation: Use the **CLR** key to enable entry of a new timeout. Use the **0-9** and **ENT** keys to enter the timeout value of the output.

### **Reset**

The front panel reset key can be configured to perform multiple or no functions for the totalizer. These functions include reset totalizer count, unlatch totalizer set point output, reset totalizer count and unlatch totalizer set point output, and none.

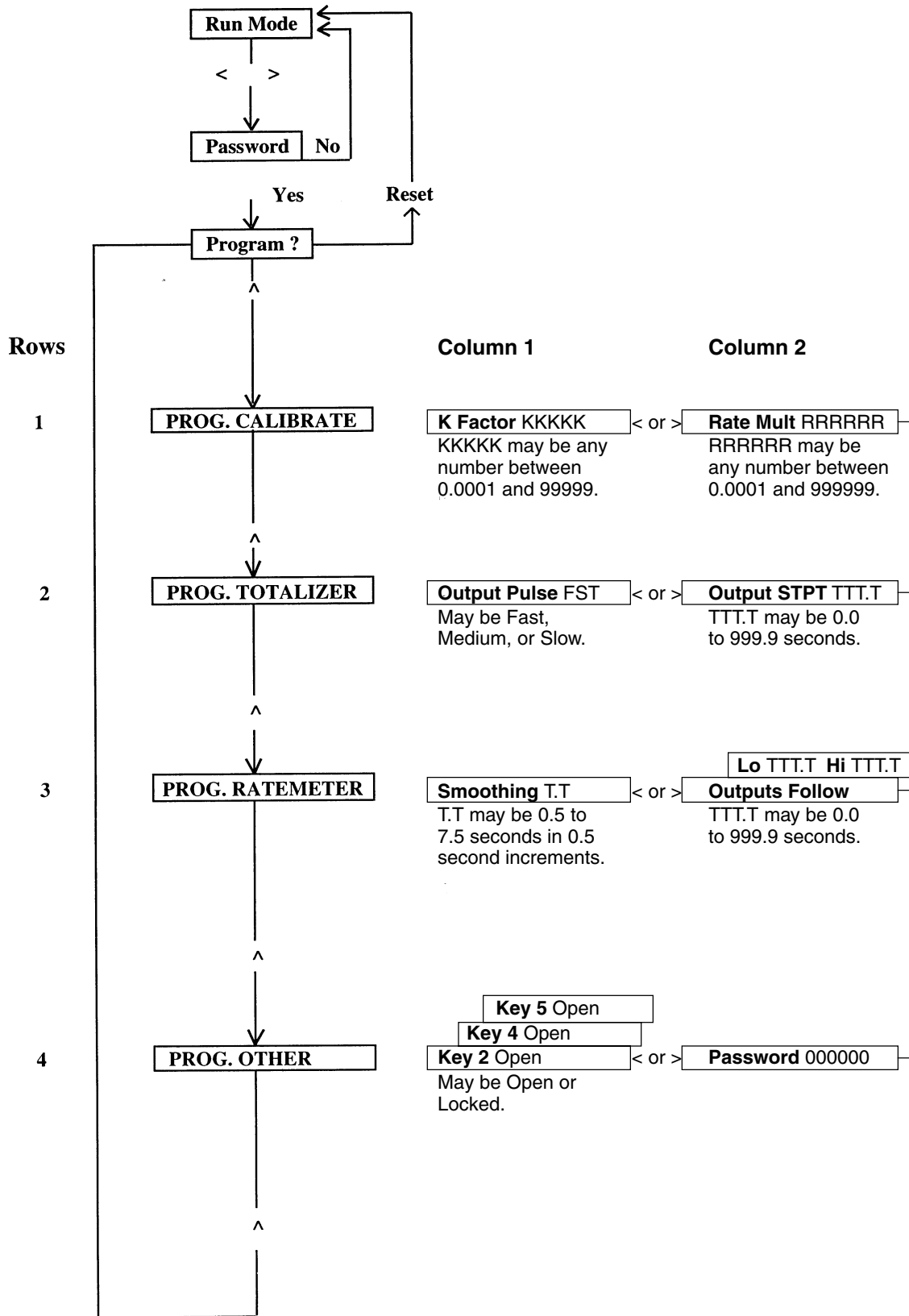
Operation: Use the ^ key to select the totalizer function of the Reset key.

### **Decimal Point**

The decimal point position of the totalizer may be selected using this display.

Example: Use the ^ key to select the decimal point location for the totalizer.

**PROGRAMMING CHART**



**Model 1030F Indicator-Totalizer**

**Column 3**

**Column 4**

**Column 5**

**Column 6**

**20 mA Out Start ?**  
**4 mA Out Start?**

**20 mA Rate RRRRRR**  
**4 mA Rate RRRRRR**

**Diagnostics**

RRRRRR may be numbers less than or equal to 999999.

**Reset Unl. Out**  
 May be None, Reset Count, Unlatch Output, or Reset and Unlatch.

**Dec. Pt. 000000**

**Reset Unl. Out**  
 May be None or Unlatch Hi/Lo Alarms.

**Dec. Pt. 000000**

**Rate at Zero TT**  
 TT may be 1 to 15 seconds.

**Rate Header GPM**  
 G, P, and M may be any alphabetical character or a blank space

**Baud BBBBB PPPPP**  
 Baud Rate (BBBBB) may be 300, 600, 1200, 2400, 4800, or 9600. Parity (PPPPP) may be Space, Even, or Odd.

**ID III Time TTT**  
 III may be 0 to 255. TTT may be 0, 10, 100, or 500.

**Speed 400 Hz max.**  
 Input pulse speed may be 40, 400, or 7500 Hz maximums.

## **PROG. RATEMETER**

### **Smoothing**

A built-in dynamic averager performs software dampening. With this, a stable reading of flow rate may be obtained from a pulsating flow system. A smoothing factor of 0.5 to 7.5 may be set in 0.5 increments. By setting the smoothing factor at 0.5, no damping is performed. A smoothing factor of 7.5 provides a 7.5 second time delay for 100% display settling after a change in flow rate. Instantaneous rate readings are taken and averaged to produce a single reading to be displayed. With each rate update, the oldest reading will be incorporated into the average.

Operation: Use the ^ key to select a new rate smoothing time.

### **Outputs Follow**

The high and low flow rate set points may operate three different ways. They may follow the flow rate, be latched, or be timed. If latched, set the timeout period for 0.0 seconds. If timed, set the timeout from 0.1 to 999.9 seconds. The output will persist until after the responsible conditions cease and the timeout period has expired or until the output is unlatched.

Operation: Use the ^ key to select whether the rate outputs follow the rate or are timed. If timed, use the < and > keys to select either the lo or hi rate output. Use the **CLR** key to enable a new entry. Use the **0-9** and **ENT** keys to enter a new output time. The output is latched if a time of 0.0 is entered.

### **Reset**

The front panel reset key can perform either an unlatching of the rate set point outputs or no function at all.

Operation: Use the ^ key to select the rate meter function of the Reset key.

### **Decimal Point**

The decimal point position of the rate meter may be selected using this display.

Operation: Use the ^ key to select the decimal point location for the rate meter.

### **Rate at Zero**

In absence of the flow pulse input, the rate at zero is the period that the rate meter will show the last legitimate flow reading before showing a zero flow rate. The period may be set from 1 to 15 seconds. An ideal application to use this function would be when flow pulse input rates are expected to be very slow. Example: A "rate at zero" set to "15" would be useful when the pulse input rate is expected to be as low as 1 pulse every 10 seconds. An expected low pulse rate of 1 pulse every 2 seconds may constitute a "rate at zero" setting of 3 to 5 seconds. For low pulse rates greater than 5 per seconds, a "rate at zero" settling of "1" is normal.

Operation: Use the **CLR** key to enable a new entry. Use the **0-9** keys and **ENT** to enter a new rate zero time.

### **Rate Header**

Three alphabetical characters and a blank character may be used to label the flow rate display with engineering units.

Operation: Use the > and < keys to select which location to program. Use the ^ key to select the character for that location.

### **PROG. OTHER**

#### **Key 2 Open** (Also, keys 4 and 5)

The totalizer set point value, rate low set point value, and the rate high set point value may be designated as open or locked. Locking the value prevents the changing of the set point value from the front panel unless it is first reopened in the programming mode. This protects against unauthorized persons having access change the set points in critical control applications.

Operation: Use the **2**, **4**, or **5** keys to select which set point mode to program. Use the ^ key to select whether or not the selected set point is locked.

#### **Password**

A password may be specified for the next entry into the programming mode. A password of zeros (000000) means that no password is required for program mode entry. Do not forget your password!

Operation: Use the **CLR** key to enable a new entry. Use the **0-9** and **ENT** keys to enter a new password.

#### **Baud - - - Parity**

The baud rate and parity must be specified when using the RS-485 communications link. The baud rate should be chosen from 300, 600, 1200, 2400, 4800, 9600, 19200. The parity may be space (none), even, or odd.

Operation: Use the **CLR** key to enable entry. Use the **0-9** and **ENT** keys to enter the communication baud rate. Use the ^ key to select odd, even, or space parity.

#### **ID - - - Time**

The Model 1030's identification number must be set whenever using the RS-485 communication link. This must be a number between 0 and 255. No two units on the same link may have the same ID. Also, the minimum communication response time for the unit must be specified. It may be selected from 0, 10, 100, or 500 milliseconds. A longer time is normally given for non-time-critical applications.

Operation: Use the **CLR** key to enable entry. Use the **0-9** and **ENT** keys to enter the unit identity number from 0 to 255. Each unit on the communication link must have a unique number. Use the ^ key to select the minimum communication response time.

#### **Input Speed**

The pulse frequency of the flow input must be specified. Three choices are available.

Fast (7500 Hz max.) — is used for quick electronic pulses.

Min. pulse width is 50 microseconds.

Medium (400 Hz max.) — Min. pulse width is 1.5 milliseconds.

Slow (40 Hz max.) — is recommended for contact closure inputs.

Min. pulse width is 10 milliseconds.

$$\text{FS Freq.} = \frac{\text{gpm} \times \text{pulses per gallon}}{60}$$

Operation: Use the ^ key to select the count input speed.

## **SPECIFICATIONS**

### **Flow Inputs**

Require npn current sinking or contact closure to ground.

Internal 5.8K ohm pull-up resistor to 5 VDC

Voltage low: 0-2.2 VDC

Voltage high: 2.8-24 VDC

High speed: 0-7500 Hz; min. pulse width; 50 microseconds

Med. speed: 0-400 Hz; min. pulse width; 1.5 milliseconds

Low speed: 0-40 Hz; min. pulse width; 10 milliseconds

Rate display: 1 Hz min.

**Input A:** Flow input

**Input B:** Flow input inhibit (flow input ignored when pulled low)

**Front panel control:** pushbutton control (may be locked out)

### **Reset\*:**

Rate meter: *unlatch rate hi/lo set point outputs*, or none;

Totalizer: reset totalizer count, *unlatch totalizer set point output*, reset totalizer count and unlatch totalizer set point output, or none

Note\*: When more than one function is available, the function that is italicized is the program default. It is possible to change the function through the program menu.

**Control inputs:** Contact closure or npn transistor pull down to ground

impedance: 5.8K ohm pull-up resistor to 5 VDC

low: 0-1.0 VDC; high: 3.5-24 VDC

response: min. low 30 millise.; min. high 30 millise.

**Control Input 1:** Unlatch totalizer set point output

**Control Input 2:** Reset totalizer count

**Control Input 3:** Unlatch rate hi/lo set point outputs

**Control Input 4:** Unlatch totalizer set point output and unlatch rate hi/lo set point outputs

**Control Input 5:** Reset totalizer count, unlatch totalizer set point output, and unlatch rate hi/lo set point outputs

**Power supply:** 115 VAC, 50/60 Hz, 0.2 A or 18-27 VDC, 0.4 A max., 6 W max. (230 VAC or 18-27 VDC version available)

**Power output:** 24 VDC  $\pm 5\%$  at 100 mA max. for sensors and peripherals when unit is supplied with AC power input only

### **Rate meter**

K factor: 0.0001 to 99999

Rate multiplier: 0.00001 to 999999

Accuracy:  $\pm 0.05\%$

Rate smoothing: designate 0.5 to 7.5 second dynamic averaging in 0.5 second increments

Rate update: 0.5 seconds

**Current output:** 4-20 mA; 100 ohm impedance; optically isolated

Load: 1000 ohms max. at 24 VDC

Compliance voltage: -12-27 VDC

Response time: 0.5 seconds (follows rate meter)

Accuracy:  $\pm 0.1\%$  at 25°C;  $\pm 0.25\%$  over temp. range

Resolution: 0.05% (11 bits)

## ***Model 1030F Indicator-Totalizer***

**Control outputs:** npn trans. (150 mA max., 30 VDC max.)

**Control output 1:** scaled totalizer pulse output with designated pulse width

high speed: 1500 Hz. max.; 125 microsecond pulse width

med. speed: 200 Hz. max.; 2 millisecond pulse width

low speed: 10 Hz. max.; 50 millisecond pulse width

**Control output 2:** totalizer set point output

**Control output 3:** low rate set point output

**Control output 4:** high rate set point output

Note: Rate hi/lo set point output operations may either: follow the flow; be latched; or be timed from 0.1 to 999.9 seconds. The totalizer set point output operation may be either: latched; or timed from 0.1 to 999.9 seconds.

### **Communications**

Type: RS-485 multidrop

Baud: 300, 600, 1200, 2400, 4800, 9600, 19200

Parity: space, even, or odd

Protocol: Opto-22 compatible

**Wiring terminals:** 14 awg max., detachable

### **Environmental**

Operating temperature: 32 to 131°F (0 to 55°C)

Storage temperature: -40 to 158°F (-40 to 70°C)

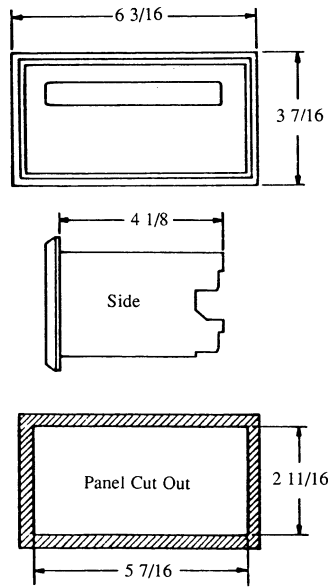
Humidity: 0 to 85% RH noncondensing

Panel mount version: key pad is NEMA 4X with gasket that will seal panel NEMA 4

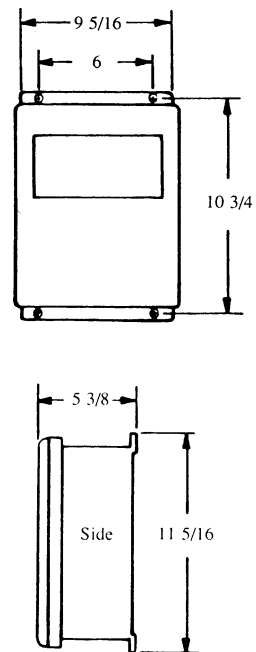
Wall mount version: enclosure and front panel are NEMA 4X

**DIMENSIONS**

**Panel Mount**



**Wall Mount**







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