AALIANT™
Fluid Measurement Solutions

Model 1030A
Indicator-Totalizer
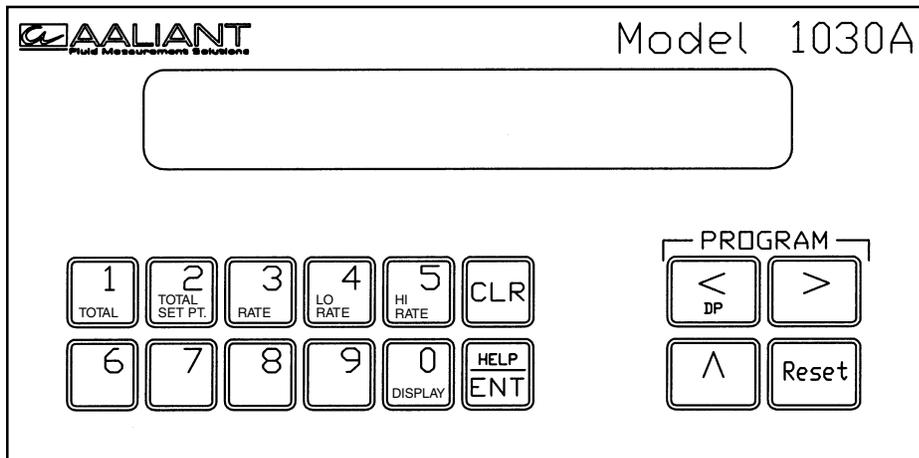
Installation, Operation and Maintenance Manual

AALIANT
Fluid Measurement Solutions

Model 1030A

1 TOTAL	2 TOTAL SET PT.	3 RATE	4 LO RATE	5 HI RATE	CLR
6	7	8	9	0 DISPLAY	HELP ENT

PROGRAM

< DP | >
∧ | Reset

Table of Contents

Installation, Operation & Maintenance

GENERAL

The Model 1030A is a microprocessor based indicator-totalizer. It gives you the ability to display important process parameters such as rate, total, and set points. It contains a 20-point linearization table to allow flexibility in displaying rate and total from a non-linear meter. 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 1030A also contains a set point lock out system to prevent unauthorized changes from the front panel.

The 1030A 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.

SPECIFICATIONS

Flow Input A:

    Type: 4-20 mA current loop

    Impedance: 100 ohm
    Voltage: 5 VDC
    Response: 3 Hz
    Resolution: 11 bits
    Accuracy: ±0.1% at 25°C
               ±0.25% over temperature range

Flow Input B: Flow input inhibit (flow input ignored when pulled low) Require npn current sinking device.
Internal 5.8K ohm pull-up resistor to 5 VDC
    Voltage low: 0.0-1.3 VDC
    Voltage high: 2.8-24 VDC

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 millisec.; min. high 30 millisec.

    Control Inputs 1 - 5: Reset totalizer count, unlatch totalizer set point output, reset totalizer and unlatch totalizer set point, unlatch rate hi/lo set points, or none.

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Power supply: 120/240 VAC +10%, −15%, 50/60 Hz, 0.2/0.1 amps; or 18 - 27 VDC, 0.4 amps maximum, 6 watts maximum

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

Rate meter
　　Rate multiplier: 0.0001 to 999999
　　Accuracy: ±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: ±0.1% at 25°C; ±0.25% over temp. range
　　Resolution: 0.05% (11 bits)

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

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.

   115 VAC connection
   To connect 115 VAC power, join the fused hot lead to **both** of the L1 terminals and the neutral lead to **both** of the L2 terminals.

   230 VAC connection
   To connect 230 VAC power, the left-most L1 terminal and the right-most L2 terminal should be connected to the two incoming power lines while a wire jumper connects the right-most L1 terminal and the left-most L2 terminal. One of the incoming leads should be fused.

   ⏚ This chassis ground terminal should be connected to earth ground. This connection is optional only if the unit is powered by 24 VDC, and the relays are not used to switch AC power.

• When connecting inductive loads to the control outputs, diode protection should be provided.

• On power-up, if the display reads "Run Installation," press the "Reset" key to clear. This is an indication that the unit has not been programmed. To program the unit, see page 11.
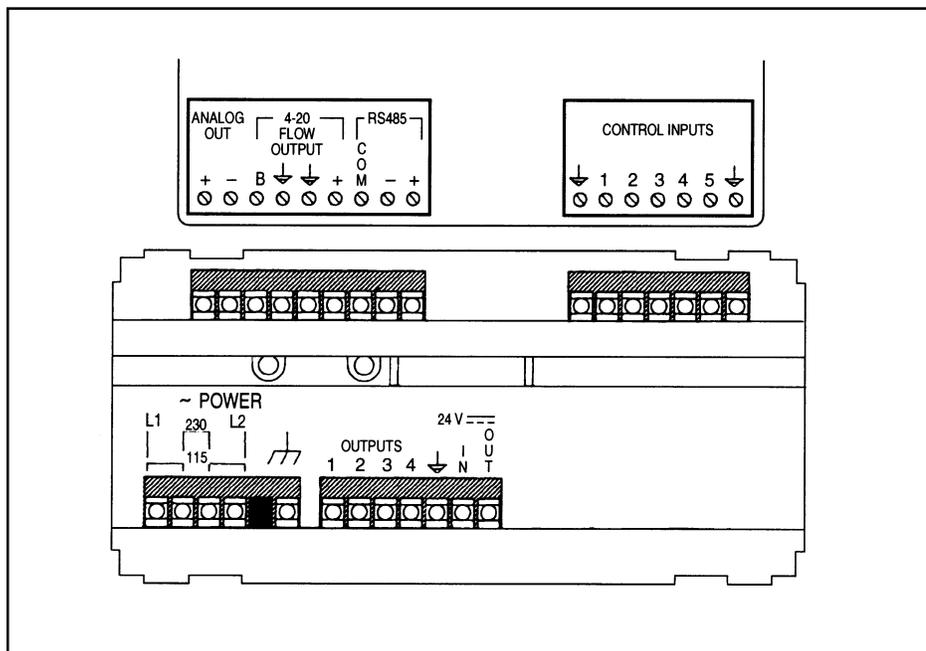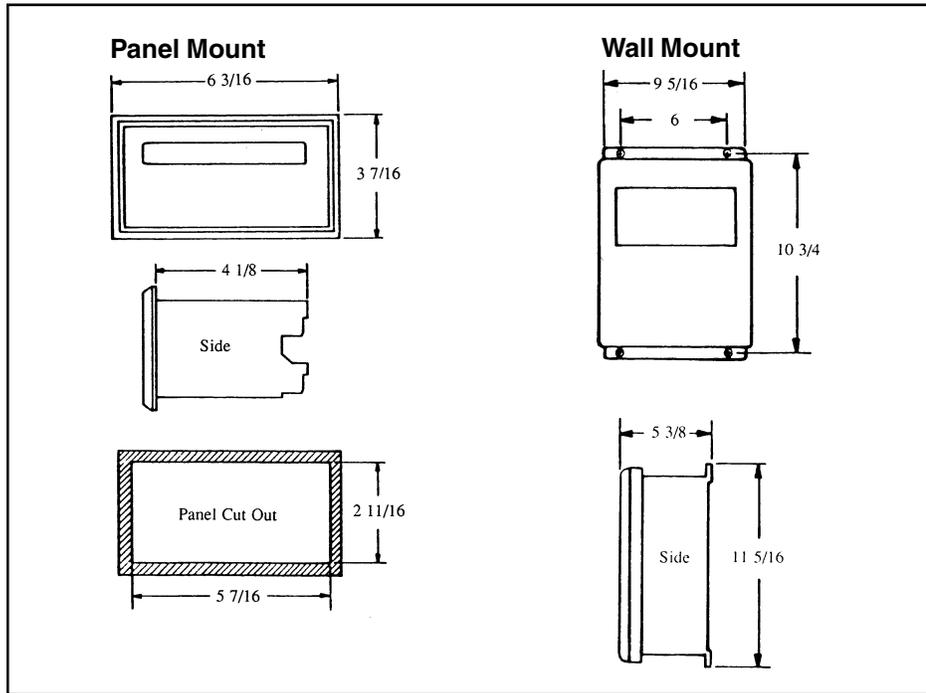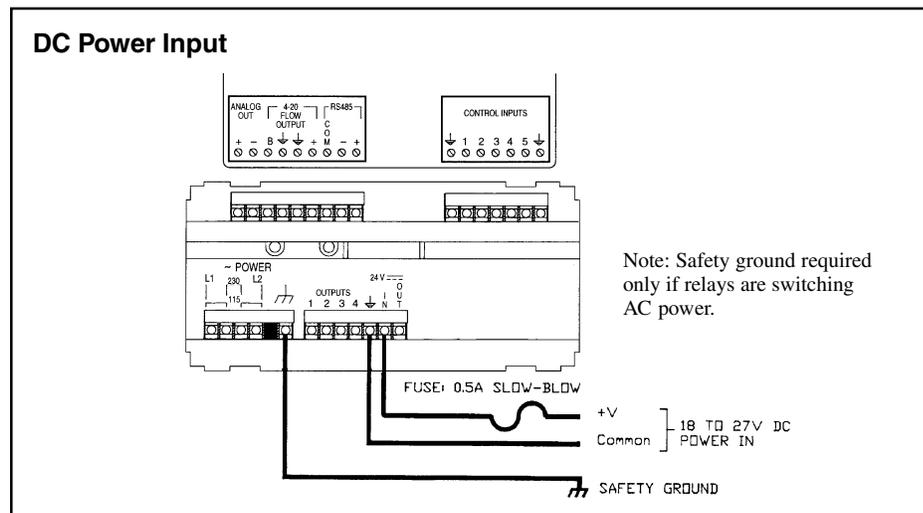
3

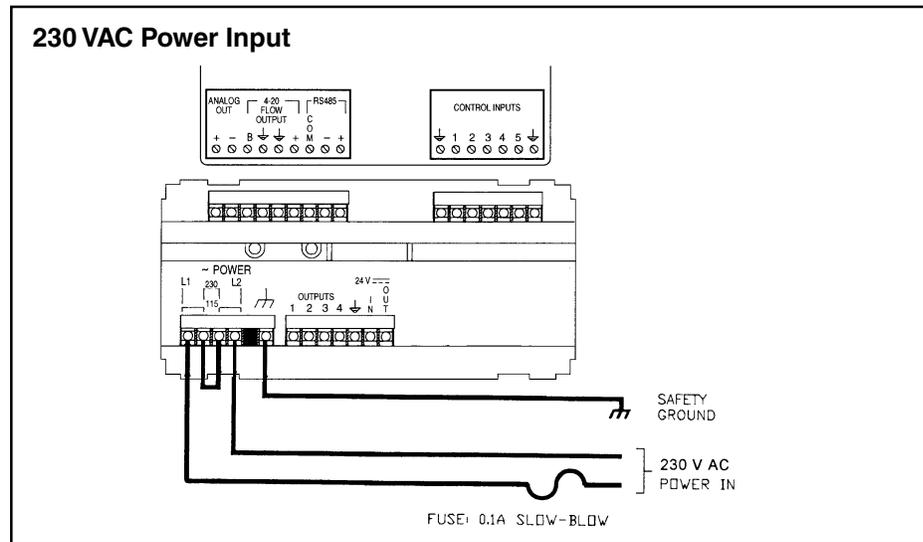## *DIMENSIONS*

Panel Mount

6 3/16

3 7/16

4 1/8

Side

Panel Cut Out

2 11/16

5 7/16

Wall Mount

9 5/16

6

10 3/4

5 3/8

Side

11 5/16

ANALOG OUT

4-20 FLOW OUTPUT

RS485

+ − B C O M − +

CONTROL INPUTS

1 2 3 4 5

~ POWER

L1 230 L2

115

OUTPUTS
1 2 3 4

24 V

O U T
I N

Figure 1 — Wiring Terminal

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Applications Wiring

115 VAC Power Input

230 VAC Power Input

DC Power Input

Note: Safety ground required only if relays are switching AC power.
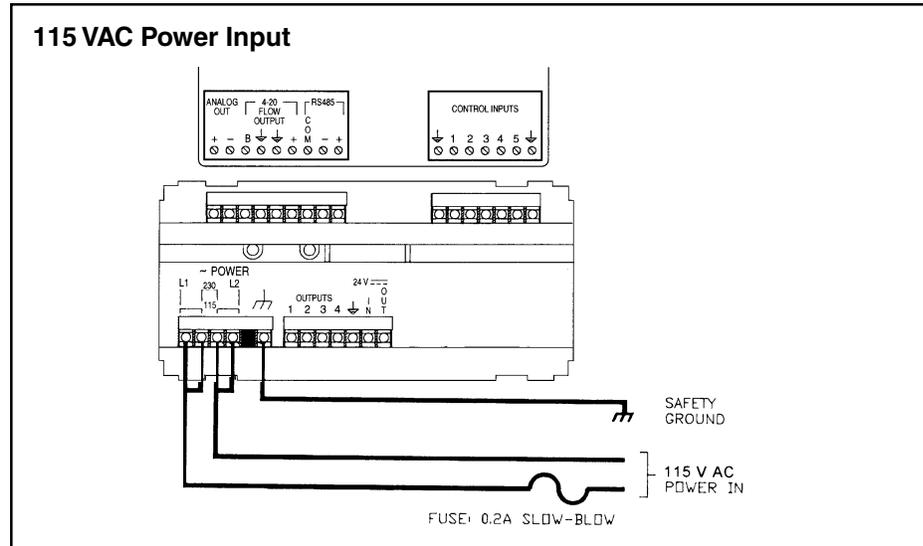
4-20 mA Rate Output (non-isolated)

Model 1030A

Monitoring Equipment

Analog Output −

Analog Output +

24 VDC Output
100 mA max.
Common

+

−
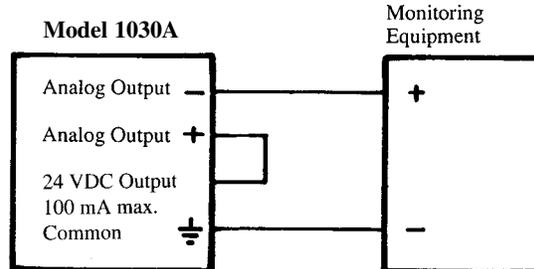
4-20 mA Rate Output (isolated)

Monitoring Equipment

Model 1030A

Analog Output −

Analog Output +

+

−

Isolated
Power
Supply

+   −
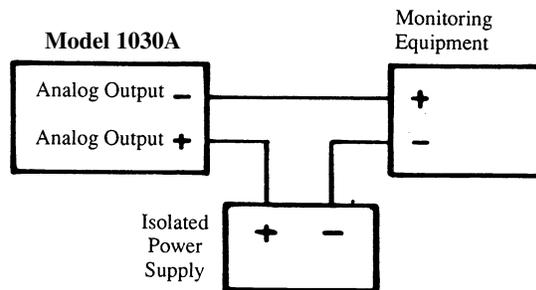
Flow Input Sensor with External Power Supply

ANALOG OUT | 4-20 FLOW OUTPUT | RS485

+ − B ⏚ ⏚ + M − +

CONTROL INPUTS

⏚ 1 2 3 4 5 ⏚

− External
   Power
+ Supply

+

Two-wire
4-20 mA
Flow
Transmitter

−

~ POWER
L1 230 L2
        115
        OUTPUTS
        1 2 3 4

24 V
O
U
T
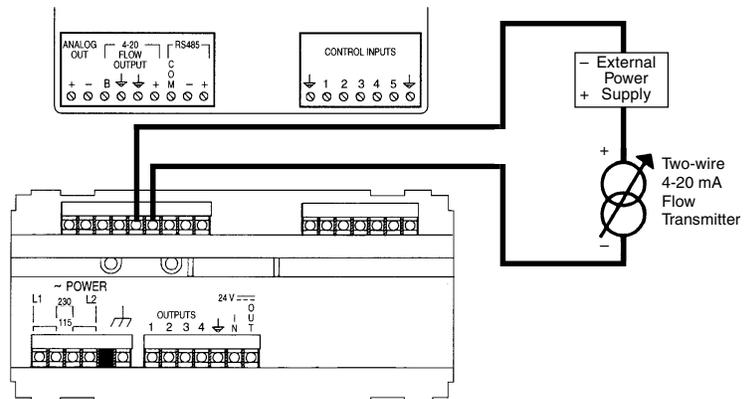
Do not connect the 24 VDC OUT terminal to the sensor if powered from another source.
The DC power required for the transmitter may be optionally obtained from an external power source
or the 24 VDC OUT terminal of the Model 1030A. **Be certain not to exceed the total current output
capability of the 24 VDC OUT terminal (100 mA).**
If using an external DC supply, connect the minus side of the supply to the DC common of the Model 1030A.

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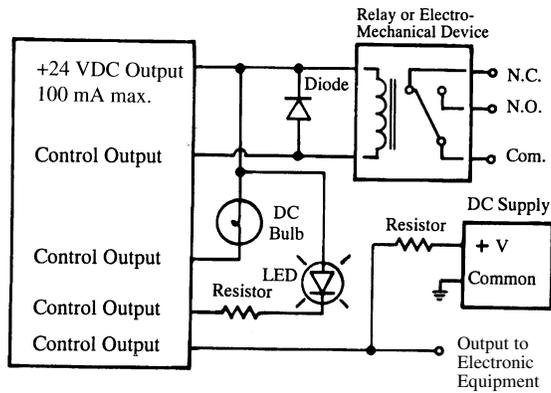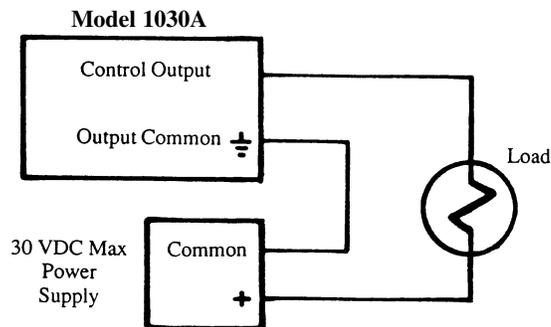## Flow Input Sensor with Control Power Supply (1030A powered)
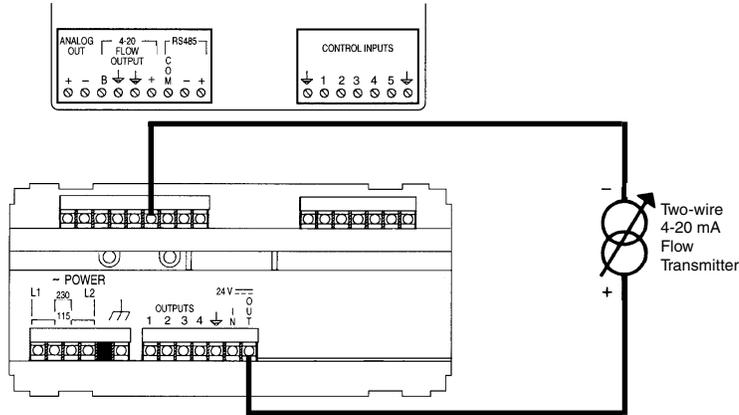
The DC power required for the transmitter may be optionally obtained from an external power source or the 24 VDC OUT terminal of the Model 1030A. **Be certain not to exceed the total current output capability of the 24 VDC OUT terminal (100 mA).**

Control Output Application Examples
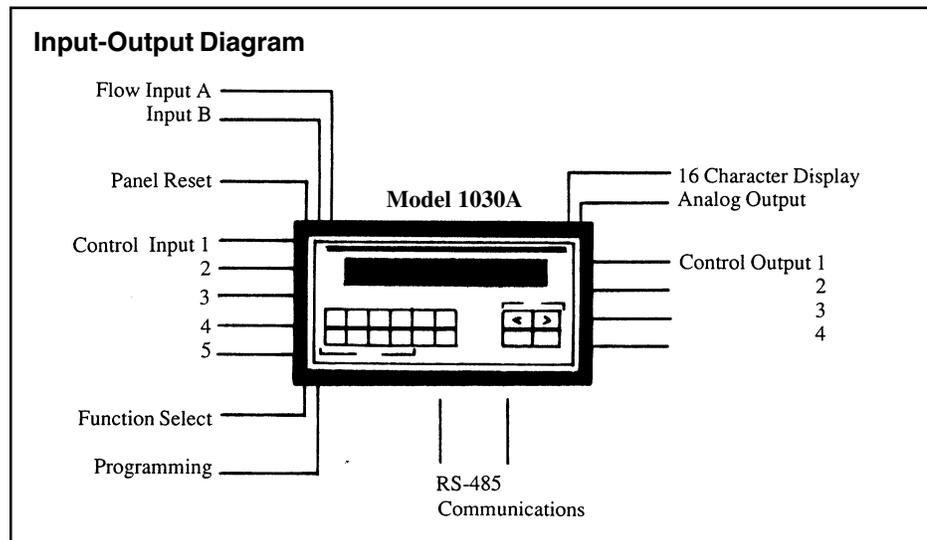

Control Output Wiring

OPERATION

The indicator and the totalizer portions of the Model 1030A 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 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 1030A 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 flowmeter. 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.

Input-Output Diagram

Totalizer

The Model 1030A 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
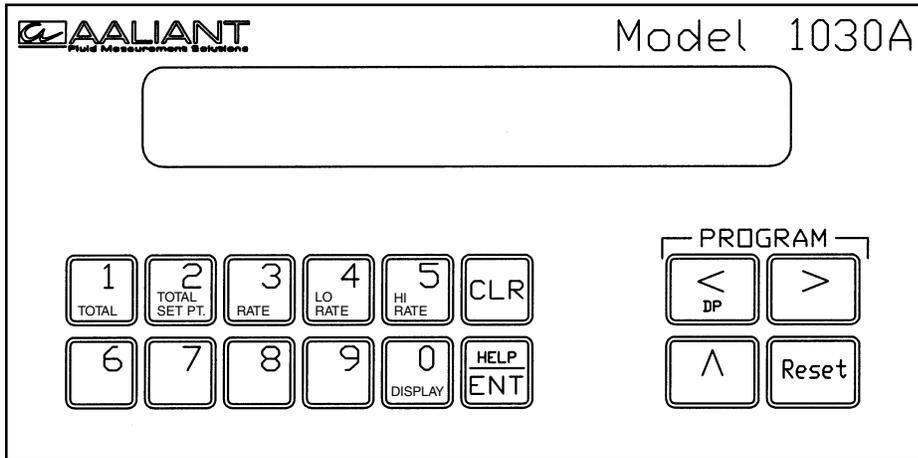
Key	Key Label	Description
1	Total	Totalizer
2	Total Set Pt.	Totalizer set point value
3	Rate	Flow rate value
4	Lo Rate	Rate low set point value
5	Hi Rate	Rate high set point value
0	Display	Dual display values

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 may 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.

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.

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 a 4-20 mA analog signal from the flow meter or flow transmitter.

Input B is a flow inhibit input. When Input B is connected to ground, the Model 1030A 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 - 5	Reset totalizer count, unlatch totalizer set point output, reset totalizer and unlatch totalizer set point, unlatch rate hi/lo set points, or none.

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 too 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 1030A 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 1030A 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 Aaliant representative.

PROGRAMMING

See Programming Chart.

Programming the Model 1030A 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 1030A comes from the factory with no password set. Setting of the password is explained on page 15. 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 16. 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 16. 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 16.

PROG. CALIBRATION

Rate Decimal Point

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

Example: Use the 0, 1, 2, 3, or 4 keys to select the location for the decimal point.

Linearization Table

This display is used when entering the calibration settings for different flow rates and 4-20 mA current inputs. For a linear meter, points 1 and 2 must be selected, and data must be entered for the low and high flow rates and associated current inputs. For a non-linear meter, up to 20 points may be entered to assign different flow rates to the applicable 4-20 mA current inputs.

4 mA Out Start

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

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.

FLO 4 mA In End ?

This step is used to calibrate the flow input.

Help message: To calibrate the flow analog input using a current source, set the input current to exactly 4 mA and press the RESET key. The display will black momentarily to indicate that calibration for that level is completed. Use the ^ key to select the 20 mA and repeat the process.

PROG. TOTALIZER

Control Inputs

Assign control inputs 1-5 to a totalizer function. Choices are none, reset count, unlatch outputs, or reset count and unlatch outputs.

Operation: Use keys **1-5** to select the control input and use the ^ key to assign a specific totalizer function.

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.

Totalizer Decimal Point

The decimal point position of the totalizer may be selected using this display. 0, 1, or 2 totalizer decimal points may be selected.

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

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.

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Control Inputs

Assign control inputs 1-5 to a ratemeter function. Choices are unlatch the rate hi/lo set point outputs or none.

Operation: Use keys **1-5** to select the control input and use the ^ key to assign a specific ratemeter function.

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.

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.

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. The last character will be M, H, or S for minutes, hours, or seconds.

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 to 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 1030A'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.

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.

PROGRAMMING CHART

```
                    ┌──────────┐
                    │ Run Mode │◄┐
                    └──────────┘ │
                         │       │
                      <     >    │
                         │       │
                         ▼       │
                 ┌──────────┬────┐│
                 │ Password │ No ││
                 └──────────┴────┘│
               Ent                │
                  Yes        Reset│
                    │         ▲   │
                    ▼         │   │
                 ┌────────────┴─┐ │
                 │  Program ?   │─┘
                 └──────────────┘
```

Rows		Column 1	Column 2
1	**PROG. CALIBRATE**	**I R** 0000.0 **I** 0.00 **RDP Loc** 000000 < or > Up to 20 points may be programmed in the table. A minimum of 2 points is required.	**20 mA Out** Start ? **4 mA Out** Start?
2	**PROG. TOTALIZER**	**CTRLI** Unl. Output < or > May be Rst. Count, Unl. Output, Rst. & Unl., or None.	**Output Pulse** FST May be Fast, Medium, or Slow.
3	**PROG. RATEMETER**	**Smoothing** T.T < or > T.T may be 0.5 to 7.5 seconds in 0.5 second increments.	**CTRLI** None May be None or Unl. Output.
4	**PROG. OTHER**	**Key 5** Open **Key 4** Open **Key 2** Open < or > May be Open or Locked.	**Password** 000000

Column 3   **Column 4**   **Column 5**   **Column 6**

| 20 mA Rate RRRRRR |
| **4 mA Rate** RRRRRR |< >| **Flow** 20 mA in End ? |
| | **Flow** 4 mA in End ? |

RRRRRR may be
numbers less than
or equal to 999999.

| **Output STPT** TTT.T |< >| **Reset** Unl. Out |< >| **Dec. Pt.** 000000 |

TTT.T may be 0.0   May be None, Reset
to 999.9 seconds.   Count, Unlatch Output,
                          or Reset and Unlatch.

| **Lo** TTT.T **Hi** TTT.T |
Outputs Follow	< >	**Reset** Unl. Out	< >	**Rate at Zero** TT	< >	**Rate Header** GPS
			Rate Header GPH
			Rate Header GPM

TTT.T may be 0.0   May be None or   TT may be 1 to   G, and P may be
to 999.9 seconds.   Unlatch Hi/Lo   15 seconds.   any alphabetical
                          Alarms.   character or a
                                                                         blank space

| **Baud** BBBBB PPPPP |< >| **ID** I I I **Time** TTT |< >| **Diagnostics** |

Baud Rate (BBBBB)   I I I may be 0 to
may be 300, 600, 1200,   255. TTT may be
2400, 4800, or 9600.   0, 10, 100, or 500.
Parity (PPPPP) may
be Space, Even,
or Odd.

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