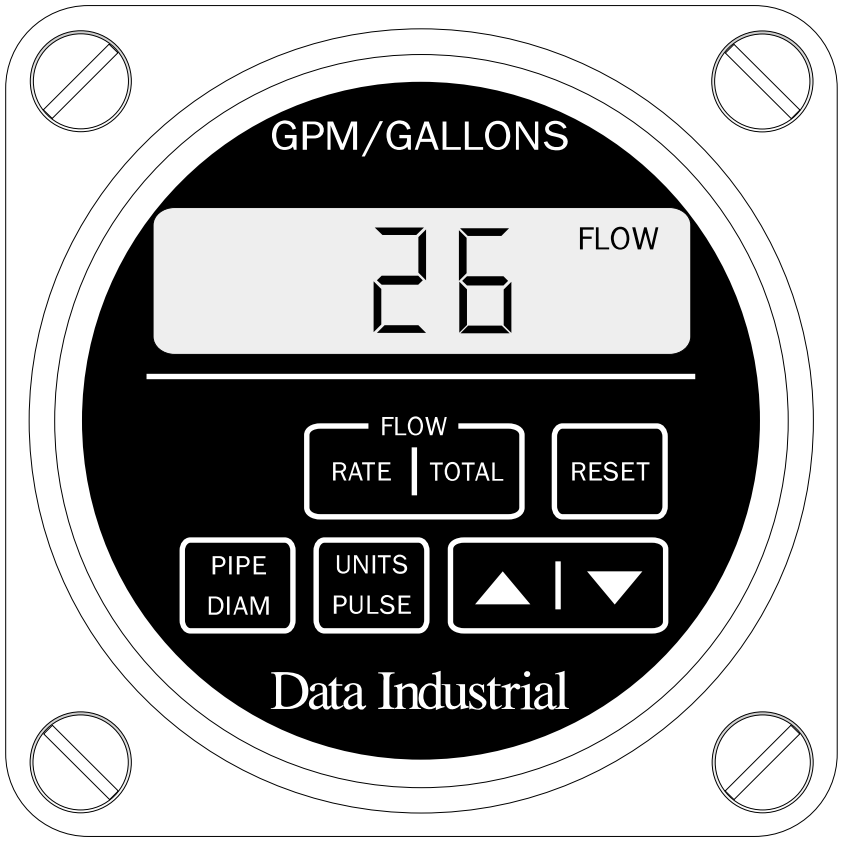
Series 1000

by Data Industrial



Owner's Manual

Data
Industrial

7/93
PN# 72077

Table of Contents

Data Industrial Corporation
11 Industrial Drive
Mattapoisett, Ma. 02739
508-758-6390
FAX: 508-758-4057

Introduction

Model 1000

The Model 1000 is a microprocessor-based liquid flow monitor designed to provide accurate reading of flow rate and total accumulated volume. It calculates and displays flow rate based on the input frequency from any Data Industrial non-magnetic flow sensor and the inside diameter of the pipe being monitored. The inside pipe diameter is entered by membrane switches on the front panel. The Model 1000 provides flow rate in gallon per minute and total flow in gallons. The Model 1000C provides units of cubic feet per minute and total cubic feet. Both the Model 1000 and 1000C use pipe diameters in inches. The Model 1000L provides units of liters per minute and total liters. The Model 1000M provides units of cubic meters per minute and total cubic meters. The Models 1000L and 1000M use pipe diameters in millimeters. It is possible to convert one model to another using available conversion kits.

Data Industrial sensors provide an input frequency which is proportional to flow rate. A preamplifier is contained in each sensor, allowing the pulse signal to travel up to 2000 feet without additional amplification. Power to operate the sensor is provided by the Model 1000. The impeller, shaft and O-rings are replaceable in the field.

The Model 1000 provides a pulse output, programmable from the face keypad, to drive an optional mechanical totalizer, relay, or to interface with other data collection equipment that can accept a pulse or dry contact closure signal.

The resettable electronic totalizer eliminates the need for an electro-mechanical counter in most applications. It retains its memory of total flow for 10 years even when power is lost.

The Model 1000 may be “locked” to prevent unauthorized access or inadvertent resetting of total flow or changes to calibration of diameter and pulse output. The unit can be unlocked from the keyboard by an authorized user.

Model 1200

The Model 1200 Calibrator is a microprocessor-based unit designed to aid in the calibration of Data Industrial analog output devices. It calculates and displays the flow in units of gallons per minute based on the input frequency from any Data Industrial analog output device (or flow sensor) and the inside diameter of the pipe being monitored. The inside pipe diameter, measured in inches, is entered on the front panel keys. Other units of measure for diameter, flow rate and total flow are available.

All Data Industrial analog transmitters may be adjusted in the field for full scale flow range. When connected to the sensor terminals of the transmitter, the Model 1200 will display the full scale in GPM when the appropriate pipe I.D. is entered, providing a visual indicator when adjusting the analog transmitter. It is powered with two 9 V alkaline batteries.

Model 1000 Installation

Location

In any mounting arrangement, the primary concern is easy viewing and convenient operation of the keyboard.

The unit generates very little heat, so no consideration need be given to cooling or ventilation.

Mechanical Installation

Surface Mounting

The Model 1000 can be mounted on any flat panel, requiring only a small opening in the panel to clear the electrical connector and 4 screw holes for mounting. It projects only 1 1/2" from the panel.

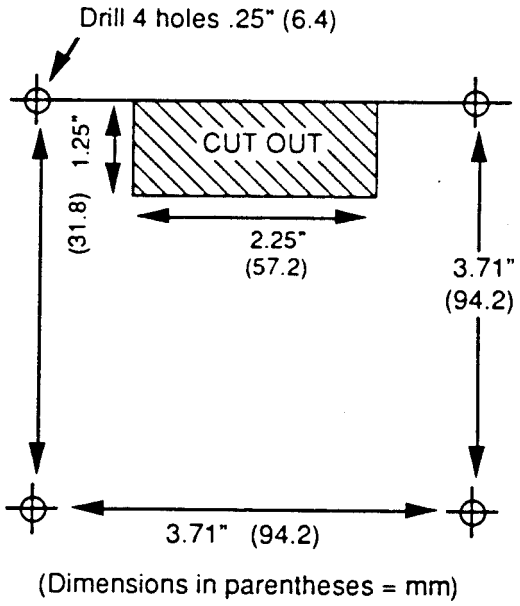
1) Remove dress plugs from the front of the unit.

2) Drill holes in panel for screws and cut out for electrical connector as shown in Figure 1.

3) Screw unit down with user-provided screws for the .25" holes.

4) Replace dress plugs on front of the unit.

Figure 1
Surface Mounting



(Dimensions in parentheses = mm)

Flush Mounting

1) Remove dress plugs from the front of the unit.

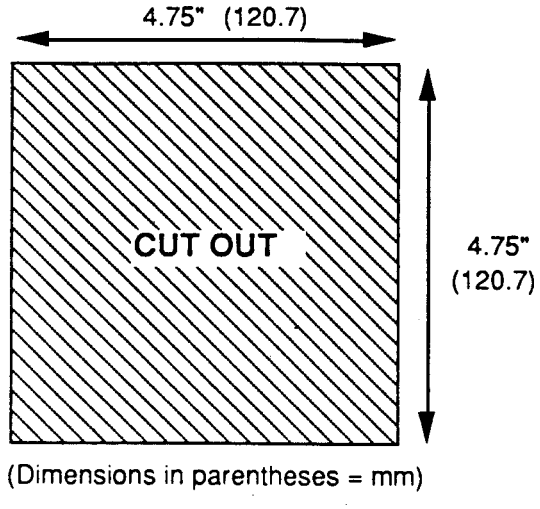
2) Take 8-32 screws provided and place through front of the unit. Tighten the screws to the rear cover so that they act as projecting studs.

3) Place the flush mount plate over the dress plug holes in the front of the unit and screw in the 4 adapters provided.

4) Cut out 4.75” x 4.75” hole as shown in Figure 2.

5) Take the 2 U-brackets provided and fit them over the 8-32 screws. Using nuts provided, clamp the unit to panel with the U-brackets.

Figure 2
Flush Mounting



Conduit Box Mounting

1) Remove dress plugs from the front of the Model 1000.

2) Put lock-washers onto conduit box spacers and screw into back of Model 1000.

3) Attach a waterproof conduit fitting with grounding lug in bottom of conduit box.

4) Align box to spacers so that hole for wiring will be facing down when unit is finally mounted, as shown in Figure 3A.

5) Use 4 seal screws to attach box to Model 1000. Make sure that the box edge firmly and evenly seats against the gasket in the rear panel.

6) Replace dress plugs on the front of the unit. Make sure O-ring seals are intact.

7) Mount the unit using the welded brackets provided on the conduit box. Refer to Figure 3B for the welded bracket dimensions.

Figure 3A
Conduit Box Attachment

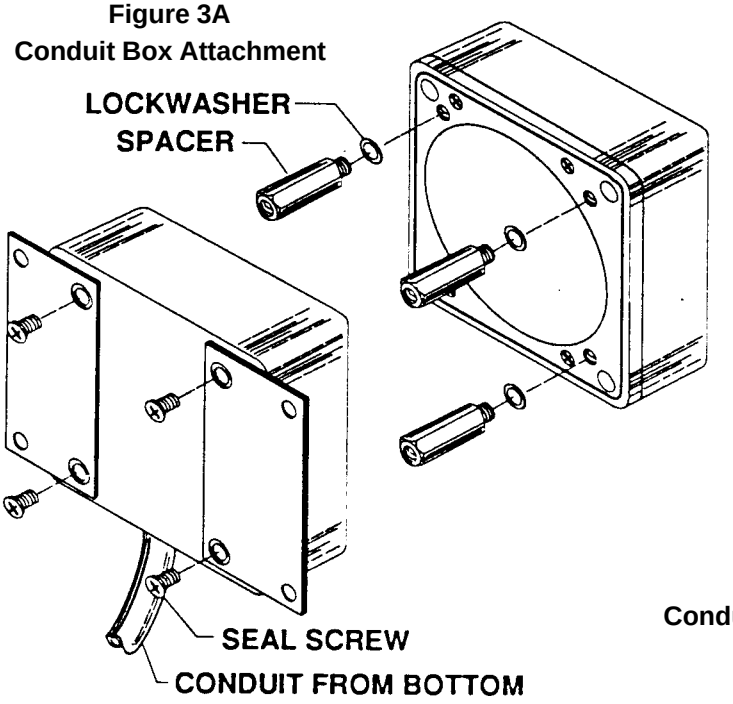
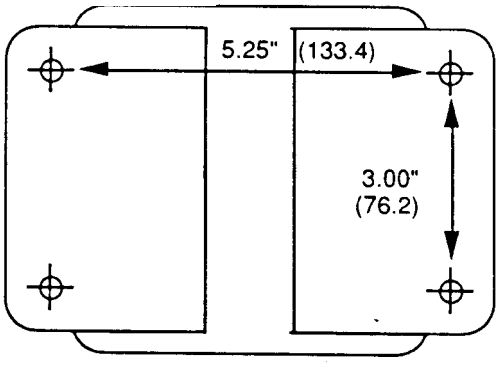


Figure 3B
Conduit Box Mounting



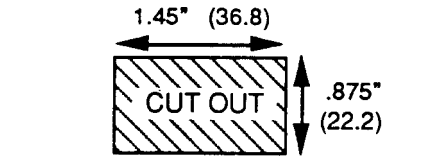
(Dimensions in parentheses = mm)

Electromechanical Totalizer

1) Cut an opening .875” x 1.45” in panel as shown in Figure 4.

2) Lift wire clip up, insert through opening, and bring clip down to engage it. The clip has two possible positions on the totalizer in order to handle a wide range of panel thicknesses.

Figure 4
Electromechanical Totalizer



(Dimensions in parentheses = mm)

Relay Output

This is already mounted and wired except for your contact closure connections. See the electrical installation section of this manual.

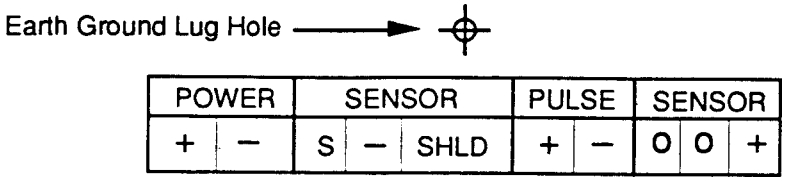
Electrical Installation

Make sure all other flow sensor and pulse connections are wired before applying power to the unit. **Warning**: This meter operates only on DC power. Voltages between 10 VDC and 30 VDC are allowed. To power from an AC power source, order the AC adapter as described in the “Options” section of *Specifications*.

Power Cable

Connect black with white stripe wire to power positive (+), black wire to power negative (-). Refer to Figure 5 for diagram of the terminal strip for this part of the installation.

Figure 5
Terminal Strip



Pulse Output

If an external totalizer or other device is being used, connect positive lead to pulse positive (+) and negative lead to pulse negative (-).

Flow Sensor

1) **Series 200:** Connect red wire to sensor signal (s), third terminal from the left, and the black wire to sensor negative (-), and bare wire to sensor SHLD.

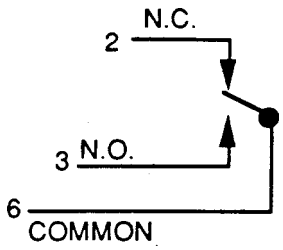
2) **Series 4000:** Connect red wire to sensor positive(+) end terminal on the right, black wire to sensor negative (-), white wire to sensor signal (s), bare wire to sensor shield (SHLD).

3) The Model 1000 supplies 10-12VDC to the sensor terminals through a 1K ohm source impedence, which is regulated to 8VDC at .5 ma current by the sensor. For safety, this low voltage is electronically isolated from the DC line. If the sensor is to be located in a hazardous area, we recommend that the sensor leads be interrupted by an intrinsically safe barrier.

Relay Output

The relay coil wires have already been connected to the terminal strip at the factory. For contact connections, simply crimp the lugs provided to your wires and connect to the relay contacts, as shown in Figure 6.

Figure 6
Relay Output



Earth Ground

For surface or flush mount
Attach green wire with terminal lug to tapped hole above terminal strip with screw and lock washer. Attach other end to Earth Ground.

For conduit box mounting
Ensure that the green wire is also attached to the conduit fitting to ensure that the conduit box is grounded.

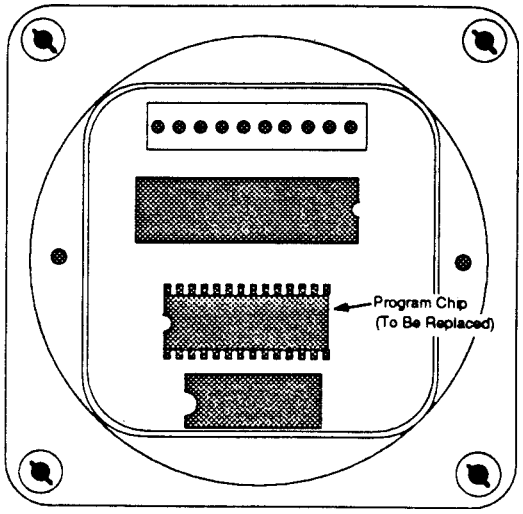
Units Conversion Kits

1) Turn off power to the unit and disconnect all wires.

2) Remove the round rear panel access cover with a Phillips screwdriver.

3) Locate the program chip on the circuit board (refer to Figure 7). This is the chip with a label on it which is inserted in a socket.

Figure 7
Locating and Removing Program Chip



4) Using a wide blade screwdriver, and working first from one side and then the other, gently pry up the chip to remove it from the socket. Be sure to insert the blade *between* the socket and the chip, rather than underneath the socket, as you could damage the socket leg. Take care to avoid contact with the circuit board as circuit traces can easily be damaged.

5) Handle the replacement program chip with care. It is sensitive to small electrical discharges such as static electricity. Before handling, touch a grounded metal surface with your hands. If the pins of the chip are splayed and do not match the socket row spacing, lay the chip on a flat, clean surfact and bend them slightly (refer to Figures 8 and 9).

Figure 8
Correct Pin Angle

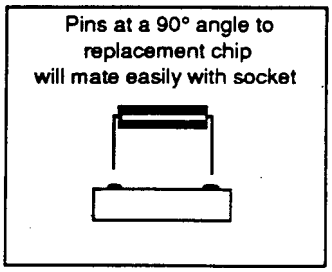
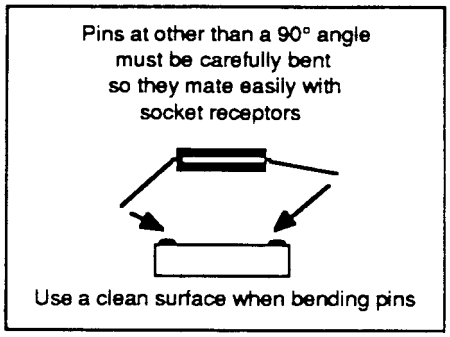


Figure 9
Correcting Splayed Pins



6) Orient the chip so that the notched end of the chip matches the notch in the socket body (notch to the left with the unit upright). Refer to Figures 10 and 11. Gently and firmly press the chip into the socket until it bottoms out, ensuring that all pins mate properly.

Figure 10

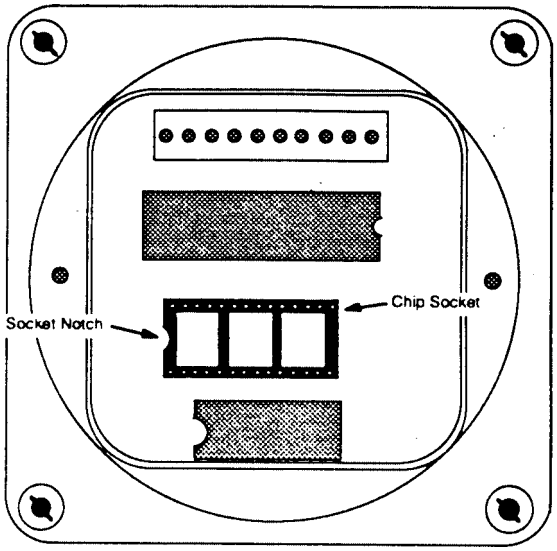
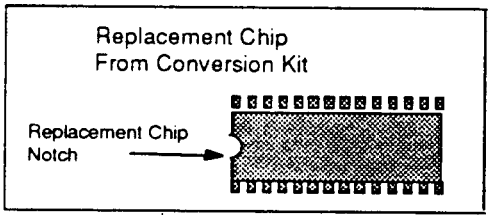


Figure 11



7) Replace the access cover and reconnect the wires to the unit.

NOTE: After making the conversion, some difficulty may be encountered in operating the Model 1000 when it is first turned on. This is because previously legal values of pipe diameter still stored in the memory are often illegal using the new programmed units of measure. Your display may show “CAL” or “18.8.8”. Turn the power to the unit OFF for a few seconds and back ON. Check and reset if necessary all values of diameter, total flow, units/pulse, and security code before using the converted Model 1000.

8) Apply the new units of measure label to the front panel of the Model 1000. If the old units were CFM, LPM, or CUBIC METERS, remove the old label. Clean the base label above the display using alcohol and a lint-free cloth or paper-wipe. Peel off the backing on the new label and apply it above the display. Once positioned, press the entire label surface to set the pressure-sensitive adhesive.

9) Using a permanent marking pen, add the letter “C” (CFM), "I" (IMP GAL), “L” (LPM), or “M” (CUBIC METERS) at the end of the model number on your serial number label(s); or change the model no. to a #1019 if you've opted for the Auto Restart option.

Operation

Model 1000

The front access keyboard provides membrane switches that enter the pipe size, select flow rate or total flow for display, reset the total flow to zero, set the desired pulse output in gallons-per-pulse, and to enter and change the security code. **Note**: If you find that you can display settings but cannot reset them, read the section entitled "Unlocking/Using the Security Code."

The following instructions assume your monitor is a Model 1000 with units of GPM, GALLONS, and inches of pipe diameter. If your monitor is a Model 1000C, 1000L, or 1000M, the operation is the same but the units are as marked on the front panel.

Model 1200

The Model 1200 is powered by two (2) standard 9V transistor batteries (customer supplied) located under the rear cover, with an ON/OFF switch located on the rear of the conduit box cover. A 6-foot cable with alligator clips is provided for signal input connections. Connect as follows:

Model 1200	220 Series Flow Sensor	4000 Series Flow Sensor	Display or Analog Transmitter
Red	N/C	Red	N/C
Black	Black	Black	- Sensor Input
White	Red	White	+ Sensor Input
Yellow	Shield	Shield	Shield

Flow sensors connect as shown in the table above. Note that the wires are not necessarily paired color for color, and all connections not always required, depending on the type of sensor being used.

When connecting to an analog transmitter such as the Model 750M or a Model 500, the WHITE wire of the Model 1200 should be connected to the (+) SENSOR INPUT, while the BLACK wire is connected to the (-) SENSOR INPUT wire. No other connections are required; however, these connections can be shared with a flow sensor if desired. This is especially useful in final system check-out.

Initial Settings

1) Measure the pipe diameter as accurately as possible. The proper pipe diameter has a large effect on the flow rate accuracy. A table of common pipe sizes with schedules and their inside diameters are provided in the *Specifications* Section.

2) Pipe diameter resolution is from 0.00 to 19.99 in hundreds of an inch and from 20.0 to 40.0 in tenths of an inch (0.0 to 199.9 in tenths of a mm and 200 to 1016 in whole mm).

3) For pipe sizes that are from 3" up to 40.0" (76.2 to 1016 mm), any pipe diameter may be entered. For pipe sizes that are below 3" (76.2 mm), only the diameter for the Data Industrial tee and sensor series can be entered, as shown in the tables in the *Specifications* Section.

4) To calibrate the display, press **RESET** and then **PIPE DIAM**. The LCD will display a pipe diameter. Increase or decrease the number by pushing the up and down arrow keys on the front panel to correspond to the inside diameter of the pipe being monitored.

5) When increasing or decreasing the pipe diameter in the LCD, note that the longer the arrow key is depressed, the faster the numbers will count.

6) After entering the correct diameter, press **RESET** again.

7) The Series 1000 will begin to monitor liquid flow and totalization is returned to zero gallons.

Note: If during calibration no key is pressed for 4 seconds, the display will automatically revert to flow rate without changing the pipe diameter calibration.

(Not available with Model 1200 unit)

1) If a pulse output is required, it is user-calibrated by entering the number of gallons per pulse desired. Press **RESET** and **UNITS/PULSE**.

2) The setting can be made from 0.01 to 1,999,000,000 gallons per pulse in the same resolution increments used for total flow. The increment listings are provided in the *Specifications* section.

3) The maximum limit of 100 pulses per second (100 Hz) output controls how low the minimum allowed gallons/pulse may be set. The Model 1000 will not allow a setting below this low limit.

4) Setting the **UNITS/PULSE** is much like setting a digital watch. The display will show the present value with the UNITS DIGIT flashing. (Since decimals and multipliers may be used, UNITS DIGIT refers to the rightmost digit even though it may represent tens, hundreds, etc.)

5) Press the up or down keys to set the UNITS DIGIT. Press **RESET** to enter the UNITS DIGIT. The display will freeze the UNITS DIGIT and flash the TENS DIGIT.

6) Repeat this setting and entering procedure for the TENS and HUNDREDS DIGITS.

7) Next, the leftmost decimal point will begin to flash. Press the up key to move the

decimal to the right. Additional presses of the up key will cause the display of no decimal and then the multiplier setting.

8) Once the decimal or multiplier is set, press **RESET** one more time to enter this value.

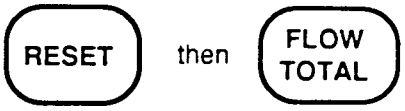
9) Press **RESET** a final time to enter the **UNITS/PULSE** value.

Note: Entering a new pipe diameter will automatically reset the **UNITS/PULSE** output to 00.00.

Display Operation

- Pressing the **FLOW RATE** membrane switch displays the current flow rate with the word “FLOW”. Display resolution is described in the *Specifications* section.
- Update rate is 1 second. The display will continue to show flow rate until some other key is pressed.

- Pressing the **FLOW TOTAL** membrane switch displays the flow (in gallons) accumulated since the last manual reset with the words “TOTAL” and “FLOW”. Display resolution is the same as for flow rate.
- The electronic totalizer retains its memory of total flow even when power is lost, and will begin where it left off when power resumes.
- Update rate is 1 second. The display will continue to show total flow until some other key is pressed.
- Pressing **RESET** then the **FLOW TOTAL** membrane switches resets the unit.



- The display will show “00.00” and will then resume accumulating total flow.
- **Note:** Entering new pipe diameter will automatically reset total flow to 00.00.

- Pressing the **PIPE DIAM** membrane switch will show the stored value of pipe diameter for four (4) seconds, then default to flow rate.

(Not available with Model 1200 unit)

- The display will show the stored units/pulse value for four (4) seconds, then default to flow rate.

Fault Displays

Power interruptions, lightning strikes, or other electrical problems can cause faults to occur in the Series 1000.

Power Interruptions

- Should power be interrupted for more than a few seconds, when power is restored the Series 1000 will resume operation, but "—" will be shown in the display.
- Pressing any key will resume normal display, but total flow should be questioned since some flow volume may be unaccounted for during the power interruption.
- A-1019 Software Option will start up on Flow Rate. When toggled to Total, the legend "Total Flow" will flash at 1 second intervals. Pressing "Total" once will cause the flashing legend to stop.

Electrical Problems

- The Series 1000 continuously checks for valid settings. If problems exist due to an electrical fault, the display will show "CAL". In this case, it will be necessary to reset the initial settings as described earlier.

Battery Replacement (Model 1200 only)

The Model 1200 will operate for approximately 6 hours of continuous operation.
To replace batteries:

1) Always slide the battery switch on the back cover to "OFF".

2) Unscrew the 4 screws on back cover. Remove cover, being careful not to strain the internal wiring.

3) Loosen the 2 screws which clamp down the battery bracket.

4) Unsnap the battery connectors, slide out the 2 batteries, and replace.

Unlocking Using the Security Code (Model 1000 only)

You can choose to “lock” your Model 1000 by using the security code feature. Once the Model 1000 is locked, the total accumulated flow volume may not be reset and the pipe diameter and units/pulse calibration settings may not be changed without first entering the proper code. As shipped from the factory, the Model 1000 is unlocked and will remain so unless you change the code setting. See the instructions for changing the security code on the last page of this manual.

Located above the “PIPE DIAM” key is a hidden key.
To unlock the Model 1000:

1) Press the hidden key. The display will show “000” with the units (rightmost) digit flashing.

2) Press the up or down keys to set the units digit, then press RESET to enter it. The display will freeze the units digit and flash the tens digit.

3) Repeat this setting and entering procedure for the tens and hundreds digits.

4) After you enter the hundreds digit, the Model 1000 accepts the code you have entered and compares it to the security code in memory. If you have entered the correct code, the display will show “SET.” If not, it will default to display of flow rate without unlocking.

5) Once unlocked, you can reset the total and change the calibration settings. If a period of 10 seconds elapses with no key presses, the Model 1000 will automatically return to the locked state.

Specifications

1000 Series

Liquid Measurement Units
- Gallons per minute and total gallons (Model 1000)
- Liters per minute and total liters (Model 1000L)
- Cubic feet per minute and total cubic feet (Model 1000C)
- Cubic meters per minute and total cubic meters (Model 1000M)

Flow Calibration Range
- 0.50” to 40.00” pipe sizes (12.7 to 1,016 mm)

Display Resolution for the *FLOW RATE* and *TOTAL FLOW* indicators
0.0 to 199.9 in tenths
200 to 1,999 in whole numbers
2,000 to 19,990 in increments of 10
20,000 to 199,900 in increments of 100
200,000 to 1,999,000 in increments of 1,000
2,000,000 to 19,990,000 in increments of 10,000
20,000,000 to 199,900,000 in increments of 100,000
200,000,000 to 1,999,000,000 in increments of 1,000,000

Display Update Rate
- One (1) second

Temperature Ranges
- Operating Temperature: 32° to 158°F (0° to 70°C)
- Storage Temperature: -40° to 194°F (-40° to 90°C)

Dimensions
- Model 1000: 4.63” x 4.63” x 2.25”
- Model 1000 Surface Mounted: 4.63” x 4.63” x 1.50”
- Model 1000 Flush Mounted: 5.665” x 5.665” x .125”
- Model 1000 Conduit Box Mounted: 4.63” x 4.63” x 3.75”

Weight
- 2.8 pounds

Case
- Cast Aluminum
- Front panel meets NEMA 4x rating

Power for Model 1000
- 9-34VDC
- Reverse and overvoltage protected to 34 VDC
- Power off continuous memory of total accumulated flow, pipe diameter and units/pulse calibration
- 60 milliamp power consumption, including sensor

Power for Model 1200
- Two 9 V alkaline batteries
- Power off continuous memory of total accumulated flow and pipe diameter
- 60 milliamp power consumption

Model 1000 only

Pulse Output
- 0 to 100 Hz. 100 millisecond pulse width at supply voltage to 5 Hz
- Pulse width narrows to 50% duty cycle above 5 Hz
- Maximum current allowed is 1 amp
- User-settable resolution from .1 to 2 billion flow units per pulse, limited by input frequency of sensor (consult the factory).

Optional Relay
- SPDT contact ratings: 10 amps @ 240 VAC; 15 amps @ 30 VDC or 150 VAC
- Coil voltage ratings: 12 VDC relay = 10-14 VDC; 24 VDC relay = 20-28 VDC
- User settable to pulse output rate
- 20 closures per second maximum
- Closure rate and duration controlled by pulse output setting
- Operating temperature: 32°-130°F (0-55°C)

Optional Totalizer
- Totalizer voltage ratings: 12 VDC = 10-14 VDC; 24 VDC = 20-28VDC
- 7-digit nonresettable electro-mechanical totalizer
- Resolution same as for pulse output
- User settable to pulse output rate
- Operating temperature: 32°-122°F(0-50°C)

Options for Model 1000

Flush Mounting Kit
- Part No. A1003 allows recessed mounting in panel. Hardware adapts to 144 mm square DIN specification 43700. Cutout may be as small as 4.75” x 4.75”.

Conduit Box Kit
- Part No. A1001 covers the rear panel with a weatherproof enclosure for stand-alone mounting in an outdoor or unprotected location. Meets NEMA 4x. Opening provides for standard 1/2” conduit fitting. Mounting brackets are welded to aluminum enclosure, allowing surface mounting to any flat surface. Total assembled dimensions are 4.63” x 4.63” x 3.75”.

Factory Installed Relay Output Kit

Closure rate and duration for both are controlled by the Model 1000 pulse output setting.
- Part No. A1004: Unit provided with an SPDT relay. Nominal 12 VDC coil voltage.
- Part No. A1010: Unit provided with an SPDT relay. Nominal 24 VDC coil voltage.

Electromechanical Totalizer Kit

Resolution for both is user-settable; uses the gallons per pulse feature of the Model 1000.
- Part No. A1008: 12 VDC 7-digit non-resettable totalizer for panel mounting.
- Part No. A1009: 24 VDC 7-digit non-resettable totalizer for panel mounting.

AC Power Adapter
- Part No. A1006: U.L. approved 120 VAC outlet plug-in power supply to provide 12 VDC to the Model 1000.
- Part No. A1015: 220-250 VAC 50/60 Hz AC power adapter.
- Part No. A1016: 120 VAC barrier strip power supply to provide 12 VDC

Units Conversion Kit

- Part No. *A1011:* Program chip and units label for conversion to GPM/GALLONS.
- Part No. *A1012:* Program chip and units label for conversion to CFM/CUBIC FEET.
- Part No. *A1013:* Program chip and units label for conversion to LPM/LITERS.
- Part No. *A1014:* Program chip and units label for conversion to CUBIC METERS/MIN, CUBIC METERS.
- Part No. *A1019:* Program chip for automatic restart of unit after power loss. Auto Start displays Rate, Total legend flashes until acknowledged.

TABLE FOR ENTERING

DATA INDUSTRIAL TEE AND SENSOR INFORMATION

Data Industrial Sensor Type	1000, 1000C I.D. to be entered into Digital Display (inches)	1000L, 1000M I.D. to be entered into Digitial Display (mm)
220P-1, 228 PD-1	.96	24.4
250B-1	1.05	26.7
250B-1.25	1.38	35.1
220P-1.5, 228PD-1.5	1.50	38.1
228C C.I. Tee with 1.5" Inlet Pipe	1.61	40.9
228SS C.I. Tee with 1.5" Inlet Pipe	1.61	40.9
250B-1.5	1.62	41.1
228PF-1.5	1.71	43.4
228PF-2	2.21	56.1
220P-2, 228PD-2	1.94	49.3
228B-2	1.99	50.5
228C-2 (150 PSI Tee)	2.07	52.6
228SS-2	2.07	52.6
228C-2 (400 PSI Tee)	2.10	53.3
228C-2.5	2.51	63.8
228B-2.5	2.52	64.0
220B, 225B, 226B, in 2 1/2" pipe, no tee	2.47	62.7
220SS, 226SS in 2 1/2" pipe, no tee	2.47	62.7
220P-3, 228PD-3	4.02	102.1
220P-4, 228PD-4	5.15	130.8

Typical Pipe Sizes: Inside Diameter (inches)

Pipe Size	Steel Pipe		PVC Pipe		
	Sched 40	Sched 80	Class 100	Class 125	Class 160
3"	3.07			3.28	3.23
4"	4.03	3.83	4.28	4.22	4.15
5"	5.05	4.81	5.29	5.22	5.13
6"	6.06	5.76	6.30	6.22	6.12
8"	7.98	7.62	8.21	8.10	7.96
10"	10.02	9.56	10.27	10.09	9.92
12"	11.94	11.38	12.13	11.97	11.77
14"	13.12	12.50			
16"	15.00	14.31			
18"	16.88	16.13			
20"	18.81	17.94			
24"	22.63	21.56			

CAUTION: The above listed Inside Diameters refer to clean, new pipe. Adjustments should be made when scaling or buildup of deposits are present.

Warranty

Data Industrial Corporation (“Seller”) of 11 Industrial Drive, Mattapoisett, Massachusetts 02739, U.S.A., warrants to the original purchaser of its product that such product manufactured by Data Industrial Corporation shall be free from defects in materials or workmanship when installed, serviced and operated according to Data Industrial corporation instructions or in other such normal use. This warranty is effective for a period of 12 months from the date of installation by the Purchaser or 18 months from the date of shipment by the “Seller” whichever occurs or terminates first. This limited warranty does not cover damage or loss resulting from corrosion or erosion cased by acids or other chemicals or negligent installation improper operation, misuse, accident, unauthorized repair or substitution of components other than those provided by the “Seller”, and does not cover limited life components such as bearings, shafts, impellers where wear rate is a function of application. Any component not manufactured by the “Seller” but included in its products shall not be covered by this warranty and is sold only sunder such warranty as the manufacturer may provide.

If Buyer or Purchaser wishes to make a claim hereunder, he shall send written notice of any defect within the warranty period, to “Seller” at the above address. “Seller” may at its sole option instruct Buyer to ship subject part, postage prepaid, to the “Seller” at above address or authorize a representative to inspect the part on site. “Seller” will at its sole option repair or replace any effective product covered by this warranty. If Buyer makes repairs or alterations to any product or part covered by this warranty without “Sellers” prior written approval, this warranty shall be null and void.

The foregoing shall constitute Buyers or Purchasers sole and exclusive remedy against “Seller”, and no other remedy, including but not limited to, incidental or consequential damages for personal injury, loss of fluids, gases or other substances or for loss of profits or injury to property or person shall be available to the Buyer or Purchaser. The warranty extended herein shall be in lieu of any other implied warranty of merchantability or fitness for a particular purpose, and seller shall bear no liability for representatives or retail sellers. In no event shall Data Industrial Corporation be liable for any contingent, incidental, or consequential damage or expenses due to partial or complete inoperability of its product.

Changing the Security Code

Model 1000 only

Note: This page has been kept separate and may be removed for security reasons.

As shipped from the factory, the security code is “000.” This value leaves the Model 1000 continuously unlocked for ease of use. If you choose to change the code to some other value, you must enter the proper code to do anything other than display the readings of the Model 1000.

To change the security code:

1) Press and release the hidden membrane switch, located above the PIPE DIAM key, three times in succession. Press the RESET key. The display will show the present value of the security code with the units digit flashing.

2) Press the up or down keys to change the units digit, then press RESET to enter it. The display will freeze the units digit and flash the tens digit.

3) Repeat this setting and entering procedure for the tens and hundreds digits. The security code may be set for any number from 000 to 255 inclusive. Upon entering the hundreds digit, the Model 1000 stores the new security code.

4) The Model 1000 remains temporarily unlocked after changing the security code so that you can reset the total flow or recalibrate now. After 10 seconds elapse with no key presses, the Model 1000 automatically locks.

5) Test to ensure that the unit is locked by trying to reset the pipe diameter. If you press RESET then PIPE DIAM and the displayed diameter does not flash, the unit is locked.

6) Now test to ensure that the new security code is correct by unlocking the unit as described earlier under “Unlocking Using the Security Code.”

Note: If the Model 1000 encounters electrical problems as described under “Fault Displays,” the security code may default to a setting of “001.” This will ensure that it remains locked even though memory may be lost. Always check the code value after a display of “CAL” due to a fault condition.