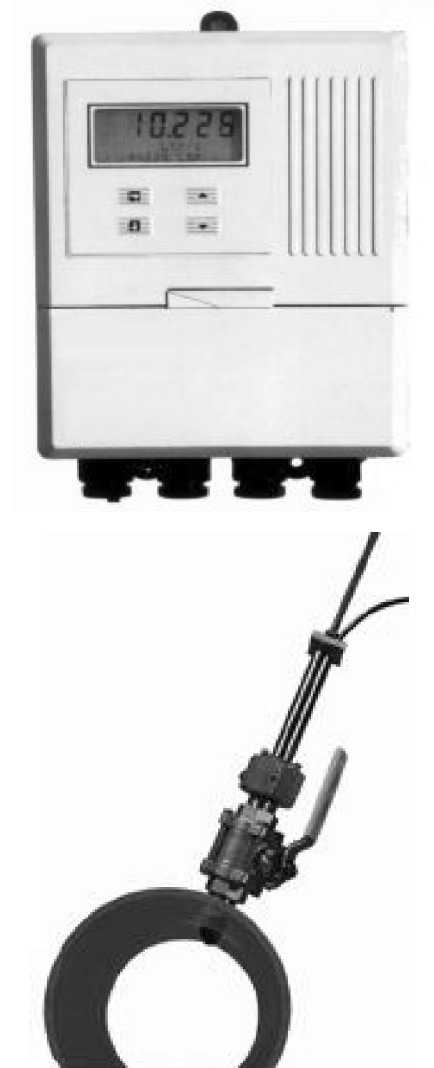


Installation & Operation



Marsh Single-Mag™ **Single-Point Insertable** **Electromagnetic Flowmeter** **Model 282**

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WARRANTY STATEMENT

Manufacturer warrants all products of its manufacture to be free from defects in workmanship and material under normal use and service. This warranty extends for a period of twelve (12) months after date of shipment, unless altered by mutual agreement between the purchaser and manufacturer prior to the shipment of the product. In addition, the **Multi-Mag** sensor is warranted for an additional forty-eight (48) months (60 months total). If this product is believed to be defective, purchaser shall notify manufacturer and will return the product to the manufacturer, postage paid, within twelve (12) months after date of shipment (60 months for the sensor) by the manufacturer. If the purchaser believes the return of the product to be impractical, manufacturer shall have the option, but will not be required, to inspect the product wherever located. In any event, if the purchaser requests the manufacturer visit their location, the purchaser agrees to pay the non-warranty expenses of travel, lodging and subsistence for the field service response. If the product is found by the manufacturer's inspection to be defective in workmanship or material, the defective part or parts will either be repaired or replaced, at manufacturer's election, free of charge, and if necessary the product will be returned to purchaser, transportation prepaid to any point in the United States. If inspection by the manufacturer of such product does not disclose any defect of workmanship or material, manufacturer's regular service repair charges will apply. Computing devices sold but not manufactured by McCrometer, Inc. are covered only by the original manufacturer's written warranty. Hence, this warranty statement does not apply.

THE FOREGOING WARRANTY IS MANUFACTURER'S SOLE WARRANTY, AND ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE NEGATED AND EXCLUDED. THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, GUARANTEES, REPRESENTATIONS, OBLIGATIONS OR LIABILITIES ON THE PART OF THE MANUFACTURER.

Purchaser's sole remedy and manufacturer's sole obligation for alleged product failure, whether under warranty claim or otherwise, shall be the aforesated obligation of manufacturer to repair or replace products returned within twelve months after date of original shipment. The manufacturer shall not be liable for, and the purchaser assumes and agrees to indemnify and save harmless the manufacturer in respect to, any loss or damage that may arise through the use by the purchaser of any of the manufacturer's products.

Safety warnings

When installing, operating, and maintaining McCrometer equipment where hazards may be present, you must protect yourself by wearing Personal Protective Equipment (PPE) and be trained to enter confined spaces. Examples of confined spaces are manholes, pumping stations, pipelines, pits, septic tanks, sewage digesters, vaults, degreasers, storage tanks, boilers, and furnaces.

You must follow all state and local laws, as well as Occupational Health and Safety Administration (OSHA) regulations concerning Personal Protective Equipment, confined-space entry, and exposure to bloodborne pathogens. Specific requirements can be found in the OSHA section of the Code of Federal Regulations: *29 CFR, 1910.132 - 1910.140, Personal Protective Equipment; CFR Title 29, Part 1910.146, Permit-Required Confined-Spaces; and 29 CFR, 1910.1030, Bloodborne Pathogens.*

WARNING!

Never enter a confined space without first testing the air at the top, middle, and bottom of the space. The air may be toxic, oxygen deficient, or explosive. Do not trust your senses to determine if the air is safe. You cannot see or smell many toxic gases.

WARNING!

Never enter a confined space without the proper safety equipment. You may need a respirator, gas detector, tripod, lifeline, and other safety equipment.

WARNING!

Never enter a confined space without standby/rescue personnel within earshot. Standby/rescue personnel must know what action to take in case of an emergency.

WARNING!

Pressurized pipes should only be tapped, cut, or drilled by qualified personnel. If possible, depressurize and drain the pipe before attempting any installation.

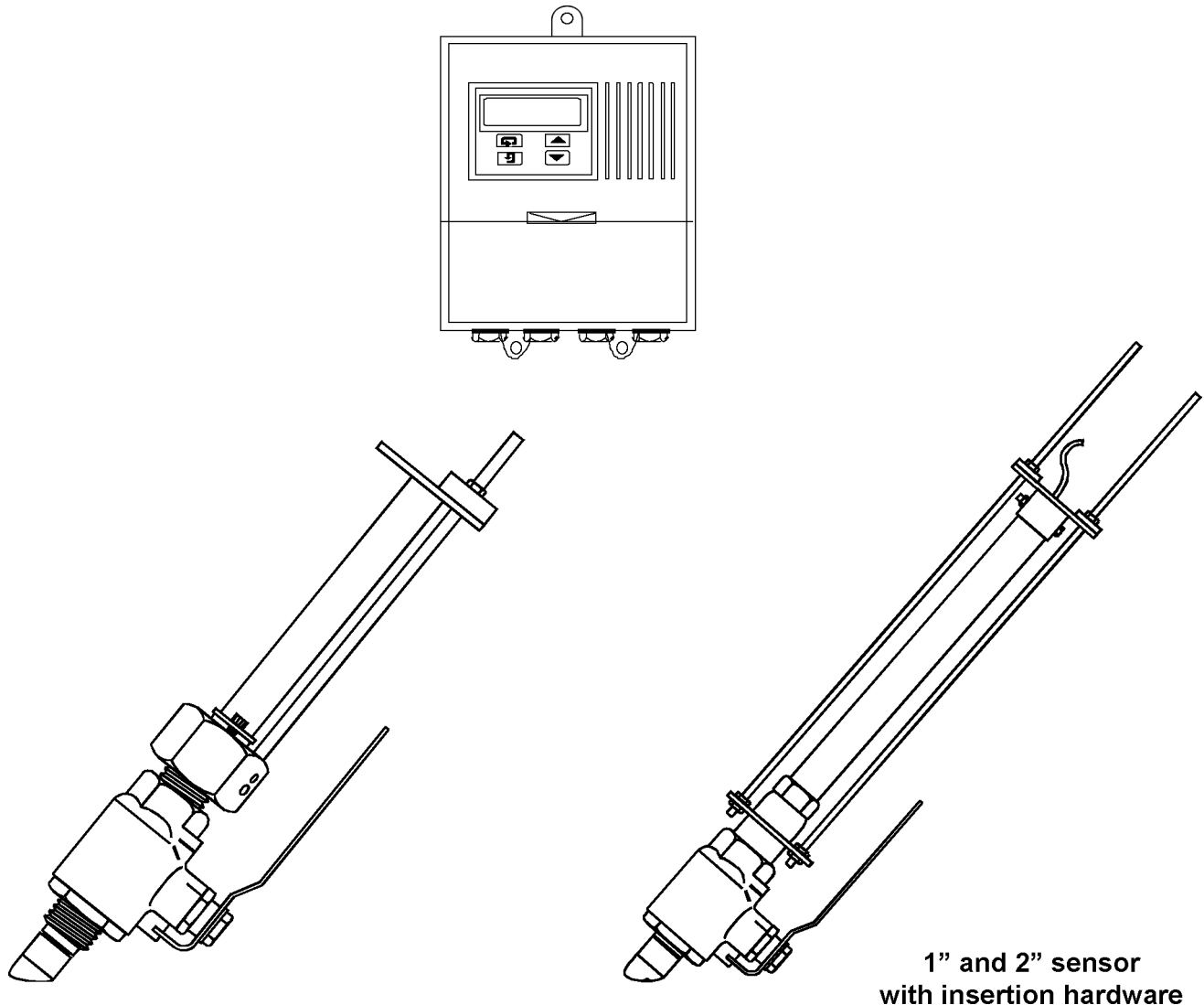
Single-Mag™ Model 282

Instrument Overview

The Single-Mag Model 282 flowmeter combines an innovative sensor with a comprehensive electronics package to provide accurate flow measurement for full-pipe flow monitoring applications.

The insertable sensor (available for one-inch and two inch taps) uses electromagnetic technology to measure water velocity. The streamlined, debris-shedding sensor shape allows the Single-Mag to be used under many flow conditions.

Single-Mag has many features to suit a wide variety of applications, and is easily set up using the keypad and readouts.

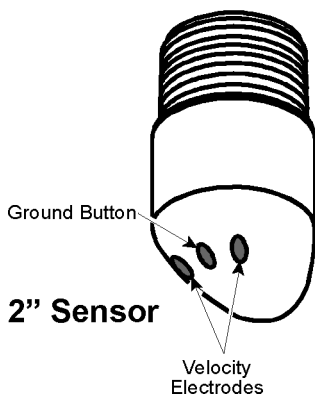
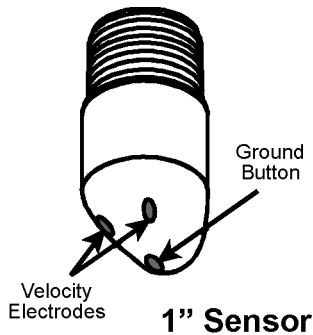


Full Pipe Sensors

The full pipe sensor makes use of *Faraday's Law of Electromagnetic Induction* to measure water velocity. Faraday's Law states:

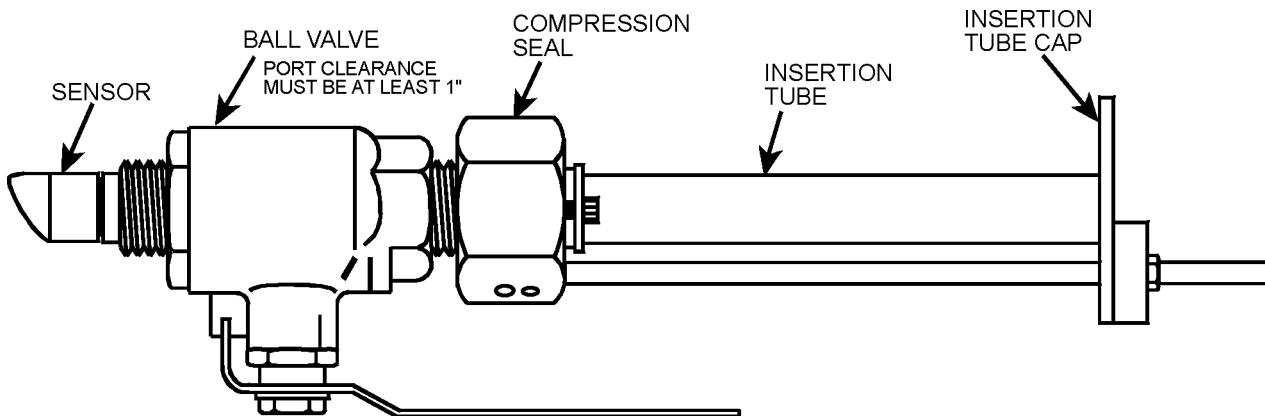
A conductor, moving through a magnetic field, produces a voltage.

Because water is a conductor, water moving through a magnetic field produces a voltage. The magnitude of the voltage is directly proportional to the velocity of the water. The sensor generates an electromagnetic field, creating a voltage in the water. The two velocity electrodes, along with the ground button measure this voltage. A faster water velocity produces a higher voltage. By accurately measuring this voltage, the velocity is determined.



Sensor Installation

The sensor is installed using an insertion tube, which places the sensor in the flow through a ball valve or corporation stop. The sensor can be easily removed for cleaning or service.



Flow Calculation

The velocity measurements provided by the full-pipe sensor are used to calculate *flow*. Flow (also known as Q , as the *flow rate*, or as *throughput*) is the amount of fluid moving through a pipe in a period of time. For example, if 100 gallons of water move past the sensor in one minute, the flow is *100 gallons per minute (GPM)*.

To calculate the flow, two things are needed: The cross-sectional area of the channel and the average velocity.

Cross-sectional area is found using the diameter of the pipe.

Average velocity is found using the sensed velocity (measured by the sensor). A site calibration is performed to determine the velocity profile. This allows the flowmeter to calculate the average velocity from the sensed velocity.

Flow is calculated by using the Continuity Equation:

Flow = Average Velocity x Area

Before You Start

About this manual

This manual shows you how to install, operate and maintain the Single-Mag™, Model 282. Detailed field calibration and profiling instructions are contained in the One or Two Inch Sensor Installation Manuals.

Chapter 1 covers Installation and Interfacing External Devices

Chapter 2 covers Set-Up and Operation of the Model 282

Chapter 3 covers Site Calibration

Where to go for information

For information about the Profiling and Site Calibration, refer to these documents:

- One Inch Full Pipe Sensor Installation and Profiling Manuals, P/N 105000401.
- Two Inch Full Pipe Sensor Installation and Profiling Manuals, P/N 105001301.

Registering your equipment

Take a moment to register your equipment using the registration card that came with your documentation. As a registered user, you'll receive notices of new and upgraded McCrometer products.

What you must know

About Safety

Before installing certain McCrometer equipment, you must be trained to enter confined spaces. If you haven't already, please read "Safety warnings" on page iii.

Basic Installation



There are three steps to installing the Model 282 Single-Mag™:

- 1 Select an installation site.
- 2 Install the sensor.
- 3 Install the instrument electronics.

About sensor installation

Sensor installation is covered in separate manuals. One Inch Full Pipe Sensor Installation and Profiling Manual (Part number 105000401), and Two Inch Full Pipe Sensor Installation and Profiling Manual (Part number 105001301). Following are some general guidelines. Please refer to the Sensor Installation Manual for complete information.

Select an installation site

Choose an installation site which will give the best measurements. Locating the sensor in areas of low turbulence will result in the highest accuracy. It is also important to locate the sensor so that it is accessible (for ease of installation and maintenance).

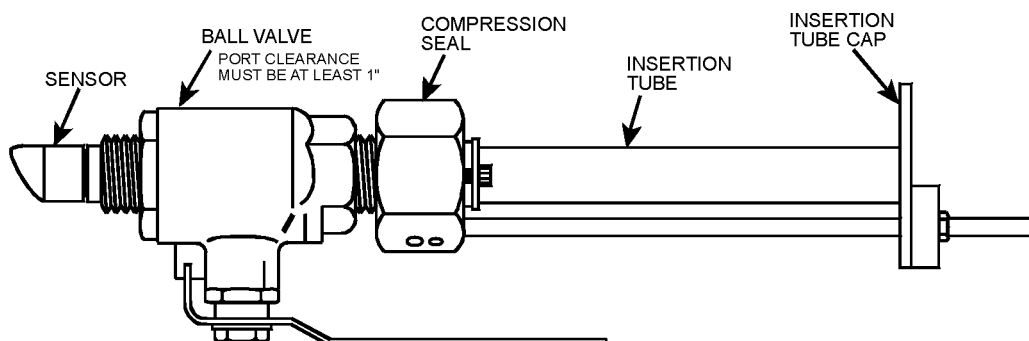
In general, the best choice for an installation site is a long, straight run of pipe. Pipe bends, valves, or other source of turbulence can cause problems. Choose an installation site which provides both useful and accurate flow measurements.

The Applications Schematics, located in the Sensor Installation manuals, show the best sensor locations for a variety of typical sites.

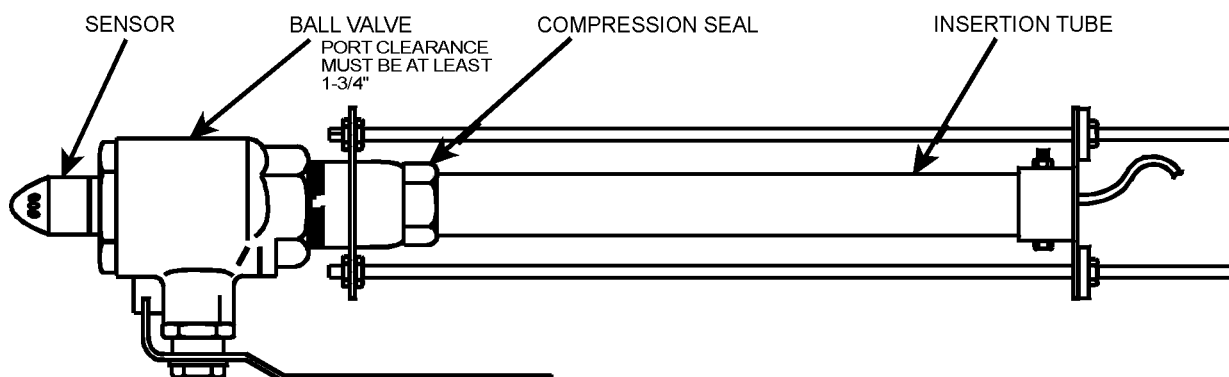
WARNING! Pressurized pipes should only be tapped, cut, or drilled by qualified personnel. If possible, depressurize and drain the pipe before attempting any installation.

Install the sensor

Install the insertion tube assembly at the correct site in the pipe (see the Sensor Installation Manual).



Insertion Tube (one inch sensor)



Insertion Tube (two inch sensor)

Caution

Conduit that is run from the instrument electronics to the manhole must be sealed to keep sewer gases out of the electronics. Sewer gases are very corrosive to electronics, and could be explosive.

Pulling the Sensor Cable Through Electrical Conduit

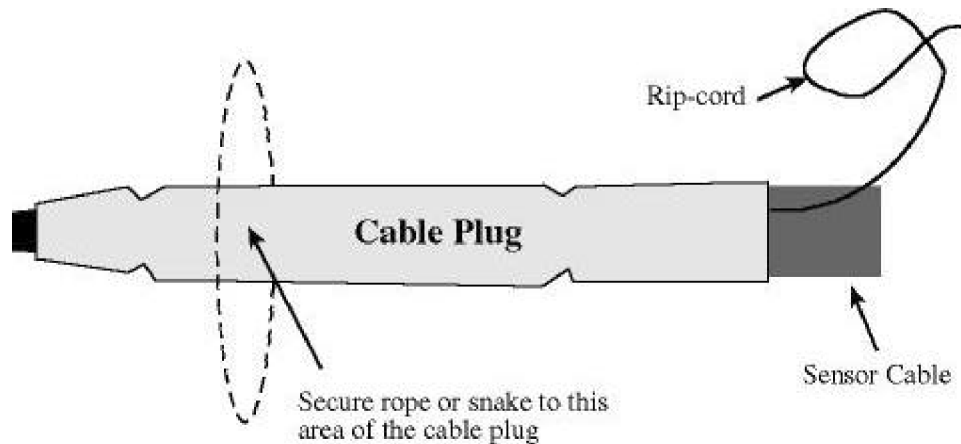
Because the Single-Mag™ is intended for permanent installation, the sensor cable should be run through conduit to the instrument electronics.

➤ Pulling the sensor cable

- 1 Tie a rope or cable-snake securely around the middle of the cable plug.
- 2 Carefully pull the rope or snake until the sensor cable end clears the conduit.
- 3 Bring the cable end to the instrument electronics location. If necessary, secure the cable so that it does not fall back through the conduit.
- 4 Remove the cable plug by pulling the rip –cord. The cable plug will tear off (discard the plug).

Caution

Do not cut the cable plug off. Doing so may damage the sensor cable.

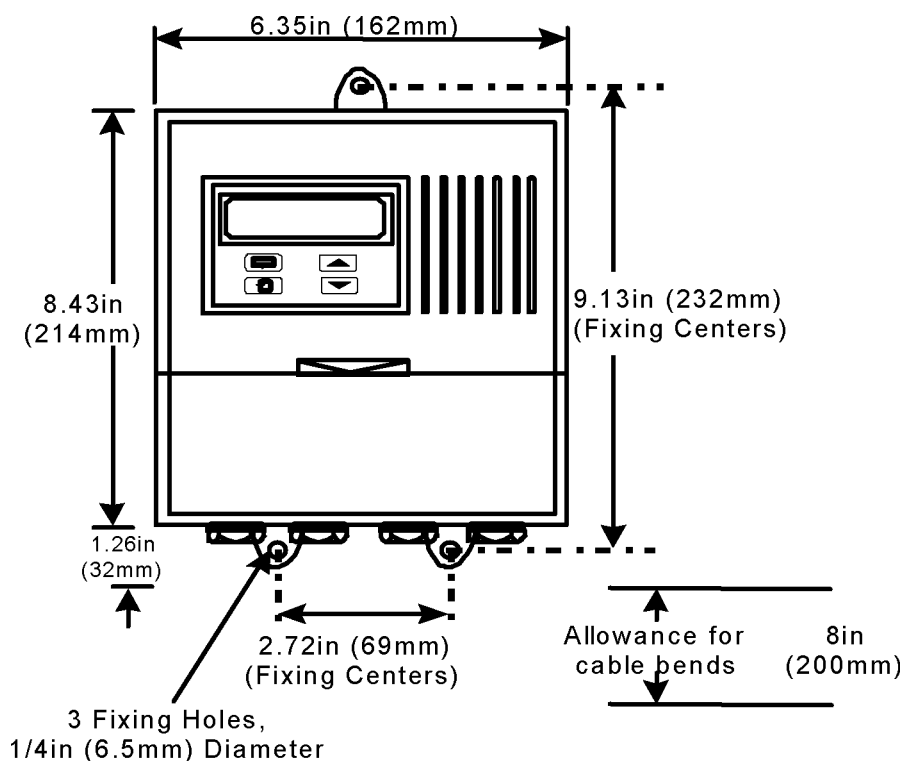


Every new (or serviced) sensor cable has a watertight plug on the cable end. This both protects the cable, as well as provides a secure location to tie a rope when pulling the cable through conduit.

Electronics installation

Mount the electronic housing

Mount the Model 282 in an electronics shed or environmental enclosure, or outdoors with the optional sun shield (part number 0624B339001). The meter is mounted using three heavy bolts (see dimensions, below). The Model 282 is not suitable for underground vault or manhole installations where submersion could occur. *The sensor may be submerged.*



Electrical cable connections

Sensor connections

CAUTION

All cable entries must be properly sealed.

Glands must be appropriate for sealing on the cable size in use.

Unused cable entries must be plugged.

Electrical installation and earthing must be in accordance with relevant national and local standards.

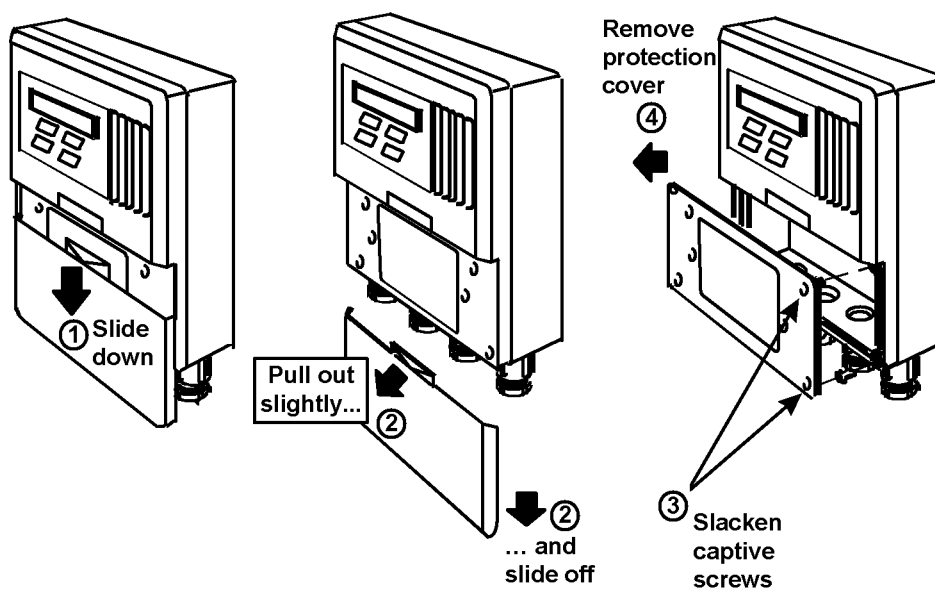
The transmitter and sensor are supplied as a matched system.
Check serial numbers to ensure matched pair.

Sensors are supplied with an integral cable. The transmitter end of the cable, the power supply, and any output cables must be prepared and connected as detailed in the relevant parts of this manual.

Transmitter/Electronics

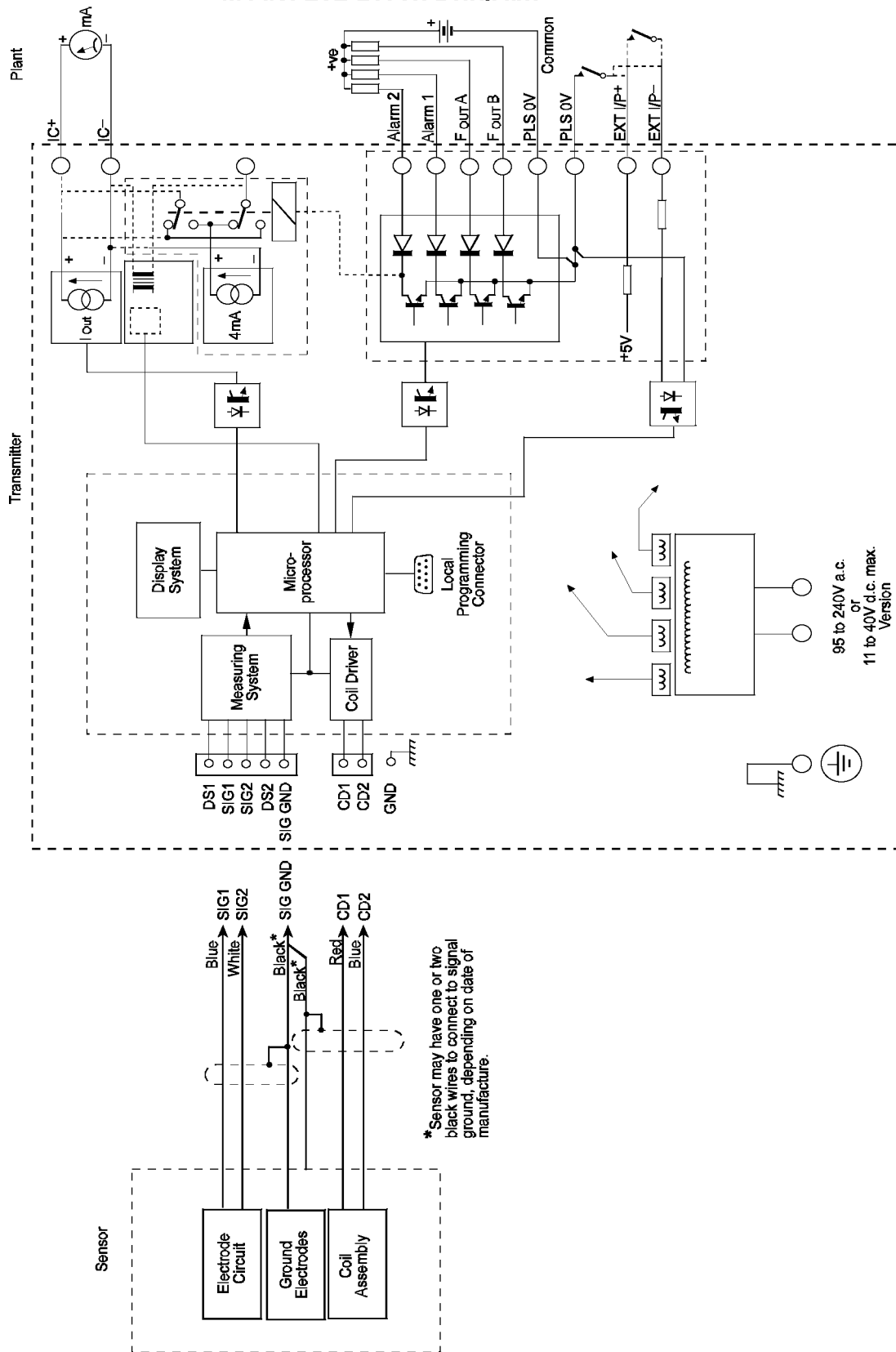
CAUTION

Unused cable entries must be blanked with the permanent blanking plugs supplied.

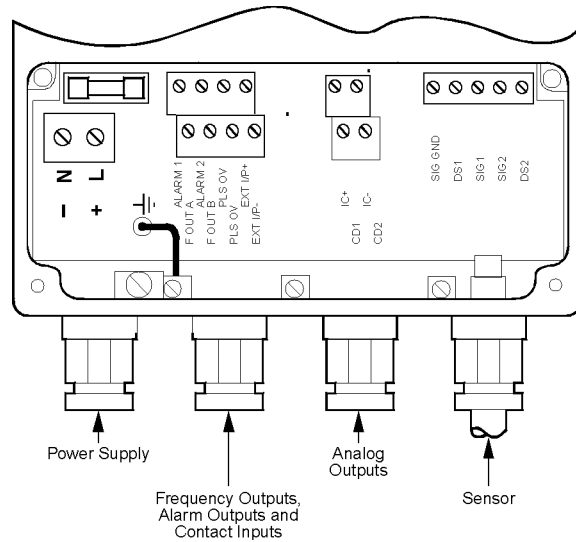


Connection terminal access

Model 282 Block Diagram



Transmitter connections



Sensor cable

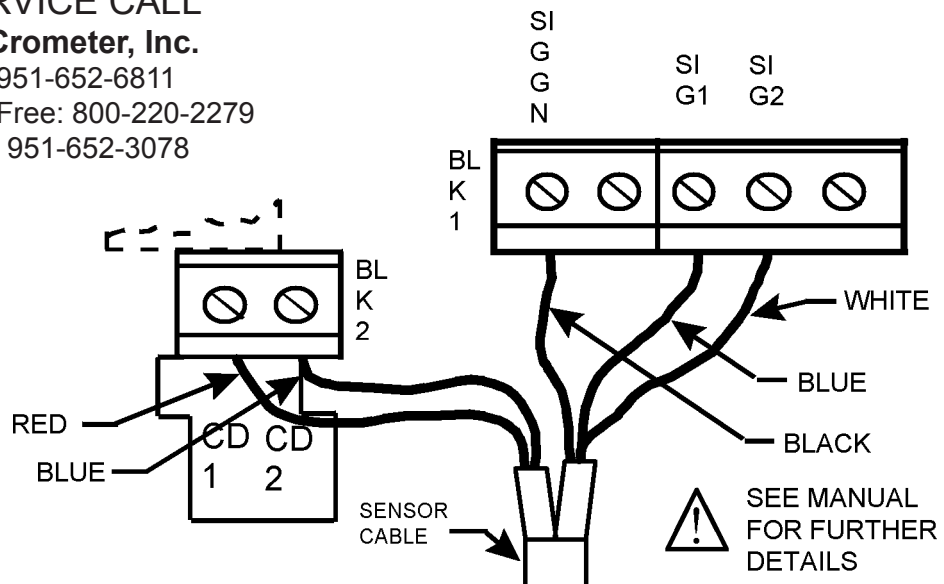
FOR SERVICE CALL

McCrometer, Inc.

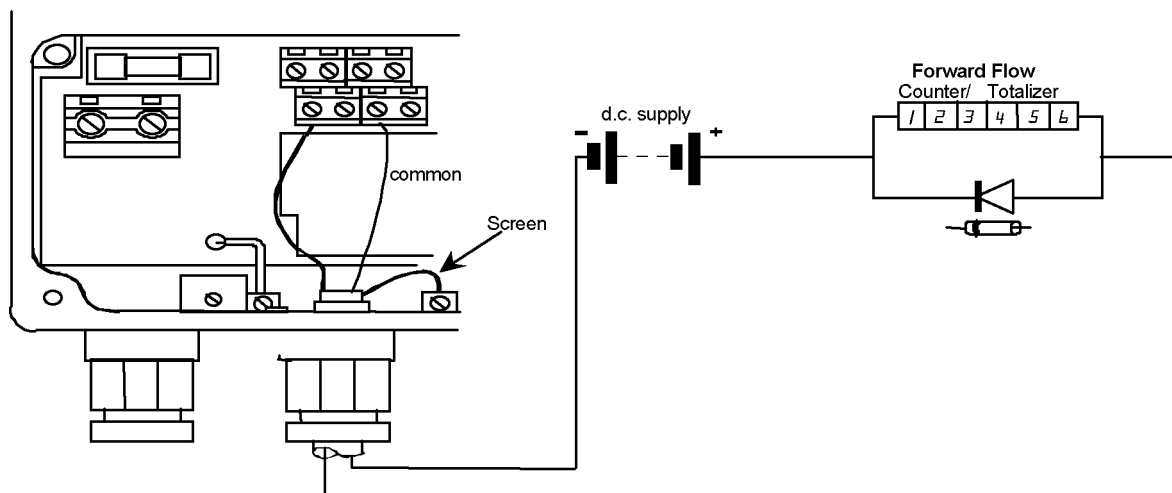
Tel: 951-652-6811

Toll-Free: 800-220-2279

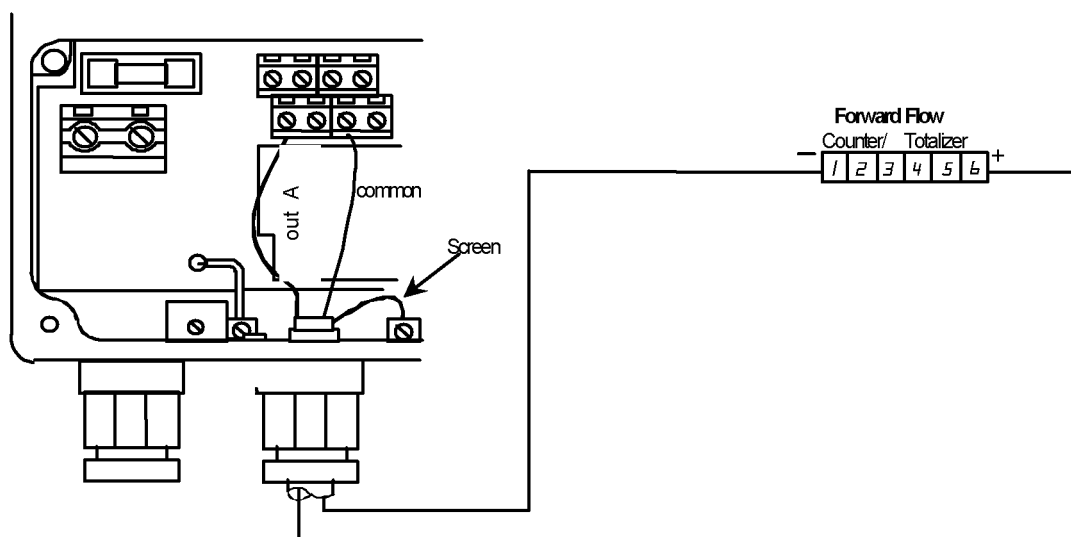
Fax: 951-652-3078



External totalizer/frequency outputs



Electromechanical connections

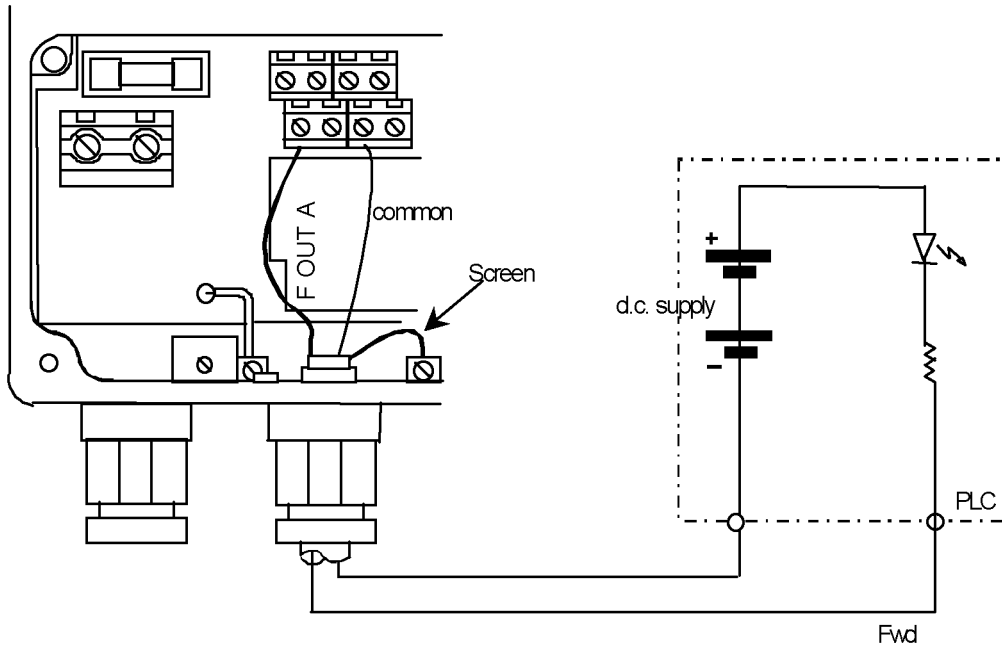


Telemetry, electronic counters, etc.

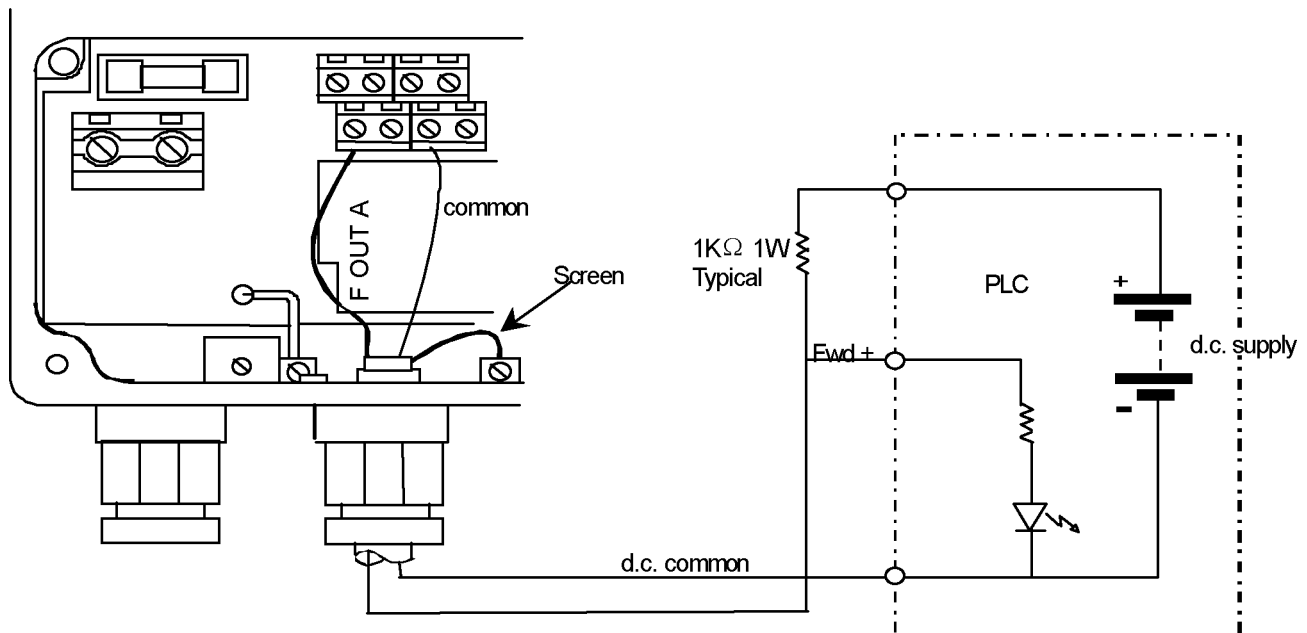
PLC interface

NOTE

Flow proportional frequency output illustrated.
The same interfacing applies to alarm outputs.



PLC - Common +ve



Alarm outputs

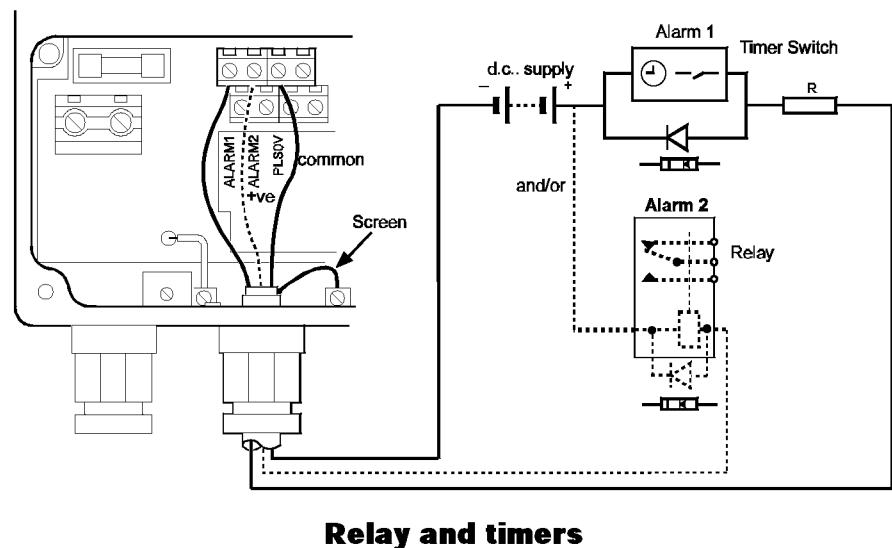
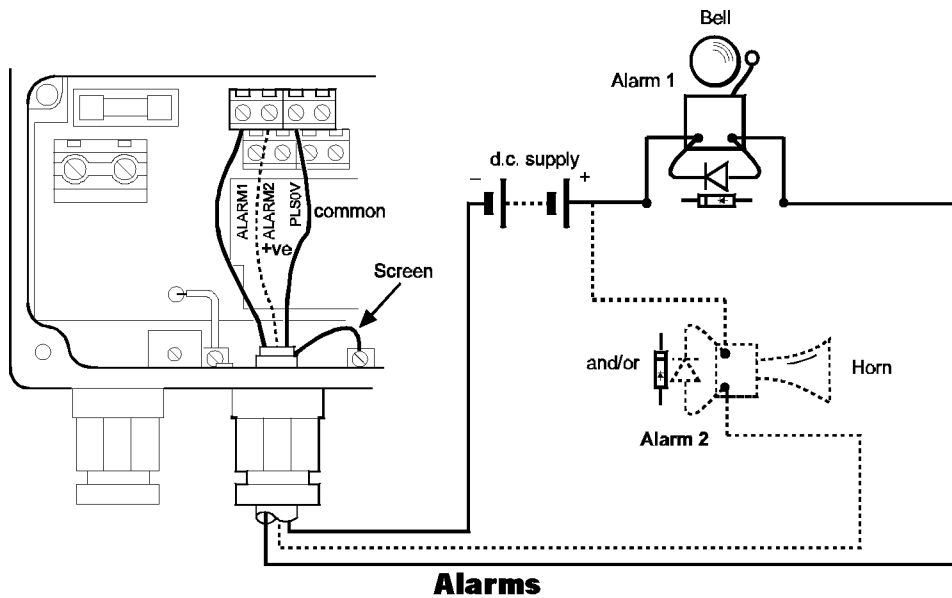
NOTE

Inductive loads may be suppressed by diodes (D) - 1N4004 or similar.

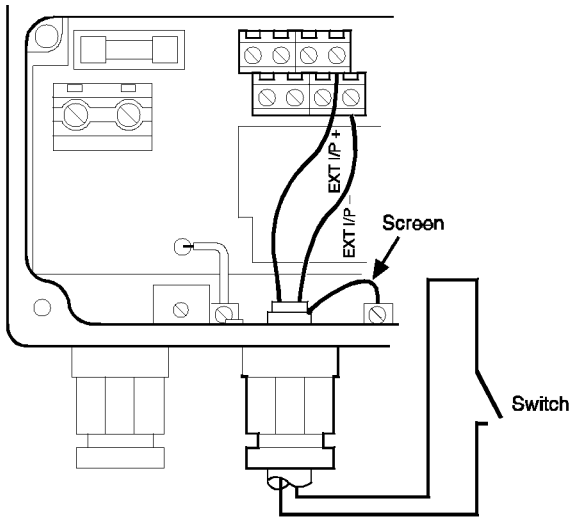
Inrush currents are limited to 1 Amp by resistor R (e.g., 27 Ω 1W for 24V systems).

Operation of outputs is programmable (see **Configuration** for details).

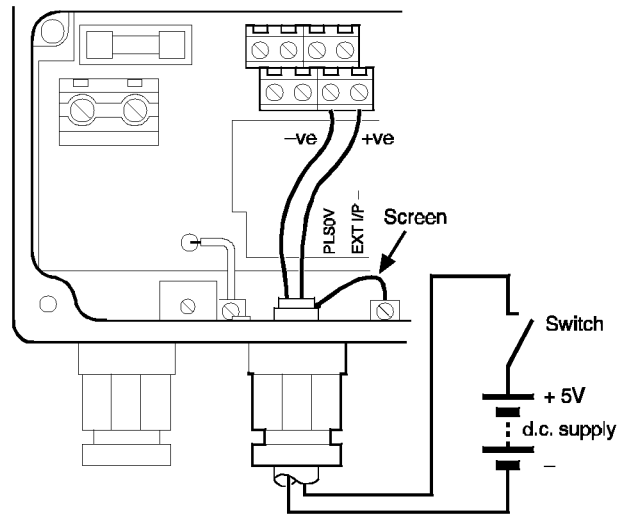
Frequency and alarm outputs share a common return with contact input.



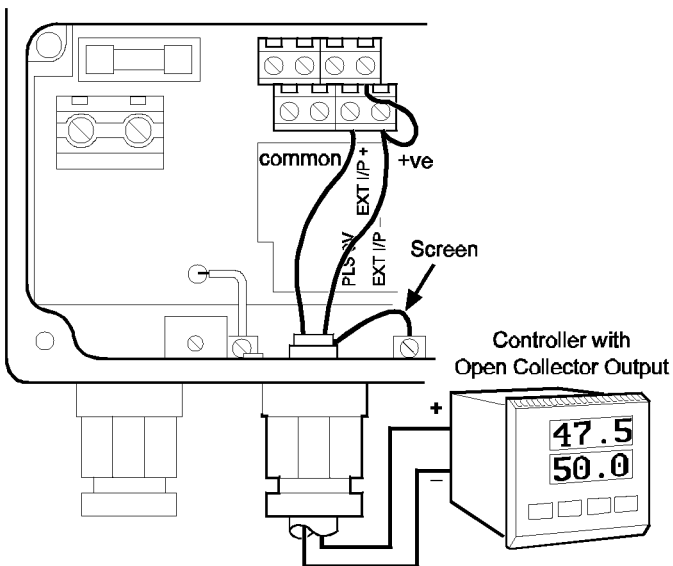
Contact input



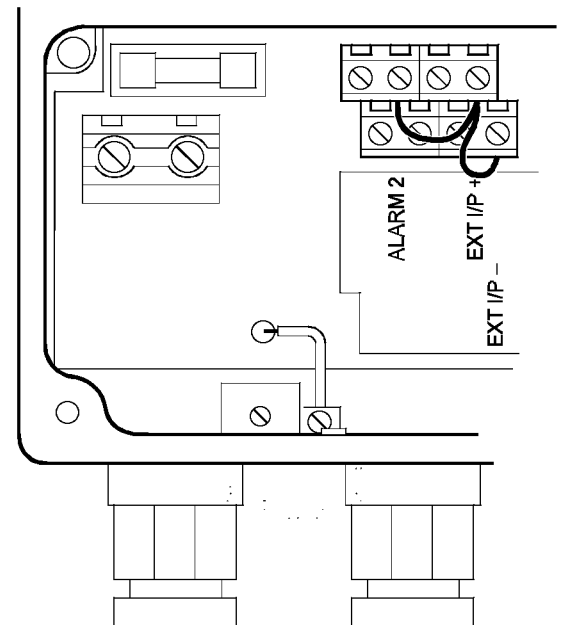
Volt-free contact



Voltage signal or logic signal



Open collector (or grounded contact)



Using an alarm for automatic range change

Current output

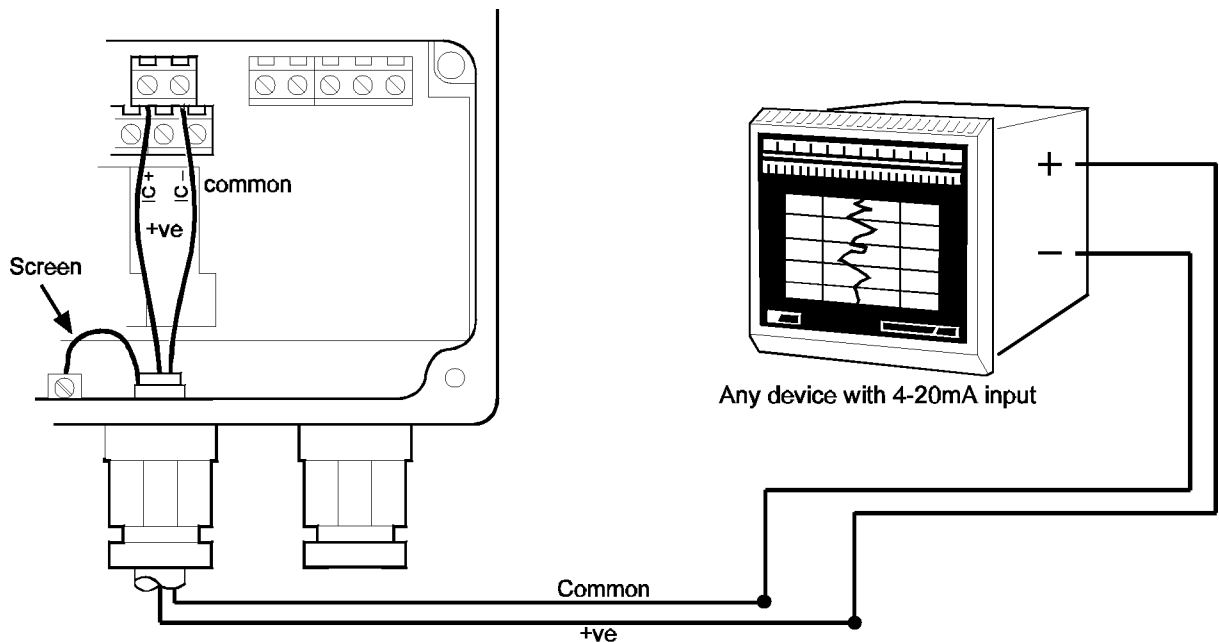
NOTE

Output is fully programmable (see **Configuration**).

Output is electrically separated from all other connections.

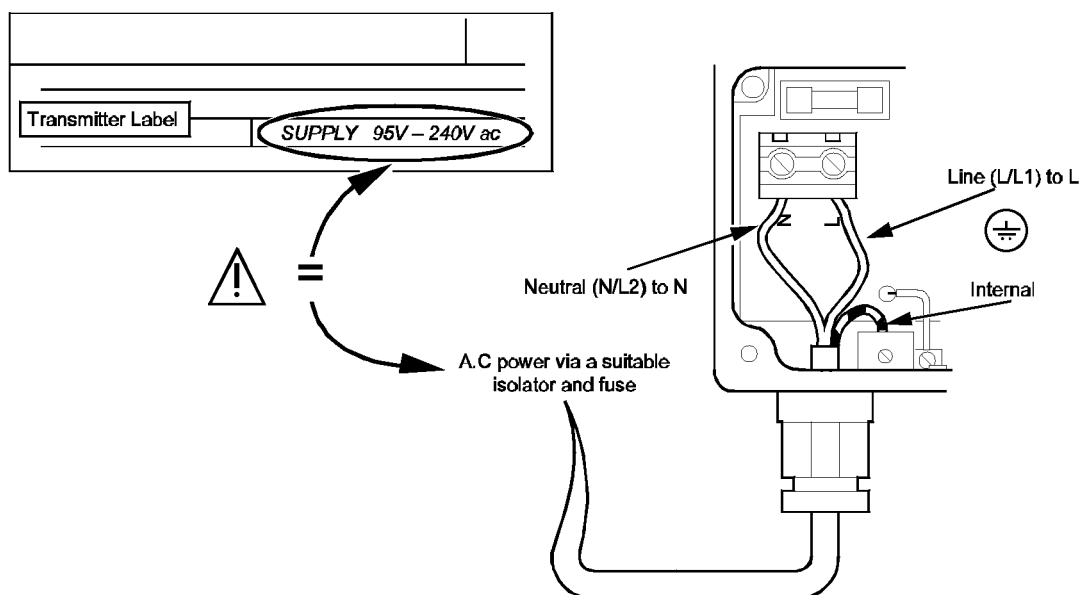
External isolators are not normally required and may significantly limit accuracy if used.

Maximum load resistance is 800Ω .

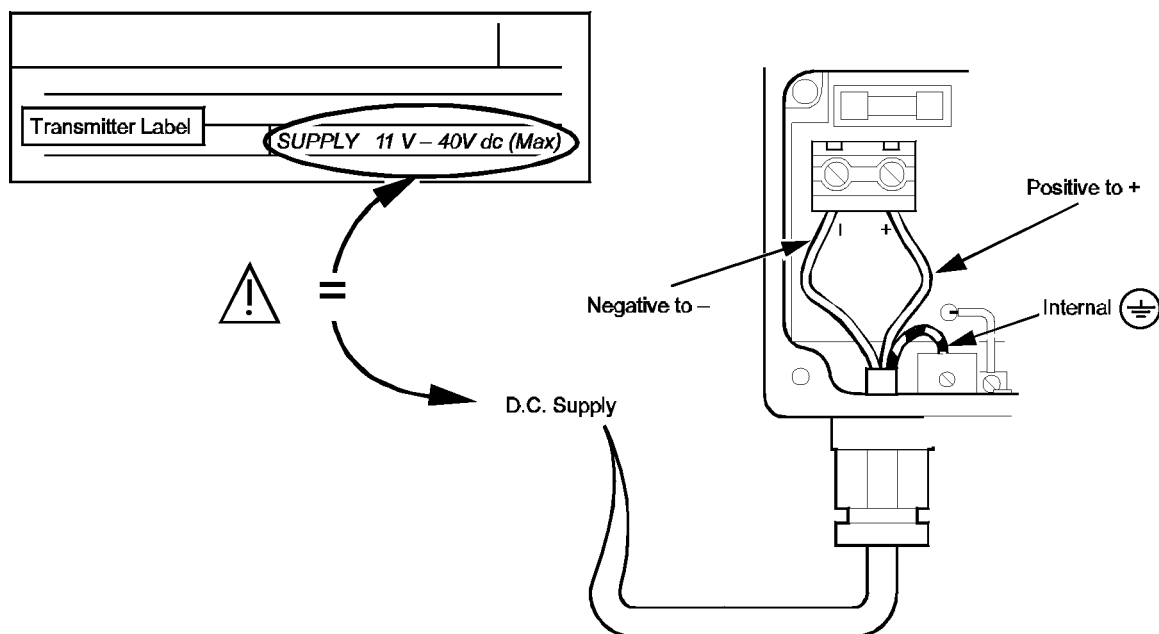


Current output connections: standard

Power hookup



Power supply connections (AC version transmitter)



Power supply connections (DC version transmitter)

Fuse Replacement

IMPORTANT

Disconnect AC power before checking fuses.

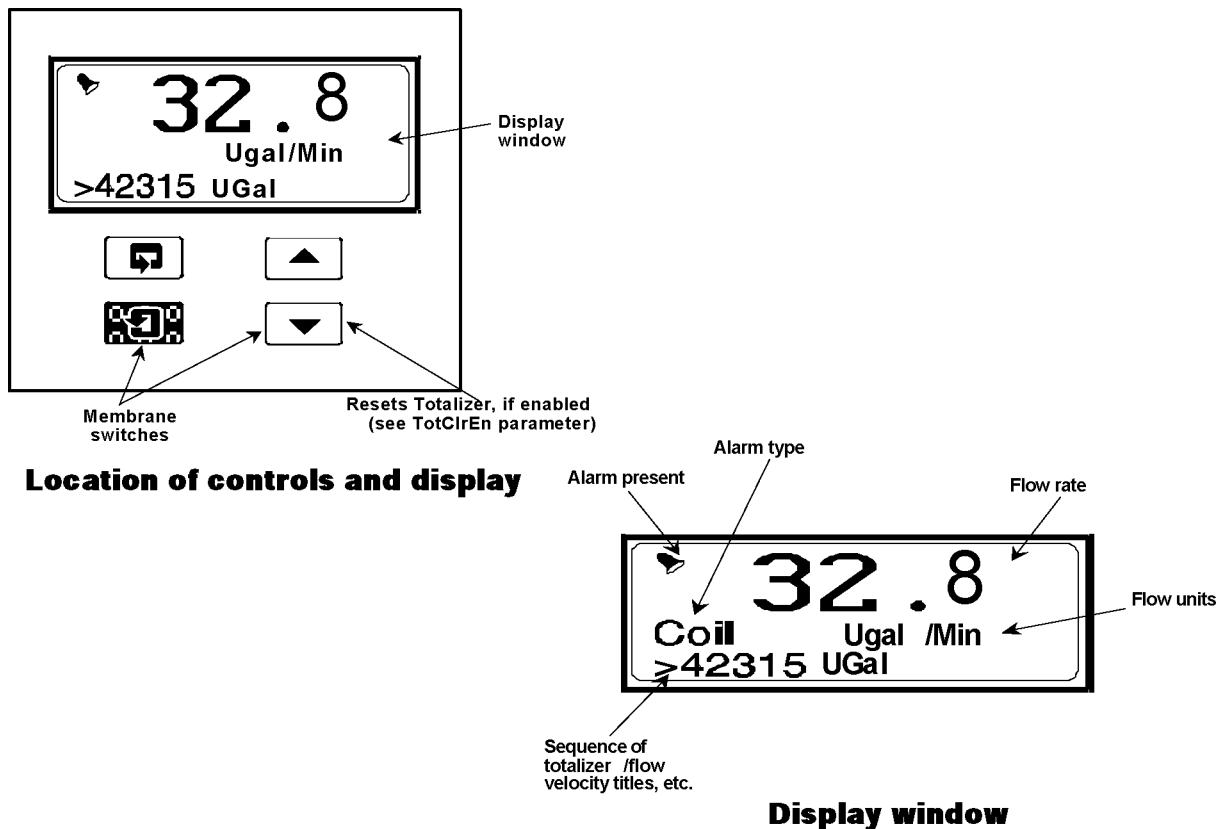
Component Ref.	McCrometer Part No.	Description	Supplier	Approvals	
				IEC	BS
F1-DC	180002102	FUSE 3.15A AS.T 20mm	SHURTER 034-3122	IEC 127/111	BS4265
			BUSSMAN S506/3.15A	IEC 127/111	UL BS4265
F1-AC	180002101	FUSE 500mA AS.T 20mm	SHURTER 034-3114	IEC 127/111	BS4265
			BUSSMAN S504/500mA	IEC 127/111	UL BS4265
			BUSSMAN S506/500mA	IEC 127/111	UL BS4265

Setting up the Model 282

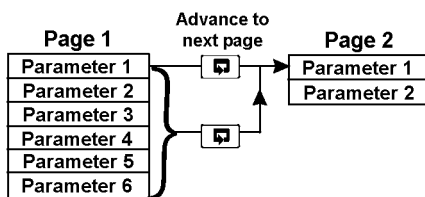
After the sensor is installed and all of the connections have been made, the Model 282 must be set up for the installation site. After the Model 282 electronics is properly set up the system can be used to perform velocity profiling to calculate the velocity multiplier K. Multiple K factors are not supported by the Model 282.

Displays

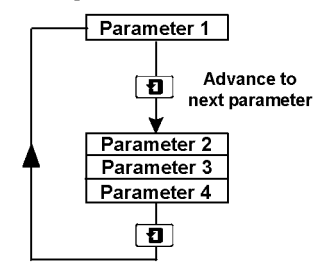
The display comprises a 5-digit, 7-segment digital upper display line and two 16-character dot-matrix lower display lines. The upper display shows the flow value. The middle display line shows alarm codes on the left, when an alarm is present (see *Faultfinding*), and flow units in the center. The lower line is toggled by the  membrane switch and will display velocity, totalizer (> = Positive), % full scale or active alarms.



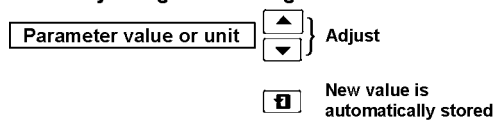
A - Advancing to Next Page



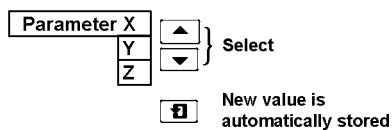
B- Moving Between Parameters



C - Adjusting and Storing a Parameter Value



D - Selecting and Storing a Parameter Choice



Membrane switch functions



Rapid reset/escape

Depressing this switch for five seconds and then releasing it will exit the menu system and return to normal operating mode.

Startup

Ensure all necessary electrical connections have been made, and switch on the power supply to the flowmeter.

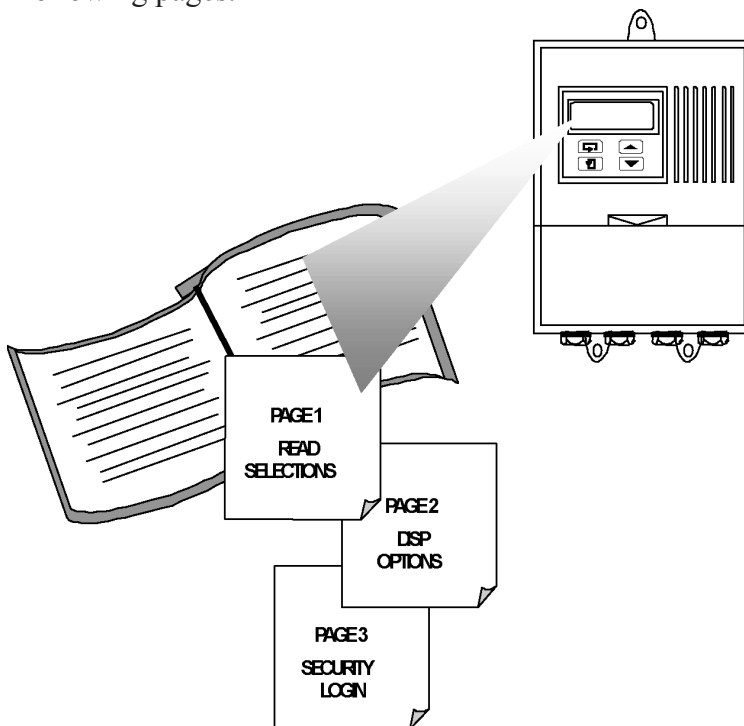
After a short delay, the bottom line of the display will alternate between “Marsh Single-Mag” and “V1.1 23/02/95”. In a few seconds, the flow rate will appear on the display, together with the flow rate units.

Page and parameter analogy

The main menu is accessed similarly to opening various pages in a book. Each page contains a group of parameters that are related to each other.

Pages 1 to 3 are generally accessible; the remainders are password protected.

Pages represent the groups of parameters provided by the transmitter which, if required, may be viewed or changed as shown on this and the following pages.



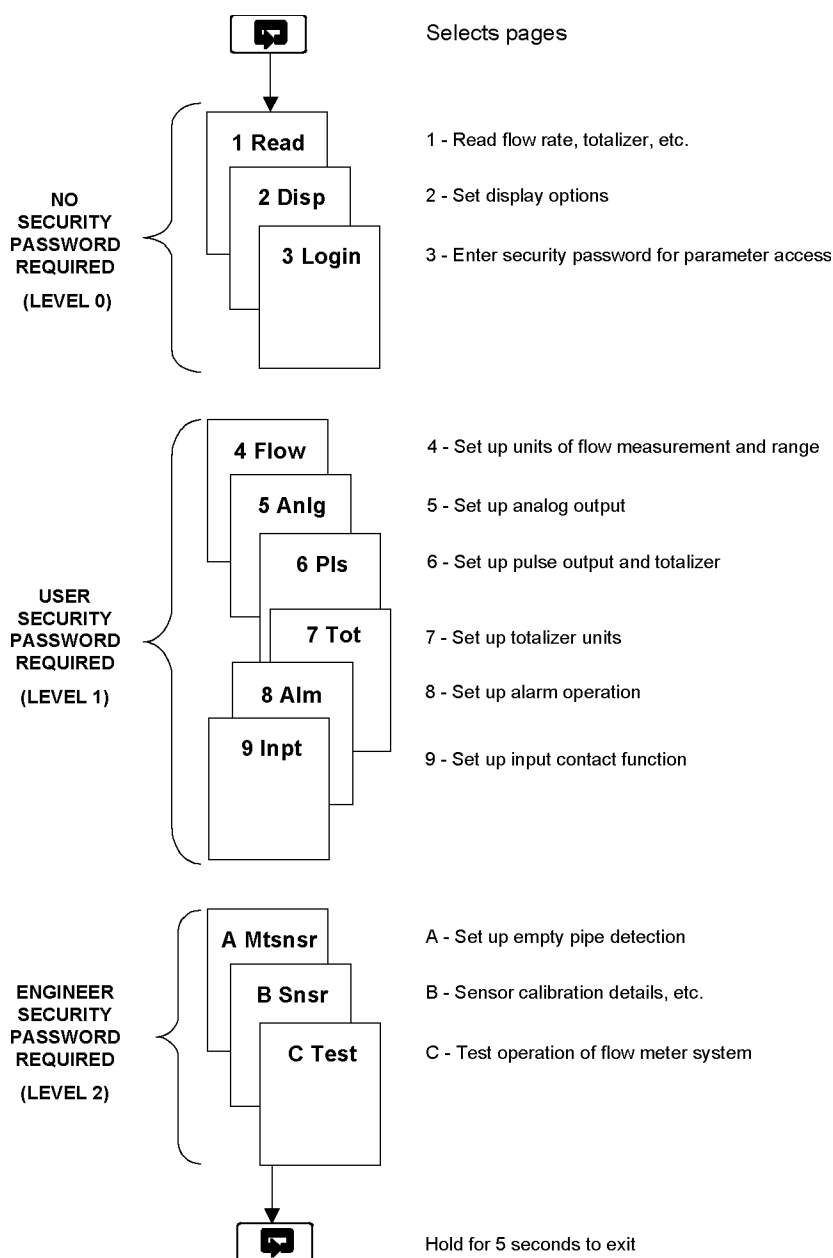
Getting started

The transmitter is delivered set up either with your chosen units, or set with our standard default values.

WARNING!

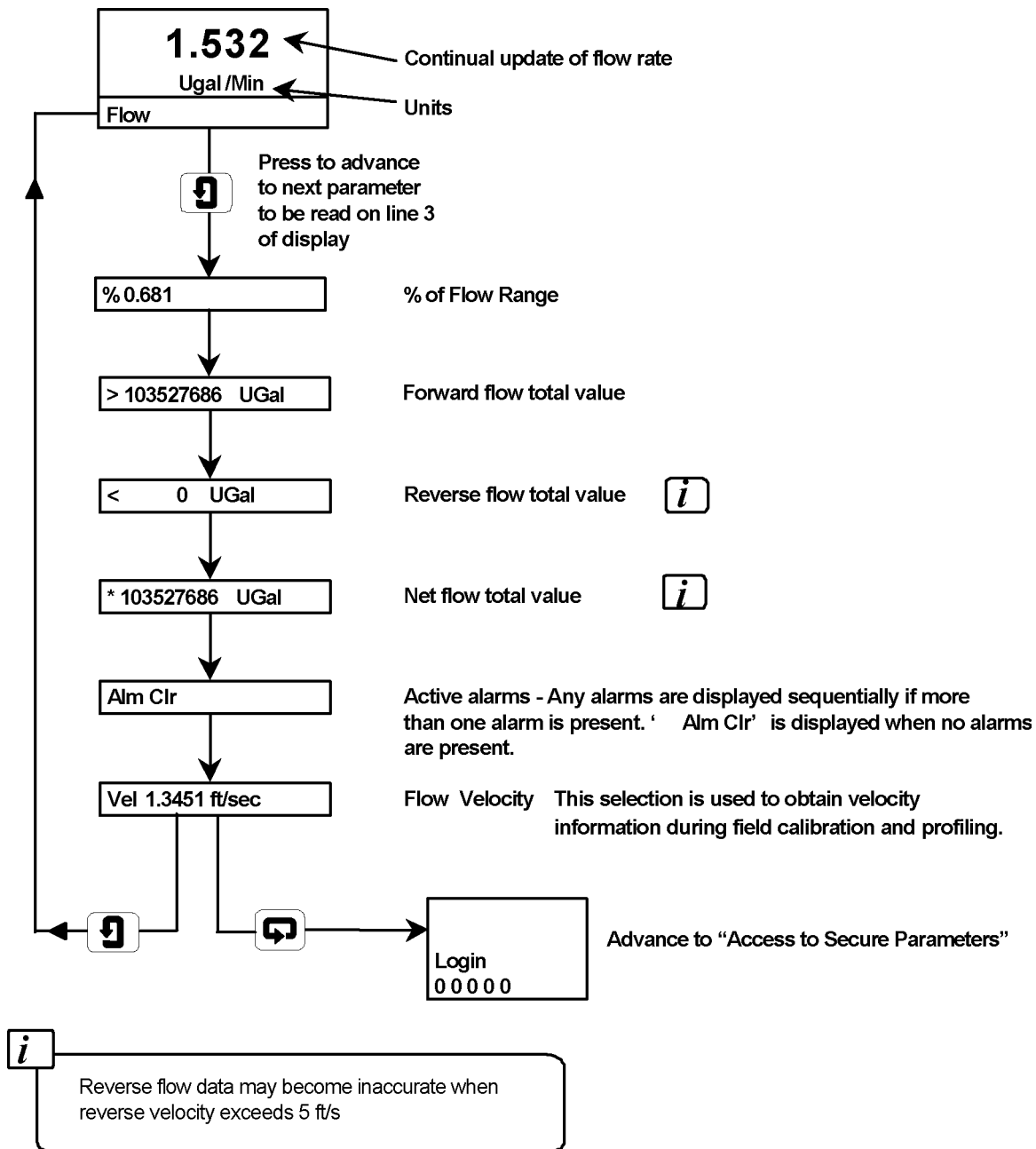
Ensure plant safety while configuring at all times.

If you need to change the transmitter configuration for any reason, this may be done depressing the membrane switches on the front of the transmitter.



Operation

Viewing user information (read only).



Access to secure parameters

A five-digit security code is used to prevent tampering with the secure parameters.

Caution

Do not use the same password for both Security Level 1 and Security Level 2.

Security codes

A code number, between 00000 and 99999, must be entered to gain access to the secure user level parameters. A default user code of “00001” has been installed, but this may be changed if required with the “Login Key 1” parameter (see *Menu layout*).

An engineer code (default 00002) is used to gain access to all the user level parameters plus the test mode, security code settings, and parameters not essential at the user level. This code can be changed if required with the “Login Key 2” parameter (see *Menu layout*).

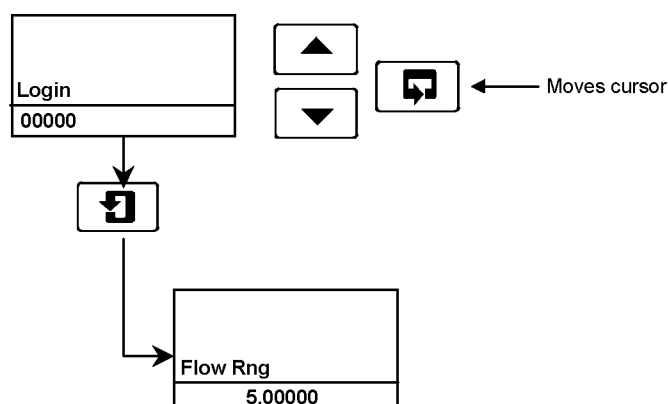
At the flashing cursor on the first digit of the login code number, press either  or  to reach the required digit. To set this digit and pass to the next digit, press . Continue until all digits have been set, and depress  to enter the complete code. If an incorrect value is entered, access to subsequent programming pages is prevented and the display reverts to the operating page.

Flow range parameter

Press  to advance to the next parameter.

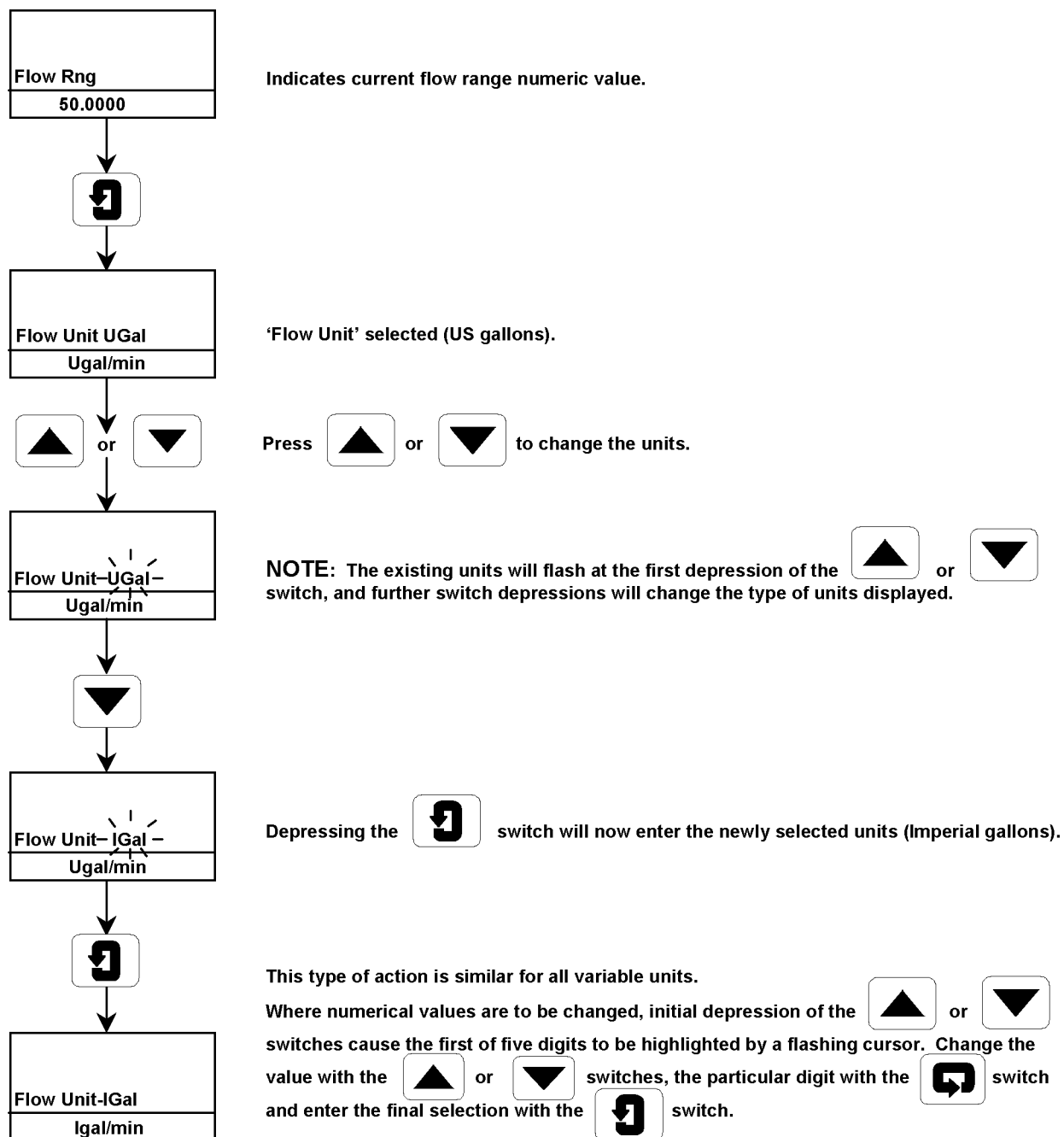
Press  to advance to the next page.

These two switches are used to advance to all subsequent parameters and pages. If a parameter is changed, it is automatically stored on operation of the  switch.



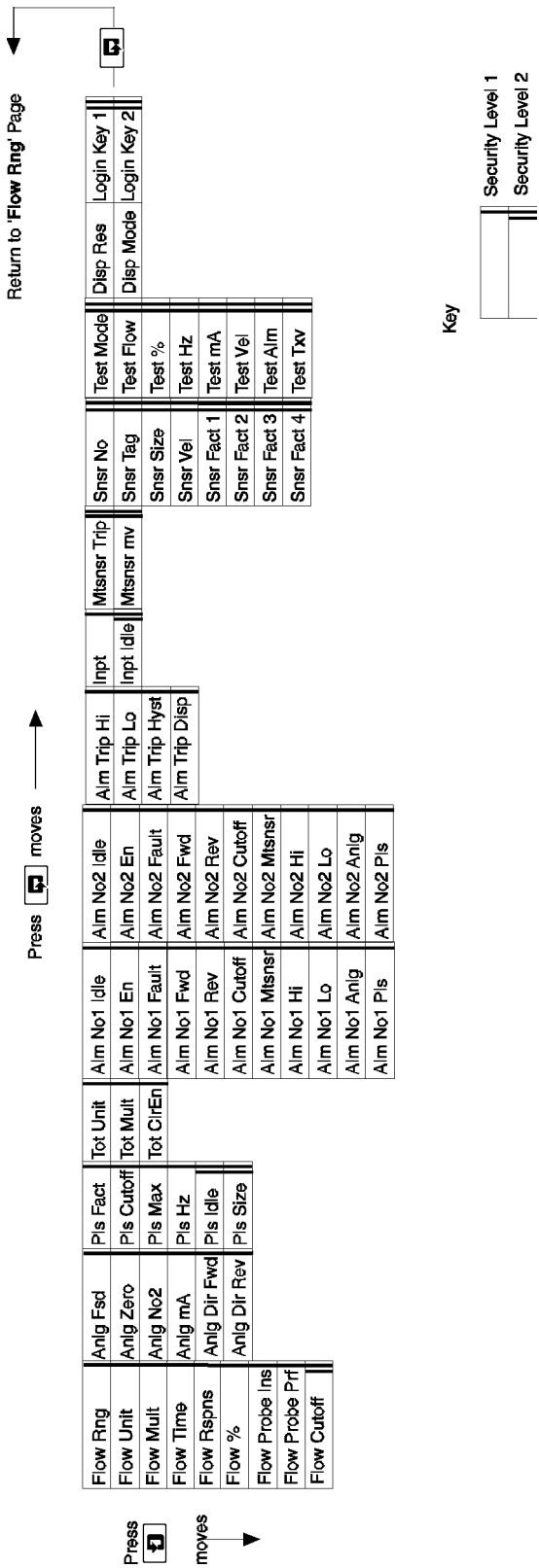
Changing parameter values and variables

When a parameter is selected, which holds one or more variable units (e.g., “flow unit” parameter, which can be liters, cubic meters, gallons, etc.), proceed as follows to change the units (“Flow Rng” selected):



Menu layout

Below is a summary of all the parameters contained in the menu.

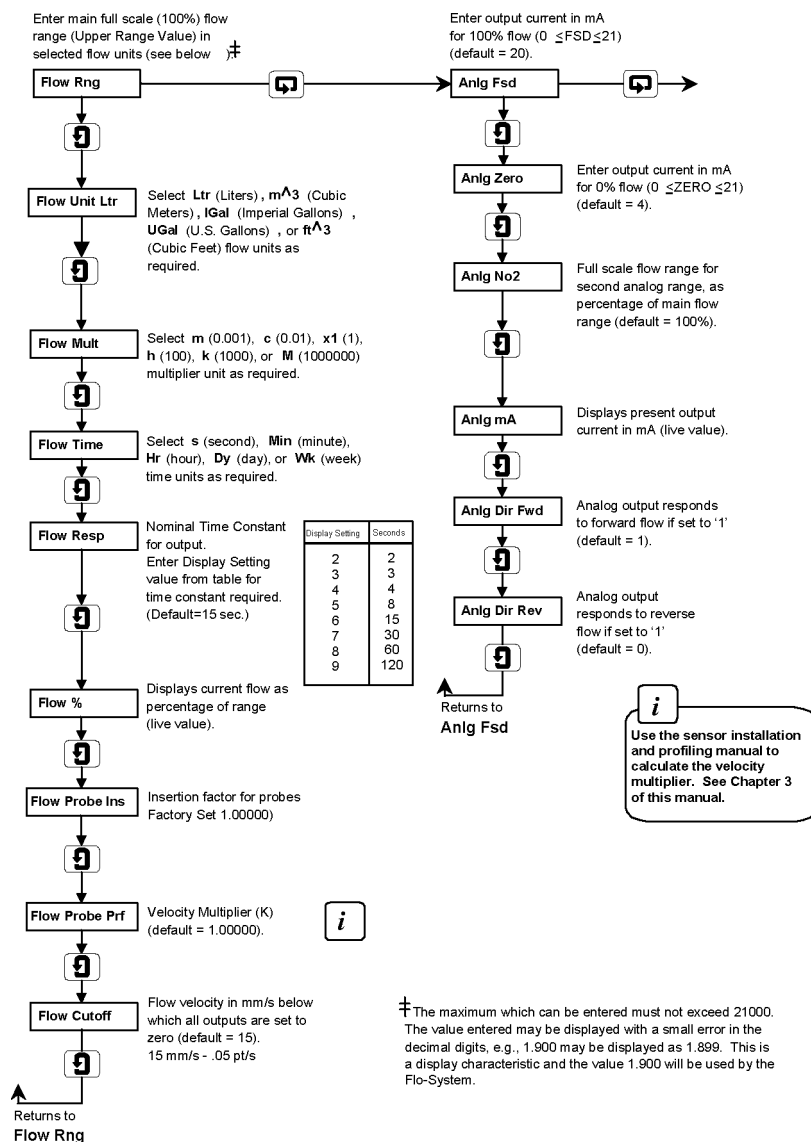


Caution

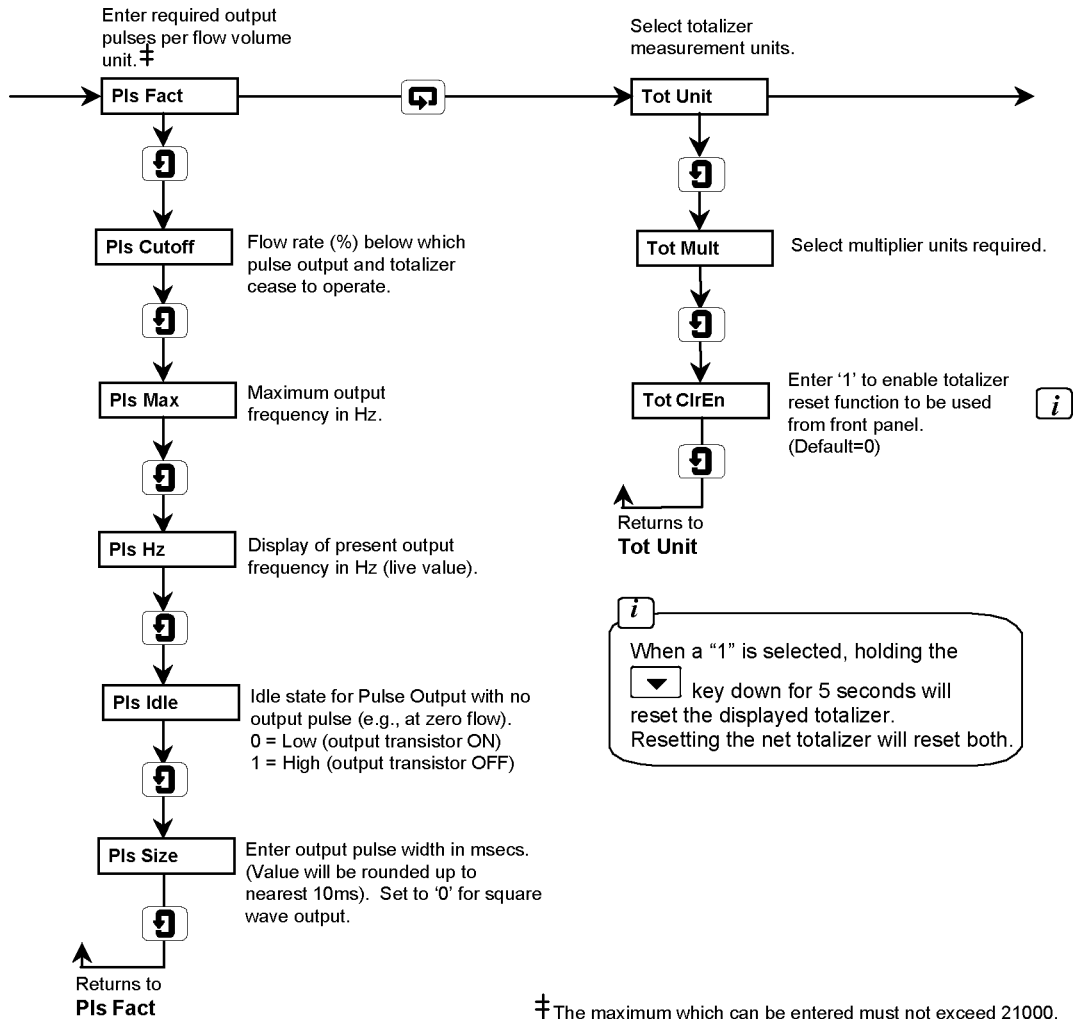
Do not use the same password for both Security Level 1 and Security Level

Parameter access and change

The correct security level must be selected. Select the parameter to read the value, or to change it as necessary. All real-time data displayed is updated each second. Use the  switch to move between pages. Use the  switch to move between parameters. The  and  switches change displayed values and units. The  switch will accept the chosen value or unit.



Desired Output	Flow Units	Flow Mult	Full Scale	PLS Fact
1 Pulse = 1000 Gal	UGal	x1	Not Needed	.001
1 Pulse = 1000 Gal	UGal	k	Not Needed	1.0
1 Pulse = 1000 Gal	UGal	m	Not Needed	1000.0
800 Hz = Freq	UGal	x1	800 GPM	60



‡ The maximum which can be entered must not exceed 21000. The value entered may be displayed with a small error in the decimal digits, e.g., 1.900 may be displayed as 1.899. This is a display characteristic and the value 1.900 will be used by the Flo-System.

Do not use the same password for both Security Level 1 and Security Level 2.

Select Alarm 1 output functions.
'1' = selected. '0' = deselected.

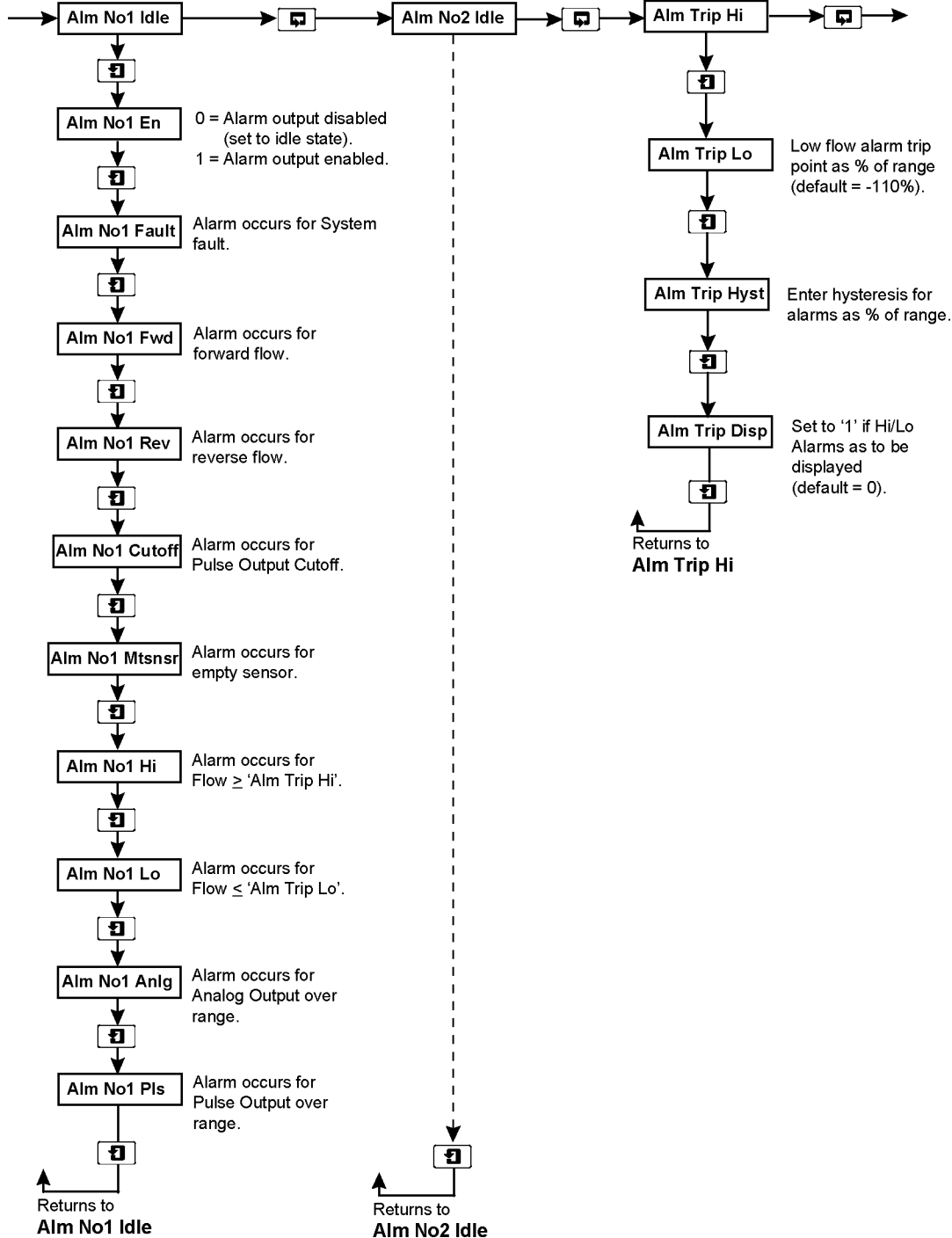
Select Alarm 2 output functions.

Select high and low flow
alarm trip points.

Idle state for alarm output. With
no alarm active:
0 = Low (O/P transistor ON)
1 = High (O/P transistor OFF)

Identical to, but
independent of, Alarm 1.

High flow alarm trip
point as % of range
(default = +110%).

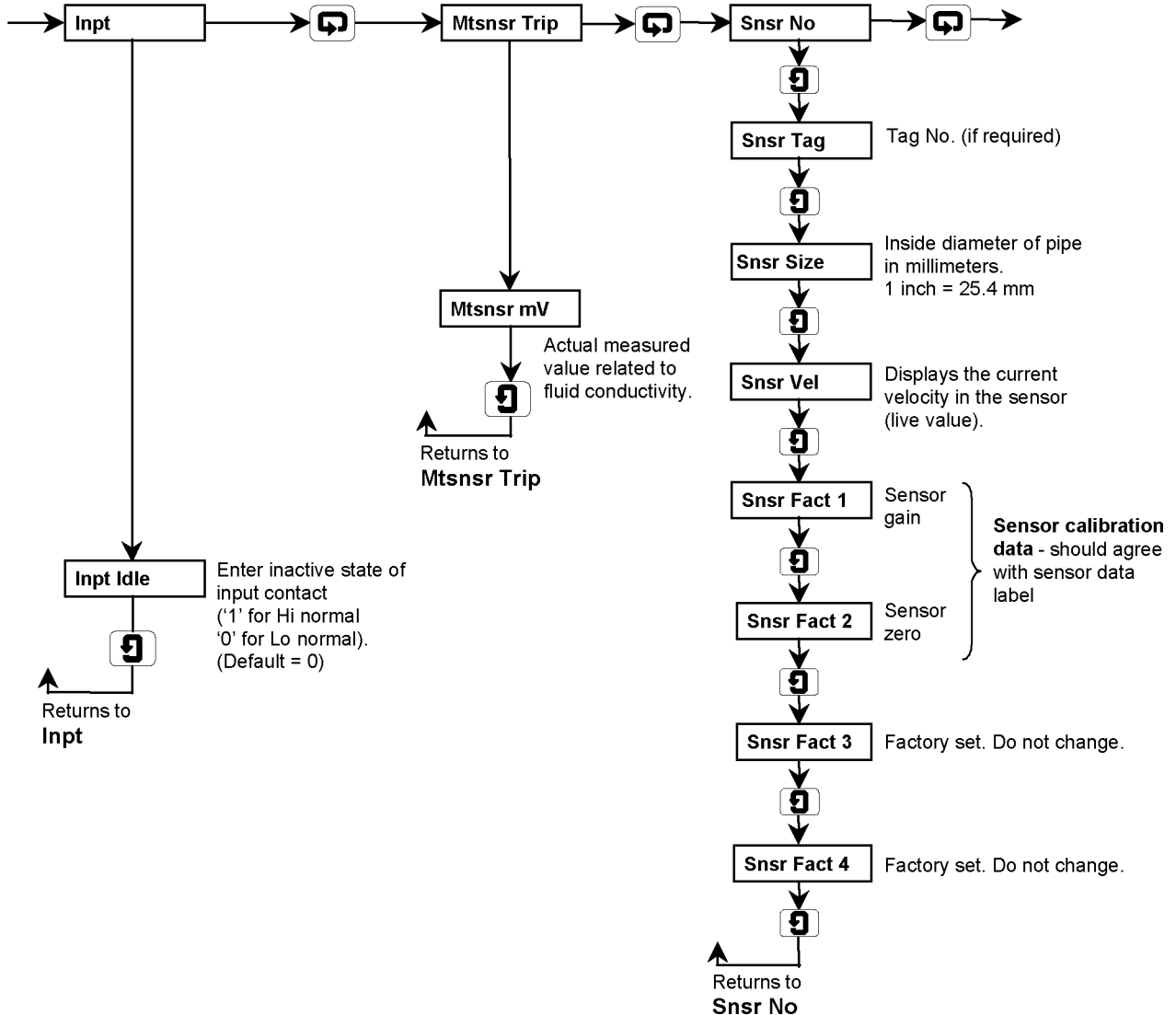


Set up function of external logic input.

Set up empty pipe detection.

Sensor calibration details, etc.

Select 'Zero' to set flowrate output to zero.
 'Hld' to hold flowmeter output value.
 'Clr' to reset all totalizers.
 'Anlg' to select Anlg No2 Range.



Faultfinding

A very powerful test mode, especially useful during commissioning and plant faultfinding, enables all external devices connected to the Model 282 to be tested over the full range of flow rates.

This mode can be used regardless of flow conditions at the sensor, or even with the sensor disconnected, and does not require the use of additional equipment. (See Test Mode Page 41 for details.)

WARNING!

Observe all safety measures.

Take all precautions to avoid risk to personnel, plant, and risk of explosion in hazardous areas.

Do NOT open the transmitter main casing. There are no user serviceable parts or adjustments inside.

Service access is restricted to the termination area.

If unit is working but velocity seems abnormally low, retract and reinsert sensor without removing sensor past the compression seal. If problems persist, remove and clean sensor. Use a small amount of liquid detergent on a soft bristle brush. **DO NOT** use oil-based cleaners or solvents.

Should the Model 282 fail to operate, first check that the power is turned on. Next, check the power connections and fuse located in the termination area. If necessary, replace the fuse with one of the correct rating.

Check that all external connections are made correctly.

Alarms

The transmitter has built-in diagnostics with alarm indications.

The table below shows possible alarm indications, and the Faultfinding Flow Chart indicates checking procedures to find the problems causing the alarms.

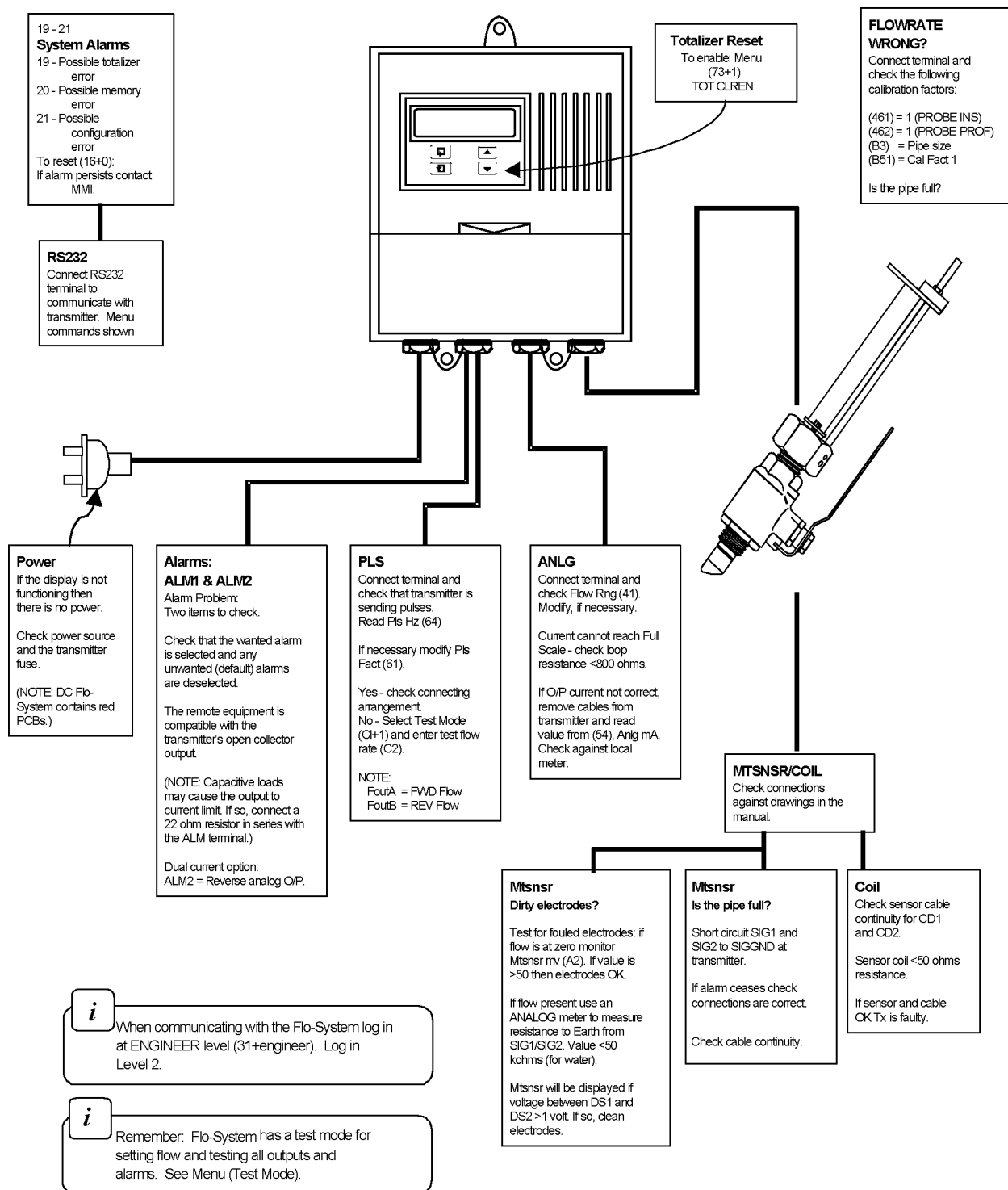
Display	Alarm
MtSnsr	Empty sensor
Hi	High flow
Lo	Low flow
Anlg	Analog over range
Pls	Pulse frequency limited
Coil	Sensor coil open circuit
19, 20, 21	See Faultfinding Flow Chart

For method of interrogating the local display see *Startup*.

Clearing Alarms

Choose Alarms (“ALM”) for the lower line of the display by pressing the  membrane switch. Depressing the  membrane switch for five seconds will clear all alarms. If alarms return an alarm condition still exists.

Faultfinding Flow Chart



Test mode

Select **Engineer** security level (see *Access to secure parameters*). Set Test Mode parameter to “1” and enter an appropriate flow rate in the Test Flow parameter.

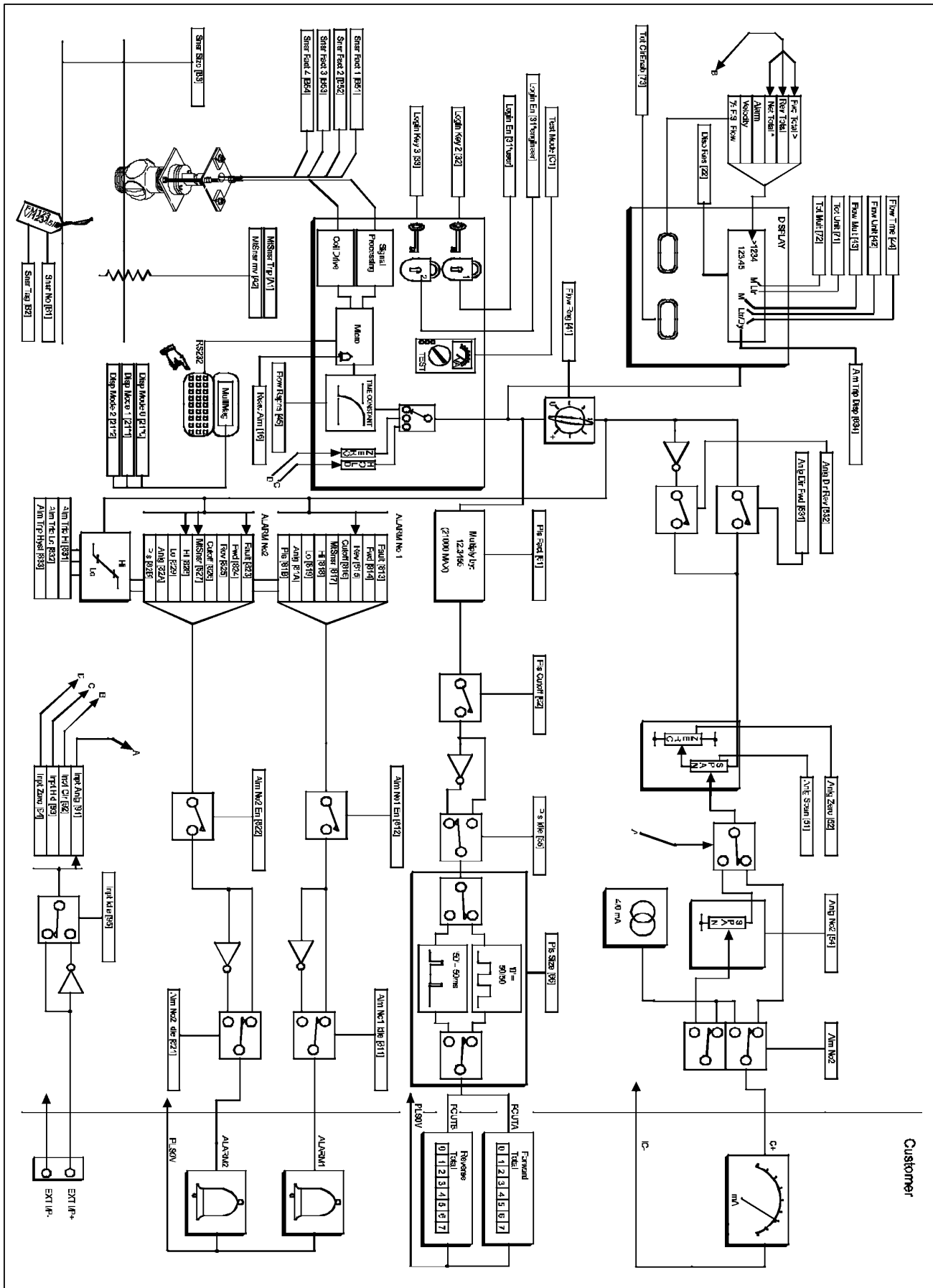
Output responses may now be viewed from the various test parameters (see *Configuration* for full details of operation).

Example:

Assume the flow range is 500 UGAL/MIN and 20 mA = 100% FLOW (500 UGAL/MIN)

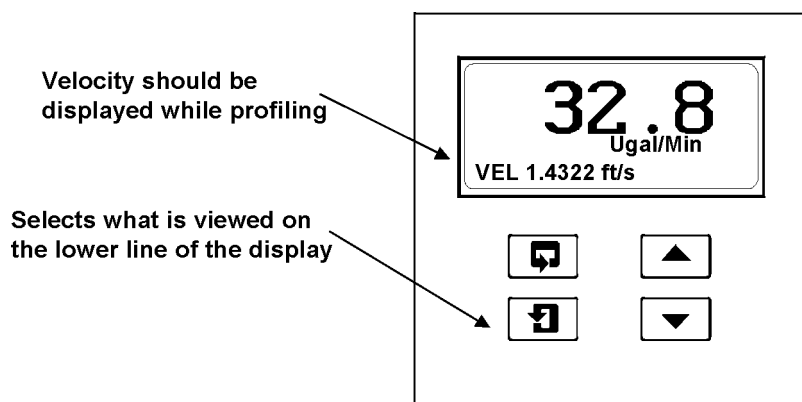
If 250 is entered as the test flow parameter then the 4-20 mA output will be set to 12 mA and all other outputs will indicate values appropriate for the test flow value.

Depressing the  switch for five seconds will cancel the test mode and return the unit to normal operation.



Site Calibration

After the sensor is installed and all of the connections have been made, the Model 282 should be site calibrated. Before performing velocity profiling the electronics should be configured properly. Refer to Chapter 2 *Setting up the Model 282*. The “flow Probe Prf” and “Flow Probe Ins” parameters should both be set to 1.00000 when performing velocity profiles. The fields for these parameters are located on the Flow Range (“Flow Rng”) page in the electronics set up menu.



Viewing Model 282 Velocity Information

With the electronics in the operate mode press the bottom left membrane switch repeatedly until velocity is displayed on the third line of the display.

Velocity Profiling

Follow the instructions for obtaining a Velocity Multiplier (K) in the *Sensor Installation and Profiling Manual* that came with your Model 282. There are several profiling methods. Select the one that best suits your application. There are different manuals for one and two inch sensors.

Site Calibrating The Electronics

Place the electronics in the set up mode using either of the login security codes (Login 1 or Login 2). Refer to Chapter 2 for instructions on making set-up changes. Enter the Velocity Multiplier (K) for the site into the Flow Probe Profile parameter (“flow Probe Prf”) field located on the Flow Range (“Flow Rng”) page of the set up menu.

Set the Pipe ID

Convert the pipe ID into millimeters (1" = 25.4 mm). Enter this value into the inside diameter (“SNSR SIZE”) field located on the sensor calibration (“SNSR NO”) page of the set-up menu.

Set up User Preferences and Scaling

Refer to Chapter 2 as a guide and set-up full scale, 4-20 mA output, totalizer, and any of the available features you wish to use.

Specifications – Model 282

MEASUREMENT

Volumetric flow in filled flow conduits 2"-96" (5-244 cm) in diameter utilizing insertable velocity sensor. Flow indication in English or Metric units.

LOCAL VELOCITY MEASUREMENT

Method: Electromagnetic (Faraday's Law)

Range: -5 to +20 ft/s (-1.5 to +6.1 m/s)

Zero Stability: ± 0.03 ft/s (± 0.009 m/s)

Accuracy: $\pm 2\%$ of reading $\pm$ zero stability at

-3 to +10 ft/s (-0.9 to +3 m/s)

Resolution: 0.01 ft/s (3.05 mm/s)

PRESSURE/TEMPERATURE LIMITS

PVC Insertion Tube

150 PSI up to 105°C

Stainless Steel Insertion Tube:

250 PSI up to 160°F (71°C)

(McCrometer recommends the use of Stainless Steel)

MATERIALS

Sensor: Polyurethane exposed to flow

Cable: 20 ft. Polyurethane jacket

1" Sensor Mounting: 316 Stainless Steel exposed to flow.

2" Sensor Mounting: PVC and Stainless Steel exposed to flow. (Stainless Steel Insertion Tube Optional)

Compression Seal: Neoprene Rubber exposed to flow

ENCLOSURE

NEMA 4X/IP65. Separate termination and electronics compartments. Glass filled polypropylene with clear polycarbonate cover.

Dimensions: 8.4"H x 6.4"W x 2.8"D

(161.5 mm x 214 mm x 70 mm)

Weight: 3.2 lbs. (1.5 kg)

CONFIGURATION AND SET-UP

Programming can be easily done on site using the keypad. Two level of user defined password protection are provided.

OUTPUTS

Analog: Galvanically isolated and fully programmable for zero and full scale. Output capability $<16V$ (800 ohm, 4-20 mA). Secondary range enabled by external input or programmed alarm condition as a percent of full scale.

Pulse-Frequency: One frequency/pulse output for flow rate or for external totalizer. Isolated protected transistor switch capable of sinking $<250mA @ <35V$. Dual Alarms (2 separate outputs): Isolated protected transistor switch capable of sinking $<250 mA @ <35V$.

(Note: Not isolated from frequency output.) Fully

programmable for high/low flow rates. Percent of range, empty-pipe, fault conditions, forward/reverse, polarity (normally open/close), analog over-range, pulse over-range, pulse cutoff, etc.

ELECTRICAL CONNECTIONS

0.5 inch NPT with gasket seal

KEYPAD AND DISPLAY

Can be used to access and change all setup parameter using four membrane keys and 3-line display. 3-line, 16 character, backlit LCD display with large 1/2" numerals for flow rate and two lines for engineering units, totalizers, alarm status, velocity and percent of range.

ISOLATION

Galvanic separation to 50VDC between analog, pulse/ alarm, and earth/ground.

ELECTRICAL SAFETY

Meets ANSI/ISA-S82.10-1988 and S82.03-1998.

POWER SUPPLY

Universal switch mode.

AC: 85 to 265V 45 to 400 Hz at 20VA max. or

DC: 11 to 40V at 20VA max.

AC or DC must be specified at time of ordering.

VIBRATION SPECIFICATION

Meets BS2011: Part 2.1Fc: 1983

INTERNAL TOTALIZER

9-digit totalizer. Can be programmed to reset via external input or the keypad. Reset from keypad can be password protected.

TEST MODE AND OUTPUT CIRCUIT LOOP

VERIFICATION

After transmitter has been programmed, operation of the test mode will drive all outputs to programmed value, providing a total system test.

ORDERING INFORMATION

The Single-Mag™ Model 282 is an AC or DC powered, real-time, full pipe flowmeter. Standard models include a NEMA 4X enclosure, a 4-key numerical keypad, a three line back-lit display, choice of a 1" or 2" electromagnetic velocity sensor, 20 feet of sensor cable; standard sensor mounting hardware, a flow proportional or frequency output (transistor type), a 4-20 mA output for flow and an instruction manual.

Accessories include sun shield, stainless steel tag, pole mount kit and additional instruction manuals.

See Sensor Installation Accessories Information

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