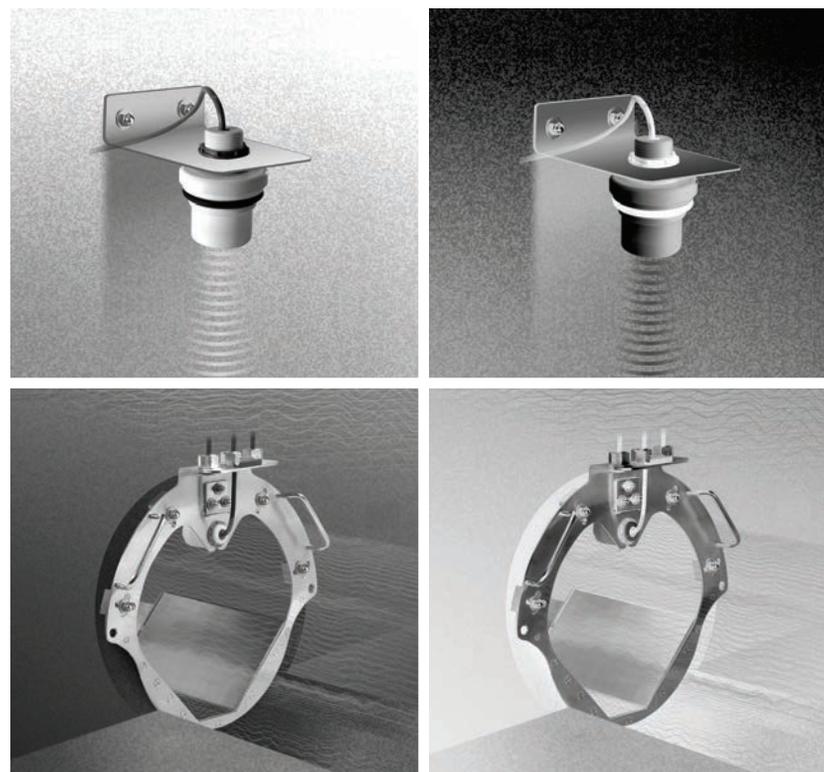


# SURCHARGE MONITOR INSTALLATION & OPERATING MANUAL



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## SCOPE

This Manual contains information concerning the installation of the optional SM15 Surcharge Monitor for the Accuron 7200 Cartridge Meter.

Keep this manual in a readily accessible location for future reference.

Changes and additions to the original edition of this manual will be covered by a “CHANGE NOTICE” supplied with the manual. The change notice will explain any changes made to the product described in this manual.

## UNPACKING & INSPECTION

Retain the container and all packing material for possible use in reshipment or storage. Visually inspect the product and applicable accessories for any physical damage such as scratches, loose or broken parts, or any other sign of damage that may have occurred during shipment.

Note: If damage is found, request an inspection by the carrier's agent within 48 hours of delivery and file a claim with the carrier. A claim for equipment damaged in transit is the sole responsibility of the customer.

To avoid damage in transit, Eastech Flow Controls products are shipped to the customer in special shipping containers. Upon receipt of the product, perform the following unpacking and inspection procedures:

Note: If damage to the shipping container is evident upon receipt, request the carrier to be present when the product is unpacked.

Carefully open the shipping container adhering to any instructions that may be marked on the box. Remove all cushioning material surrounding the product and carefully lift the product from the container.

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## GENERAL DESCRIPTION

The SM-15 is an optional non-contact Surcharge Monitor for use with the Accuron 7200/7400 Area-Velocity Cartridge Meters. The sensor allows for monitoring of conditions that change from open channel flow to submerged flow (as experienced in sewers during a storm event or downstream blockage). When used in conjunction with the Accuron 7200/7400 Cartridge Meters, the Surcharge Monitor will accurately ascertain the water level that has accumulated above the crown of the incoming pipe. Since the Accuron SM-15 is located above the flow stream and calculates level by non-contact ultrasonic means, long term maintenance-free operation can be expected.

SM-15 Specifications	
Sensor Housing	Teflon®, Submersible Nema 4,4X
Sensor	Temperature Compensated
Temperature	-40° to 158°F (-40° to 70°)
Accuracy	± 0.02" or 0.05% of target distance
Maximum Range	15 feet
Beam Angle	8° (-3dB)
Deadband	12 inches
Warranty	18 months

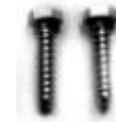
## INSTALLATION

### HARDWARE (Supplied by Eastech)

Lag shields (2)

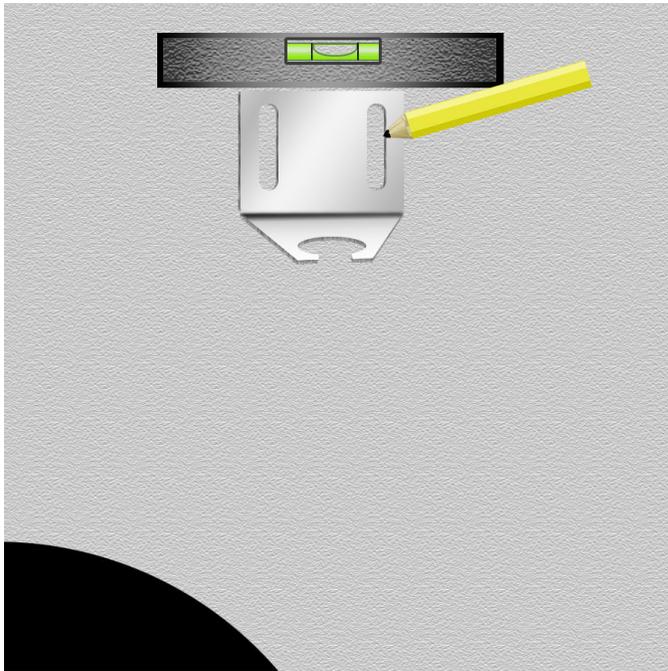


Lag bolts (2)



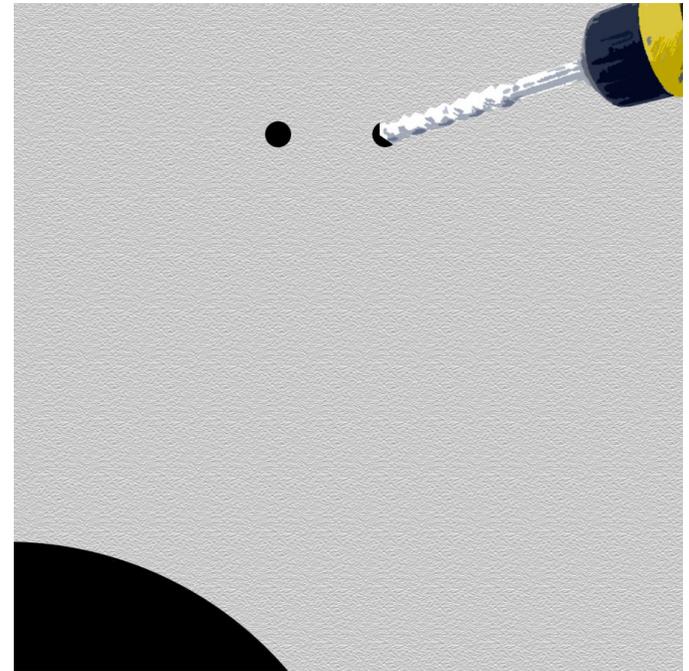
## Installation

Use the provided bracket as a template. Place a level on the bracket and mark the slots for drilling. Avoid placing the sensor over any objects that may come between the sensor and the liquid being measured (i.e. the Cartridge Meter flange and cables).



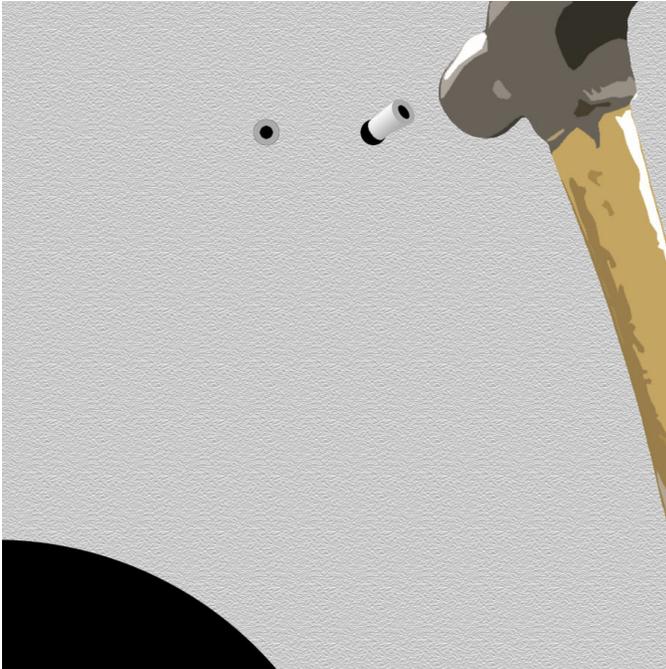
## Installation

Using the masonry drill bit provided with the meter, drill both holes to a depth that will fully accept the lag shields.



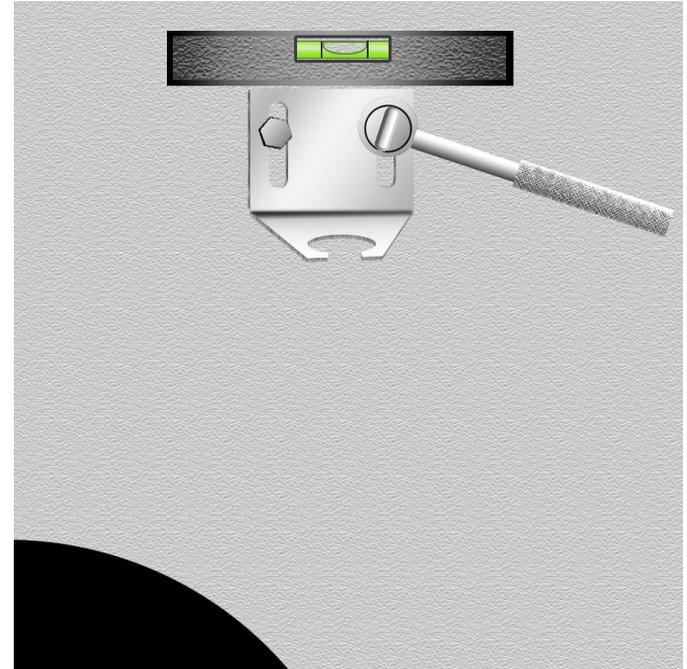
## Installation

Tap the lag shields flush to the wall.



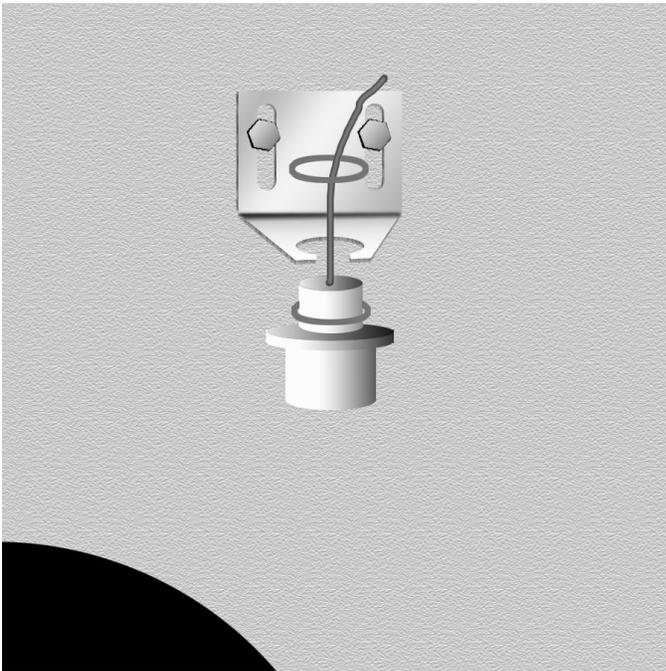
## Installation

Insert the lag screws through the mounting bracket and tighten them until they are snug.



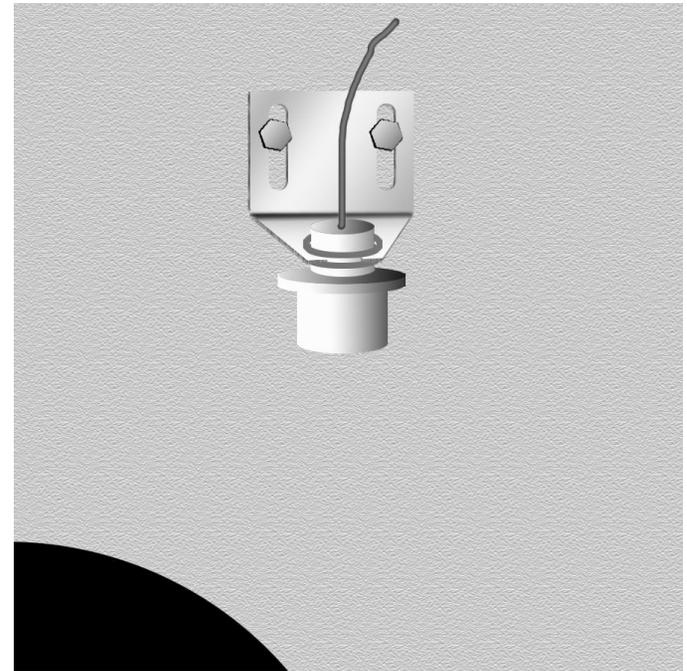
## Installation

Remove the top nut from the sensor and insert the threaded portion through the hole in the bracket.



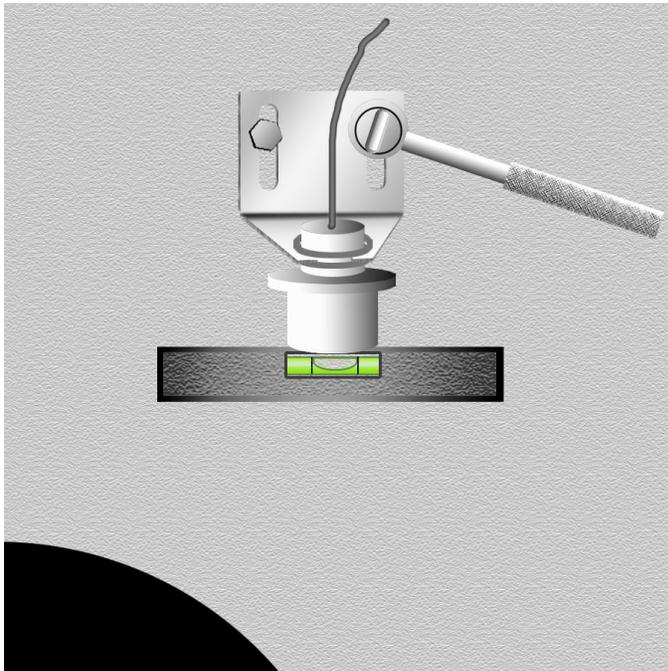
## Installation

Using the nut, attach the sensor to the bracket.  
**WARNING:** Do not over tighten nut to sensor.

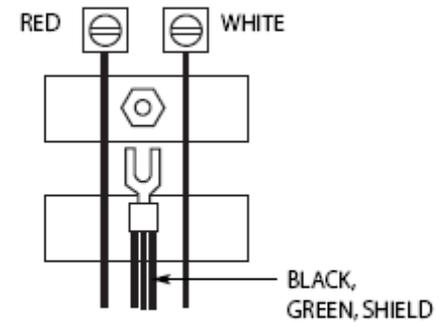


## Installation

Place a level on the face of the sensor and adjust the bracket until the sensor is level. Tighten the bolts firmly.



## SURCHARGE MONITOR CABLE CONNECTIONS



### Red Wire:

Strip wire approximately 1/4 to 3/8"

### White Wire:

Strip wire approximately 1/4 to 3/8"

### Black, Green and Shield Wires:

Strip black and green wire and crimp all three wires into the spade lug provided.



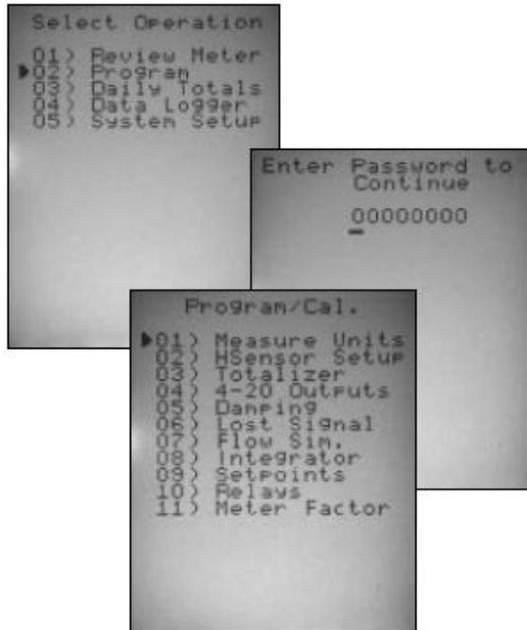
## >02) Program

Below is a quick overview of the menu system.

>01) Review Meter	⇩ENTER)	Displays the sensor mounting and programmed parameters.
>02) Program	01) Measure Units	To assign units of flow, velocity, temperature and measurement.
	02) (H)Sensor & Surcharge Monitor Setup	To set height (H) sensor frequency, distance, and temperature calibration.
	03) Totalizer	To set totalizer units and multiplier.
	04) 4-20 Outputs	To adjust, assign and scale the 4-20ma output and assign low flow shutdown.
	05) Damping	To adjust damping time.
	06) Lost Signal	To set lost signal time and "fail to" option.
	07) Flow Sim.	To test outputs at simulated area and velocity combinations.
	08) Integrator	To assign closure rates for the contact integrator.
	09) Setpoints	To set operating points for relays, alarms, recording rates...
	10) Relays	To assign relay activity.
	11) Meter Factor	Zero offset and meter factor adjustments.
>03) Daily Totals	⇐) Day 0 – 7	Display total for the last seven days.
>04) Data Logger	01) Set Time/Date	To set the time, day and date for logging functions.
	02) Storage Rate	To set logger storage interval.
	03) Secondary	To set secondary trip point storage interval.
	04) Log Channels	To assign logging values for up-to eight channels.
	05) Logged Graph	To define and view graphs of recorded data.
	06) Logged Data	To review recorded data.
	07) Amount Stored	To view the time of the last recorded value, number of records stored and remaining available.
	08) Clear Data	To clear recoded data.
>05) System Setup	01) Display	To adjust contrast and backlighting.
	02) Comm Ports	To set RS-232 and 485 baud rates, IDs, flow control and modem init string.
	03) Display Modes	To select alternate lines to display on the main screen.
	04) Totals Reset	To reset the totalizer.
	05) New Password	To change the password.
	06) Daily Tot Rst	To clear the daily summary.
	07) Sensor Option	To change the velocity sensors power and polarity.
	08) Meter Reset	To reset the meter to factory defaults.
	09) New Firmware	To upload new firmware to the meter.

## >02) Program

Programming parameters are password protected in order to prevent accidental or malicious changes. Initially the password is set to 00000000. The 02 program has eleven sub menus that provide access to critical system operations and calibration.



## SURCHARGE MONITOR

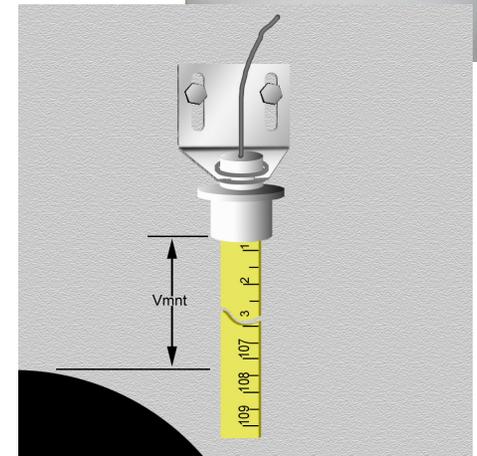
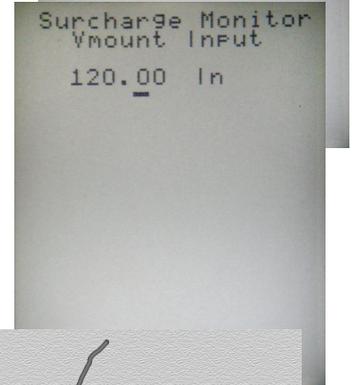
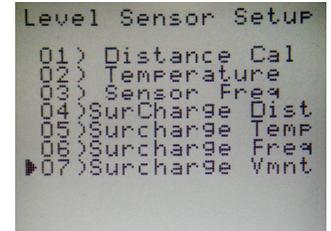
## >02) Program

**02) Surcharge Monitor Set-up:**  
From the MAIN SCREEN, press the MENU key then the number 02. Enter the password (default is 00000000) and press the ENTER key followed by 02).

*Note: On start-up 01) through 06) have been pre-programmed at the Factory. It is only necessary to input the Vmnt dimension for 07); this is the vertical distance from the crown of the pipe to the face of the level sensor.*

**07) Surcharge Vmnt:**  
To properly display the surcharge condition it will be necessary to enter the SM-15's vertical mount position. Select 07) from the Level Sensor Setup and enter the distance measured from the crown of the pipe to the face of the SM-15 sensor.

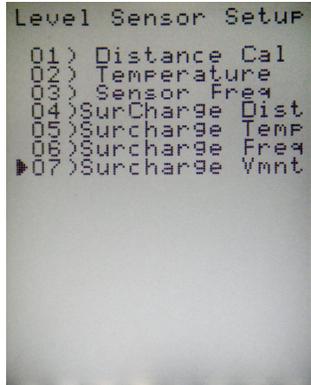
Press MENU and ENTER to store changes.



## RECALIBRATION (If Necessary)

### >02) Program

The Accuron 7200 series meters are pre-calibrated as a unit at the factory. There may be situations however that require recalibration of the Level or optional Surcharge sensor. To properly perform calibration it may be necessary to remove the head from the cartridge. Select 01) for distance calibrations. Press the left arrow (Near Distance). Place a target parallel to the face of the sensor at a distance from 12 to 36 inches. Make an accurate physical measurement of the distance from the face of the sensor. Using the up or down arrow keys, adjust the distance reading to equal the measurement distance. Press the right arrow (Far Distance) and repeat the process with an accurately measured target distance greater than 40 inches. Using the meter, measure the zero flow distance, making sure it matches the Vmnt (vertical mount) as displayed on the screen.



Press MENU and ENTER to store changes.

### >02) Program

#### 02) Temperature:

Temperature compensation is important to accuracy. To adjust the temperature select 02). The current reading will be displayed for reference. Enter the actual temperature as measured by an external device.

Press MENU and ENTER to store changes.

#### 03) Sensor Frequency:

To reduce the chance of a lost signal the appropriate frequency must be chosen. To optimize the frequency, select 03), and with a stationary target use the 1 and 3 keys to move the frequency up and down until the lowest gain is achieved.

Press MENU and ENTER to store changes.

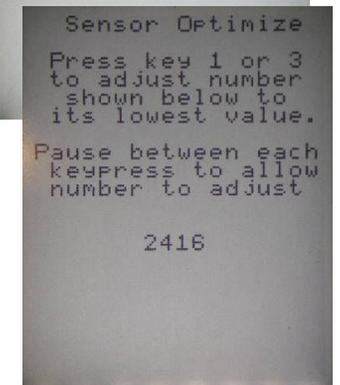
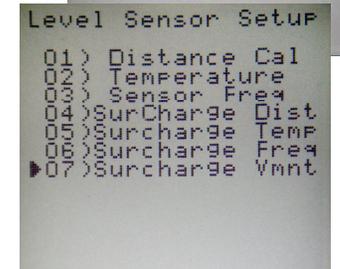
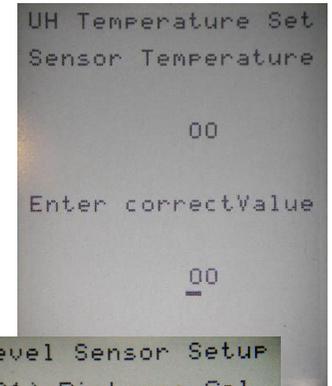
Each of the above steps can be repeated for the optional SM-15 Surcharge Monitor.

#### 04) Surcharge Distance

#### 05) Surcharge Temperature

#### 06) Surcharge Frequency

Press MENU and ENTER to store changes



INSTALLATION & OPERATING MANUAL

## Factory Assistance

For Technical Assistance, please call  
Eastech at **1-800-226-3569**