INSTALLATION &
OPERATING MANUAL

EASTECH

SCOPE

This manual contains information concerning the installation, operation and maintenance of the Accuron 7700. To ensure proper performance of the unit, the instructions should be thoroughly understood and followed.

Keep the 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 identify the sections in this manual where the changes have occurred.

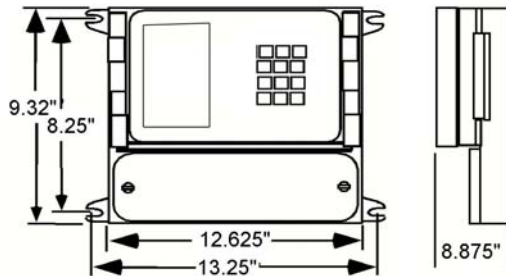# Accuron 7700
Table of Contents

GENERAL SPECIFICATIONS

Pipe Size Range (Up to 2 Chord)	Hotshot Style Sensors: 8" to >120" (using tapping saddles >15") Internal Wetted Sensors: 12" to >120"
Output	Three 4-20 mA DC isolated; 850 ohms max. Flow, Level and Velocity Three programmable relays, SPDT .25 amp @ 120 VAC, .5 amp @ 24 VDC. RS-232 Serial Port, 9600 – 38400 Baud, Modbus™ Protocol RS-485 Serial Port optically isolated, Modbus™ Protocol 12VDC, 100ma Maximum Data Logger & Software CD
Display	Backlit LCD, 160 x 128 pixel Graphic Module
Programming	Front panel mounted 24 button keypad..
Power	80/240 VAC, 50/60 Hz, or 12-24 VDC @ 350 mA continuous.
Accuracy	Low Flow: +/- 3 to 5% w/ flume, +/-5 to 7% w/Calibrated Manning Compound Flow: +/- 1.0% of actual flow

Sensor	Internal Wetted:
	   Temperature Range: -20° to 160° F (-30° to 70° C)
	
	   Operating Frequency: 320, 640 or 1280 KHz
	   Housing: PVC
	   Cable: 50 feet of Triaxial PVC coated Std.
	                          (1000 ft maximum) Belden 9222 or equal
	
	 Hotshot Wetted:
	   Temperature Range: -20° to 160° F (-30° to 70° C)
	   Operating Frequency: 320, 640 or 1280 KHz
	   Housing: 316s/s, PVC tip
	   Cable: 50 feet of Triaxial PVC coated Std
	                          (1000 ft maximum) Belden 9222 or equal

Electronic Enclosure	IP66/NEMA 4X standard, temperature range: -4° to 158° F (-20° to 70° C) Optional with heater, temperatures down to -40° F (-40°C)

Enclosure Mounting

The enclosure is rated IP 66 (NEMA 4X) and can be mounted indoors or out. A sunshade is recommended for outdoor installation. Openings used for the sensor and power must be properly prepared and sealed to maintain the rating. There are two stainless steel mounting brackets factory assembled to the enclosure. The mounting feet have slots for ¼" bolts (4 places). The electronics should be mounted with the display at eye level or lower. There are three ½" holes in the bottom of the enclosure for conduit fittings. These holes have rubber plugs installed at the factory. If you do not use all three holes for conduit, leave the rubber plugs in the holes to protect the enclosure ratings.

Opening the Enclosure:

There are two hinged door clasps on the front cover of the enclosure. To open, put thumb on one of the hinges, pull toward the outside of the enclosure. Once the hinge pops to the outside it will lower allowing the clasp at the bottom of the hinge to release. Swing the cover towards the front to open. The opposite side will act as a hinge to swing the door freely. To close, clasp the bottom side of the hinge and push the top of the hinge toward the enclosure until it locks.
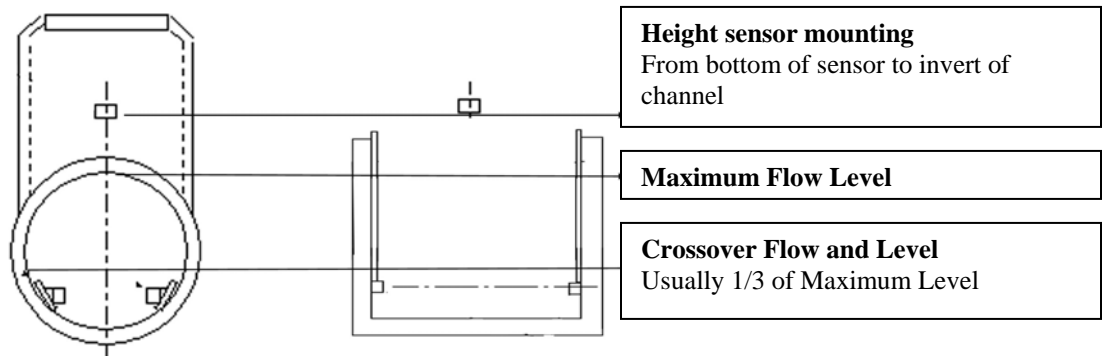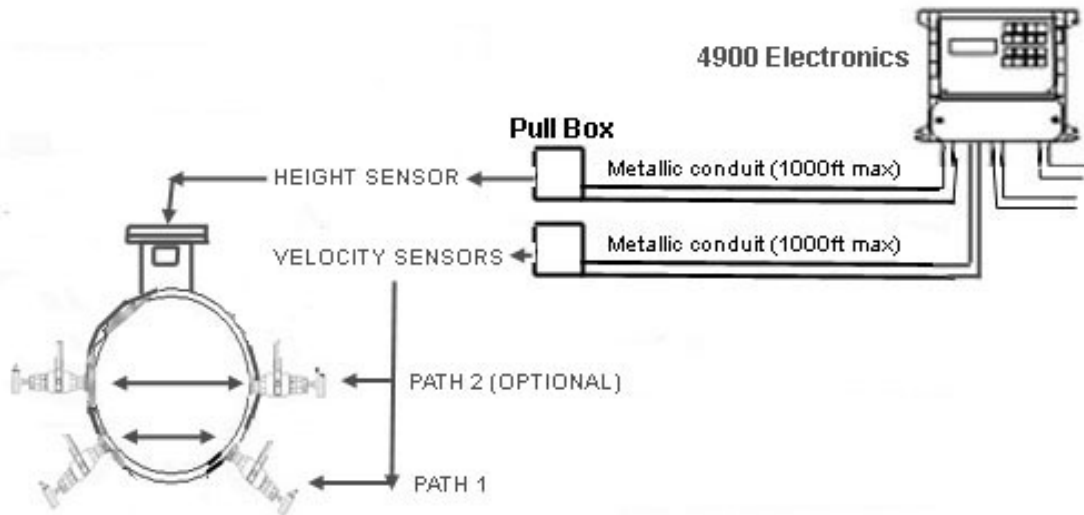
Hinge Lock and Optional Door Lock

There are two plastic gray plugs supplied with the Accuron 7700. These plugs may be used to permanently disable one side of the hinged handles. If an optional door lock was supplied with the unit then one side of the hinge handle should be plugged and the other side will have the key lock used. Either side hinge handle may be disabled. Insert the gray plug into the keyhole. **Warning: This will permanently disable the hinge handle.** The other side can be used for the key provided for the optional lock.
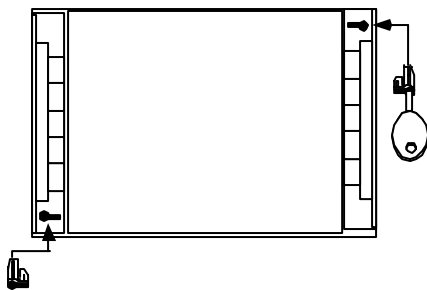
Note: The key will have to be left in the hinge handle if the door is to remain unlocked. The only way the key can be removed is if the hinge handle is locked.

7700 Recommended System Diagram

|	**Height sensor mounting** From bottom of sensor to invert of channel
	Maximum Flow Level
	Crossover Flow and Level Usually 1/3 of Maximum Level

Wiring Diagram

There are three terminal strips provided for all wiring of the Accuron 7700. The AC power terminal is separate from the other two terminal strips. The power terminal strip has three connections for High (Hot), Low (Neutral) and Ground for AC voltage only. Refer to the wiring diagram below for all internal wiring connections. The specifications for the load requirements for each input are on Page 1-2 General Specifications. The unit may also be powered with 12-24 VDC at TBB Terminals 1 (+) and 2 (-).
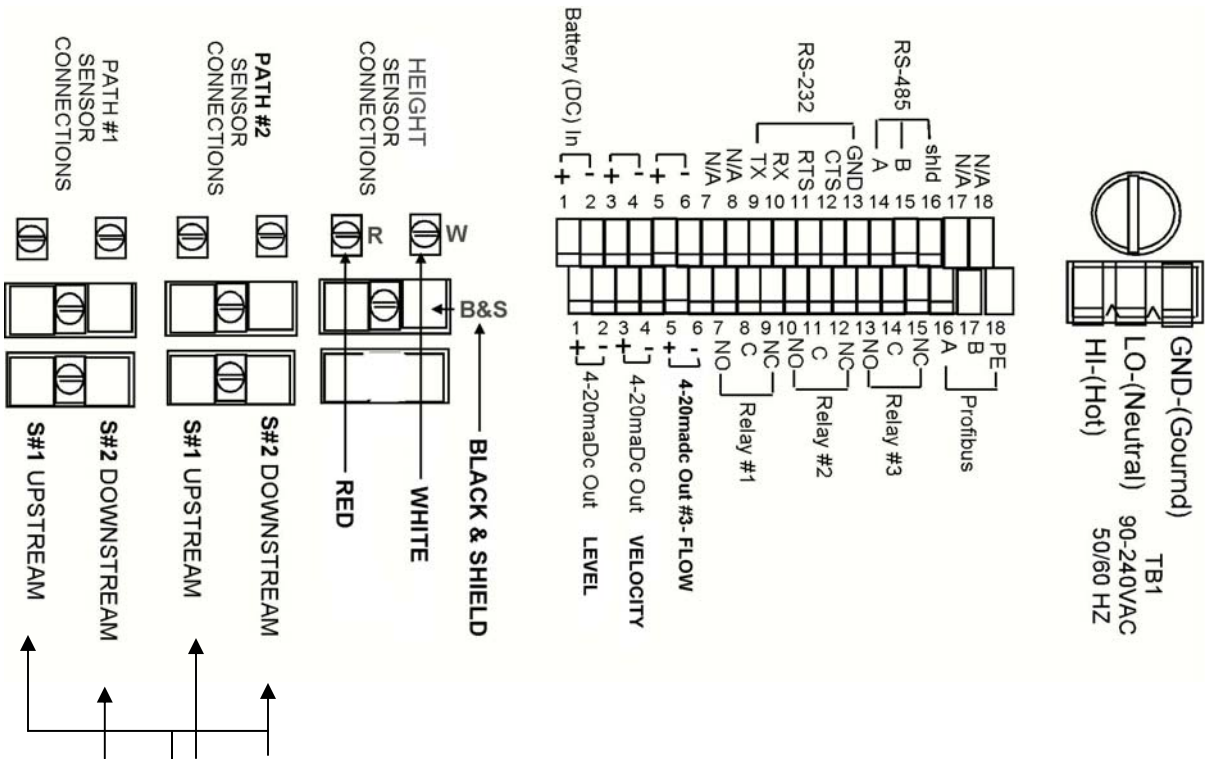

Sensor Cable Preparation
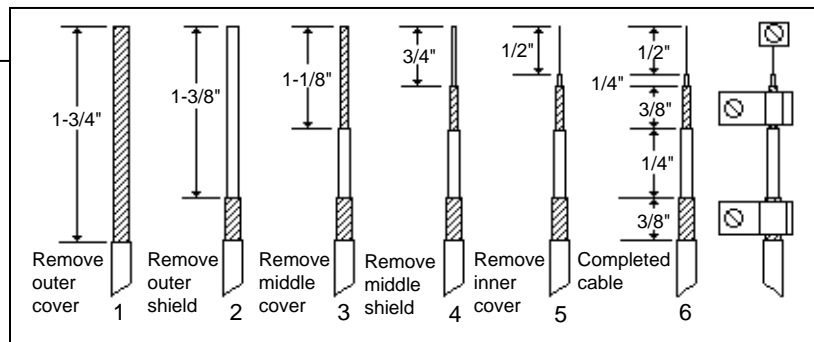
Sensor Cable Preparation

Sensor cable connections: Before pulling the sensor cables through the conduit, mark the ends of the cables to indicate the upstream and downstream sensor cables for each path. Leave approximately 8 inches of cable extending from the conduit in the enclosure. Prepare the cable ends in the following manner.

1. <u>Remove outer cable cover</u>. Measure 1-5/8" from the end of the cable. With a cutting tool, carefully cut through the outer covering completely around the cable making sure not to cut into the outer shield. Make another cut from the first cut to the end of the cable and remove the outer cover.

2. <u>Remove outer shield</u>. Measure 1-1/4" from the end of the cable with a pair of small cutters, cut the shield around the cable at the measured point and remove the cut off shield.

3. <u>Remove middle cover</u>. Measure 1" from the end of the cable. With a cutting tool, carefully cut through the middle covering completely around the cable making sure not to cut into the middle shield. Make another cut from the first cut to the end of the cable and remove the middle cover.

4. <u>Remove middle shield</u>. Measure 5/8" from the end of the cable. With a pair of small cutters, cut the shield around the cable at the measured point and remove the cut off shield.

5. <u>Remove inner cover</u>. Measure 3/8" from the end of the cable. With a cutting tool or pair of wire strippers, carefully cut the inner covering completely around the cable, making sure not to cut into the center conductor and remove the inner cover.

After the ends of the cables have been prepared, loosen the screws on the sensor inputs at the lower left corner of the PCB and remove the clamps. Take the upstream cable for path 1 and insert the center conductor into the top terminal of the upstream sensor and tighten the screw. Slightly pull on the cable to ensure the wire is secured to the terminal. Take the downstream cable for path 2 and insert the center conductor into the top terminal of the downstream sensor and tighten the screw. Slightly pull on the cable to ensure the wire is secured to the terminal. Repeat procedure for paths 2 and 3.

Place the two pair of clamps over the middle and outer shields and secure them into place. **Verify that the clamps are making good contact with the shields and that no wires of the shields are extending beyond their own clamp down area.**
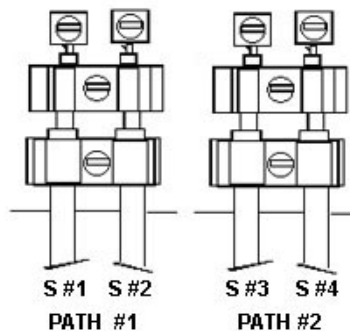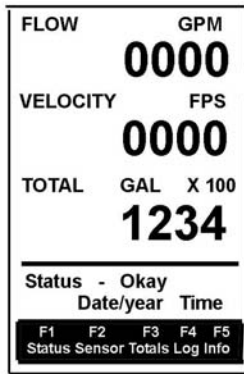
The screen at the right is the main screen for the Accuron 7700. It will display flow, velocity and totals. It will also give a status of the velocity signal crossing the pipe. An "Okay" signifies proper reception of the crossing signal. A "No signal" signifies that there are interruptions of the crossing signal and that the meter will not register flow.

There are also five "F" function keys to the right of the display. The displays below are obtained by simply pressing the appropriate function key.
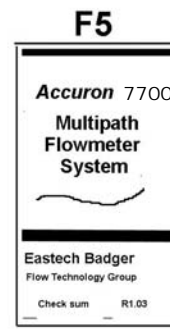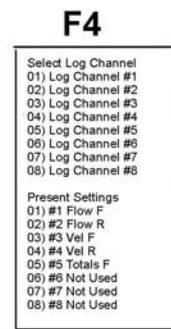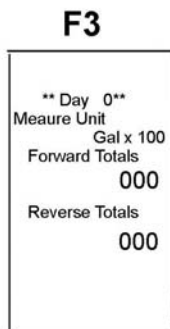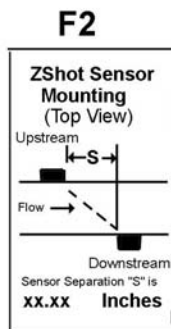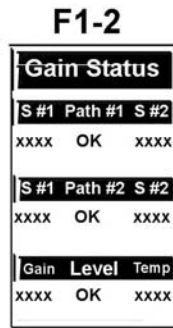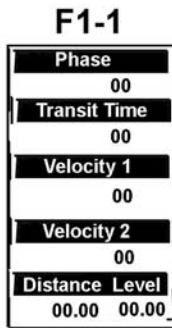
F1(screen 1)= Displays phase shift numbers, transit time numbers and the velocity for each path and the level of water in channel and the distance between the H sensor and the top of the water. Press F1 again.

F1 (screen 2) = Displays gain numbers for each sensor path and status of the appropriate path. Gain numbers should be between 650 and 1150. Hotshot and wetted sensors the gain will be lower (@650-800). This screen also displays the gain and temperature of the level sensor.

F1 (screen 3) = Displays alarms set and relays triggered.

F2= Displays the sensor separation for the meters programmed parameters.

F3= Displays the last eight days totalizer readings

F4= Displays a graph of the channels logged and the present settings for each of the available eight channels.

F5= Displays firmware revision and check sum numbers.

QuickCal Menu Functions

To program, recalibrate or change any function in the Accuron 7700 press the "Menu" key
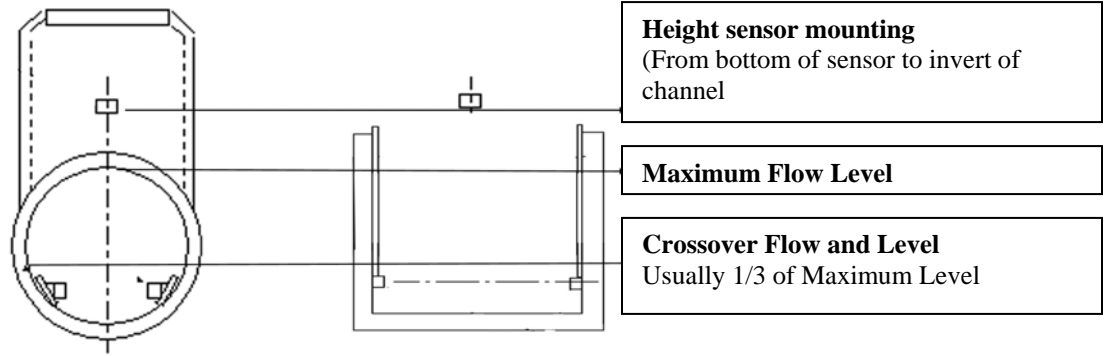This will display the Main Menu for all of the functions of the Accuron 7700QuikCal firmware. Below is a quick reference for the main menu and a brief description of each to allow the user to navigate to the required locations.

> MENU

>01) Review Meter	Selection of this will display the application set up parameters and sensor orientation (V, Z and W shot)) and the sensor separation that the meter is programmed.	
>02) Program	01) Measure Units	To assign engineering units for flow, velocity and measurement.
	02) Channel Setup	To calibrate pipe or channel parameters. (pipe ID or channel width), Velocity sensor type, Level sensor mounting, Cross over flow and level and Sensor installed cable lengths.
	03) H Sensor Setup	To program Height sensor type, Distance calibration and temperature.
	04) Totalizer	To select totalizer engineering units and multiplier.
	05) 4-20 Outputs	To adjust, assign and set full scale of the 4-20ma output and to assign low flow shutdown.
	06) Damping	To adjust damping time.
	07) Lost Signal	To adjust Lost signal time and Fail to zero or span.
	08) Flow Sim	Flow simulation
	09) Integrator	To assign closure for contact integrator.
	10) Setpoints	To assign setpoints. (e.g. Hi or Lo alarms)
	11) Relays	Relay assignment for all relays.
	12) Meter Factor	Zero offset & Meter Factor adjustments
>03) Daily Totals	01) Daily Totals	To review last eight days of totalized flows.
>04) Data logger	01) Set Time/date	To set the time and date for the Model 7700
	02) Storage Rate	To set logger storage intervals.
	03) Secondary	To set secondary trip point and time intervals.
	04) Log Channels	To set channels to log and values to log.
	05) View Data	To review logged channel history.
	06) Amount Stored	To review time, amount of data stored and amount left.
	07) Clear Data	To clear all stored logger data.
>05) System Setup		
	01) Display	To set display contrast and backlighting.
	02) Comm Ports	To set RS-232 & 485 communications and baud rates.
	03) Display Modes	To select display lines to be viewed on main screen.
	04) Totals Reset	To reset the totalizer.
	05) New Password	To change password.
	06) Daily Tot Reset	To clear daily summary.
	07) Sensor Option	To set sensor power from Normal to High or to change polarity of sensors.
	08) Meter reset	To reset the meter to factory (not customer) defaults.
	09) New Firmware	To upload new firmware into meter.

Accuron 7700 Terms

Height sensor mounting
(From bottom of sensor to invert of channel

Maximum Flow Level

Crossover Flow and Level
Usually 1/3 of Maximum Level

To enter the calibration mode press the "Menu" key.

>01) Review Meter: To review the application parameters and the sensor orientation that the meter is programmed for press the Menu key and then the 01 key. Press the "Enter" key and this screen will display "Program Parameters".
These are the parameters that the meter has been calibrated to.

Press the Enter key to return to the main menu.

>02) Program

01) Measure Units:
From the main screen press the **MENU** key, number **02**. Enter Security ID (00000000 from the factory), press **ENTER** key and number **01**.

Flow Units:
Select the flow engineering unit desired by pressing the number in front of the selection. Units available are:

```
Flow Units
01) GPM
02) GPD
03) MGD
04) CFS
05) CFM
06) CFD
```

01) GPM, gallons/minute	09) LPD, liters/day
02) GPD, gallons/day	10) MLD, million liters/day
03) MGD, million gallons/day	11) MS3, cubic meters/second
04) CFS, cubic foot/second	12) M3H, cubic meter/hour
05) CMF, cubic foot/minute	13) M3D, cubic meter/day
06) CFD, cubic foot/day	14) IGM, imperial gallons/minute
07) LPS, liters/second	15) BPH, barrels/hour
08) LPM, liters/minute	

The next screen will automatically appear after selecting the desired flow units:

Flow Display Format:

The Flow Display Format screen simply asks how many digits you want to show to the right of the decimal point. Press the number that corresponds to your selected value: 01) #, 02) #.#, 03) #.##. Example: GPM, #, will show a direct flow reading (e.g. 100 GPM).

Enter the number in front of the desired Flow Display format and the program will automatically display the Dimension Units screen.

Velocity Units:

The Velocity units will allow the user to select the velocity measurement units in 01) FPS feet per second or 02) MPS, meters per second.

Dimension Units:

The dimension units will allow the user to select the engineering measuring units desired to be selected. Available dimensional units are: 01) Inches, 02) Feet, 03) Meters, 04) Centimeters and 05) Millimeters.

After selecting the desired dimension units the program will automatically take you back to the Program/Cal. Screen.

Temp Units: 01) Celsius, 02) Fahrenheit

>02) Channel Setup:

To calibrate pipe or channel parameters (pipe ID or channel width), Velocity sensor type, Level sensor mounting, Cross over flow and level and Sensor installed cable lengths. From the main screen press MENU, 02, press Enter (or password) to pass the password screen and press 02. The first screen to appear is for programming the unit for the sensor type to be used.

Sensor Type:

NOTE: The Sensor Model numbers and operating frequencies are designated on the sensor itself. If you do not know the sensor type, look on the sensor tag.

Sensor Model:
01) **V20WT1-1280** is the new style hotshot wet tap style sensor and is 1280KHZ operating frequency.
02) **V20WT1-640** is the new style hotshot wet tap style sensor and is 640KHZ operating frequency
03) **V20WT1-320** is the new style hotshot wet tap style sensor and is 640KHZ operating frequency
04) **WFF-2 1280** is the internal wetted sensor for pipe sizes 12" – 36" and is 1280 KHZ operating frequency.
05) **WFF-2 640** is the internal wetted sensor for pipe sizes 12" – 36" and is 640 KHZ operating frequency.
06) **WFF-2 320** is the internal wetted sensor for pipe sizes 12" – 36" and is 320 KHZ operating frequency.
07) **WR-2 1280** is the internal wetted sensor for pipe sizes > 36" and is 1280 KHZ operating frequency.
08) **WR-2 640** is the internal wetted sensor for pipe sizes > 36" and is 640 KHZ operating frequency.
09) **WR-2 320** is the internal wetted sensor for pipe sizes > 36" and is 320 KHZ operating frequency.
10) **WFG-1 1280** is the wetted 2" flanged sensor and is 1280 KHZ operating frequency.
11) **WFG-1 640** is the wetted 2" flanged sensor and is 640 KHZ operating frequency.
12) **WFG-1 320** is the wetted 2" flanged sensor and is 320 KHZ operating frequency.
13) **HS3-1280** is the hotshot style sensor and is 1280 KHZ operating frequency.
14) **HS3-640** is the hotshot style sensor and is 640 KHZ operating frequency.
15) **HS3-320** is the hotshot style sensor and is 320 KHZ operating frequency.

After pressing the selected sensor style number desired, the program will automatically take you to the Channel Type screen.

Choose Channel Type:

This screen will allow the user to select the channel type and style for the application.

```
Choose Channel Type
01)Circular
02)Rectangular
03)Trapezoidal
04)Special
```

Select the channel type by pressing the numbers in front of selection desired.

Circular: Will require Pipe ID and Height sensor mounting dimensions

Rectangular: Will require channel Width and Height sensor mounting dimensions

Trapezoidal: Will require bottom Width of Channel.

Special: Special geometry channels.

Crossover:

The Crossover Level and Flow relates to the application flow and level at approximately 1/3 of the maximum level. The crossover flow and level numbers will be on the customer data sheet supplied with the meter. This level and flow must be higher than the level of the velocity sensors.

Once the crossover level and flow are entered press the enter key to go to Low flow equation screen.

Low Flow Equation Used:

The low flow equation as standard will be a calibrated Manning free flow equation. The low flow is used in the low flow regime which is the flow below the velocity sensors. It uses the height sensor functions for low flow. If there is a flume being used in for the low flows select the size and type of flume. Press enter to go to the cable length screen. Simply type in the cable lengths in this screen.

When finished programming all of the channel setup press the "menu" key then the "Enter" key to store changes.

>03 H Sensor Setup

To Program the unit for height sensor used, Distance Calibration for height sensor or to adjust the temperature press "Menu", 02) Program, press "Enter" past the password screen and then 03) for H sensor Setup.

01) Sensor used. Simply type the numbers in front of the sensor that was supplied with the unit.

02) Distance calibration. The dimension shown on the screen represents the distance between the bottom of the sensor and the target, (usually the top of the fluid). Measure the distance with a ruler from the bottom of the height sensor to the top of the water, if the distance displayed in this screen is different then adjust the dimension on the screen to match the measured distance.

03) Temperature, Set the temperature in this screen to actual temperature by the height sensor.

04) Sensor Frequency, Set the H sensor type that is installed.

Press the "menu" key and then the "Enter" key to store changes.

```
Totalizer Units:
   01) GAL
   02) MET3
   03) LTRS
   04) IGAL
   05) BARR
   06) CUFT
   07) ACFT
```

>04) Totalizer
Totalizer Units:

Select the Totalizer Units desired by pressing the number designation in front of the selection. Available totalizer units are:

GAL (gallons)   MET3 (cubic meters)   LTRS (liters)
IGAL (imperial gallons)   BARR (barrels)   CUFT (cubic feet)
ACFT (acre feet)

After pressing the selected totalizer engineering units desired the displayed totalizer multiplier screen will appear.

Totalizer Multiplier:
The Totalizer Multiplier screen will allow the user to select the multiplier for the totalizer that is to be displayed on the main screen. The multiplier choices are:
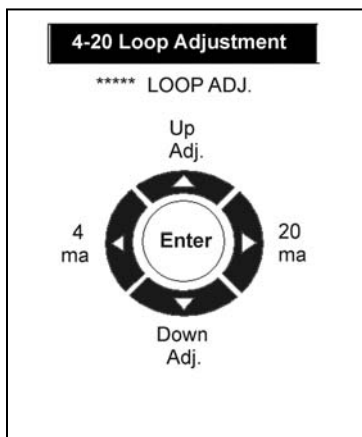
01) x .01   05) x 100
02) x .02   06) x 1000
03) x 1   07) x 10k
04) x 10

>05)4-20 Outputs:

This section will allow the user to:
01) Adjust Level output
02) Adjust Velocity output
03) Adjust Flow output

Select the 4-20 output desired to change by pressing the numbers in front of the selection.

4-20 Loop Adjustment

***** LOOP ADJ.

Up
Adj.

4
ma   Enter   20
ma

Down
Adj.

To adjust the 4-20 output, use the circular keypad. You must have a milliamp meter inline with the current output to adjust.
To adjust the 4.00 ma output, press the left arrow key to assign 4 milliamp adjustments. Then press the up arrow key to adjust the reading higher and the down arrow key to adjust the reading lower.
To adjust the 20.00 ma output, press the right arrow key to assign 20 milliamp adjustments. Then press the up arrow key to adjust the reading higher and the down arrow key to adjust the reading lower.
Press the "menu" key and then the "enter" key to store changes.

>06) Damping:

```
>06 Damping
```

This option will allow the user to select the damping or response time of the flow meter. Press the 06 on the keypad.

Output Damping Adjustment
To adjust the 4-20mA output damping press the 7 key. This will allow the user to adjust the damping time. The damping times available are:

01) None	04) 60 Seconds
02) 10 Seconds	05) 120 Seconds
03) 30 Seconds	

Enter the number in front of the desired damping time.

```
07 Lost Signal
```

>07) Lost Signal:

Lost Signal Setting

To adjust the Lost Signal Time: (This is how long the meter will hold the last value after losing the signal until failing to the Lost Signal 4-20 mA DC assignment).

To set the Lost Signal time, press the 07 key. The lost signal times available are:

01) 5 Seconds	05) 2 Minutes
02) 15 Seconds	06) 4 Minutes
03) 30 Seconds	07) 8 Minutes
04) 60 Seconds	08) 16 Minutes

After pressing the desired number, or ENTER key, the next screen to appear is the Lost Signal Action assignment. In this screen the user will select the default for the 4-20mADC output during a lost signal condition. The selections are:
    01) Fail to Zero
    02) Fail to Span
    03) Hold last value

Press the number desired, this will return to the main program screen.

>08) Flow Simulation:

```
>08 Flow Sim.
```

Flow Simulation
The flow simulation screen will allow the user to check the user to simulate flow. Press the MENU key to return to the main program screen.

>09)Integrator:

```
>09 Integrator
```

Integrator Setup
The next option in the program menu is the Integrator screen. To select this, press the 09. This screen will allow the user to assign the contact closure time for a contact integrator. The cursor will appear on the most significant digit. Use the number keys to enter the totalized flow value you want to have for a contact output. Press the ENTER key to return to the main program screen.

>10)Setpoints:

Programming Setpoints
This selection will allow the user to assign up to two setpoints for High or Low alarm conditions. Press the 10key to enter the setpoint selections. Press the 01) key for Setpoint #1. Press the 02) key for Setpoint #2. The next screen allows the user to assign the setpoint selected to velocity or flow. Press the

```
>10)Setpoints
```

01) key for Velocity and the 02) key for Flow. The velocity selection will be in the engineering units selected for velocity. The flow selection will be in engineering units selected for flow. The next screen will allow the user to input ON and OFF points for the setpoint selected. For Low alarm the ON value will be less than the OFF value. For High alarm the ON value will be greater than the OFF value. To program move the cursor to the left most significant digit by using the DOWN/LEFT arrow key. Enter the number desired by using the keypad. The cursor will advance to the right after the selection is entered. Press the ENTER key. The Setpoints must be assigned to a Relay.

>11 Relays:

Relay Assignment
The next option in the program menu is the Relays screen. To select this press 11 on the keypad. This option will allow the user to assign each of the three relays to the following selections:

```
>11 Relays
```

01) None	04) Setpoint #3	07) Reverse Flow	10) Cont In
02) Setpoint #1	05) Lost Signal	08) Fwd Total	
03) Setpoint #2	06) 4-20 Loop	09) Rev Total	

Press the number in front of the selection desired on the keypad.

>03) Daily Totals

```
┌─────────────────────┐
│  >04) Data Logger   │
│                     │
│                     │
│                     │
└─────────────────────┘
```

This function will allow the user to review the totalized values for the last eight days. Press 03 on the keypad to access the Daily Totals screen.

Press the ENTER key to return to the main program menu.

This concludes the Daily totals selections.

>04) Data Logger

The next selection in the program menu is the data logger selection. There are five selections in the data logger menu.

01) Set Time/Date: Press the UP key to move the arrow to the date or time that is to be changed. Press the number value on the key pad to change. Note the time is entered and viewed as military time.

02) Storage Rate: This will allow the user to select the storage rate for the logging. Selections are:

01) 1 minute	03) 10 minute	05) 30 minute
02) 5 minute	04) 15 minute	06) 60 minute

03) Secondary: This will allow the user to select a secondary log rate to store logging at a different interval than the main interval. This may be used to store at faster intervals during storms or flow events. The selections available are:

01) Not active   02) Setpoint #1   03) Setpoint #2   04) Setpoint #3

If set points are selected then the next screen will be storage rate times available.

04) Log Channels: There are up to 8 channels available for logging. The selections for each channel are:

01) Not Used	04) Flow 1	07) Total 2	10) Flow1+Flow2
02) Velocity 1	05) Flow 2	08) Alarms	11) Vel1-Vel2
03) Velocity 2	06) Total 1	09) Flow1-Flow2	

05) Logged Graph: View logged data in graphic form for each of the eight channels available to log. Select the channel to be viewed by pressing the number on the keypad. Press the UP or DOWN key to scroll through the data.

06) Logged Data: To review logged data for each channel programmed.

07) Amount Stored: View the logger time and time to store, amount of logging stored and the amount of free space to store.

08) Clear Data: Press the 5 key to clear all stored data.

This completes the Data Logger selections.

>05) System Setup

The system setup option will allow the user to set up the Accuron 4700 for the following options:

>05) System Setup

01) Display: Choosing this feature allows the user to select the contrast of the display from 01) Highest to 08) Lowest. This feature also allows to display the back light, to turn it off or to program for a timed "off" of the display if the key pad is not touched in a selected time interval.

02) Com Port: This option will allow the user to set the baud rate, flow control and slave I.D.s of the RS-232 and RS-485 communications.

03) Display Modes: This option will allow the user to select the four display lines to be viewed on the main screen during operation. The options for the display lines are:
  01) Display Mode 1: Flow, Velocity, Forward Totalizer and Status
  02) Display Mode 2: Flow, Velocity, Forward and Reverse Totalizer and Status

04) Totals Reset: This option will reset the totalizer to zero. Press 5 to begin.

05) New Password: This option will allow the user to change the password to enter into the QuikCal programming.

06) Daily Tot Reset: This clears the Daily Totals memory.

07) Sensor Option: 01) Sensor Power. This screen will allow the user to use Normal or a High transmit power. Most strap-on sensors will use high power and the windowed spool sensor will use low power.
02) Sensor Polarity: This screen will allow the user to change the polarity of the sensors. If the wiring of the upstream and downstream sensor have been inadvertently reverse during installation choose the Reversed sensor polarity in this screen instead of rewiring the sensors.

08) Meter Reset: This option will reset all parameters to the factory defaults.

09) New firmware: This option will allow the user to upload any new firmware to the latest revision.

This completes the System Setup function menus in the 4700 structure.

WARRANTY

Eastech Flow Controls warrants meters and parts manufactured by it and supplied hereunder to be free from defects in materials and workmanship for a period of 18 months from date of shipment. If within such period any meters or parts shall be proved to Seller's satisfaction to be defective, such meters or parts shall be repaired or replaced at Seller's option. Seller's obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Seller's receiving written notice of any alleged defect within 10 days after its discovery and, at Seller's option, return of such meters or parts f.o.b. to Seller's factory. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES WHATSOEVER INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES (EXCEPT OF TITLE) OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Eastech Flow Controls shall not be liable for any defects attributable to acts or omissions of others after shipment, nor any consequential, incidental or contingent damage whatsoever.

A claim for equipment damaged in transit is the sole responsibility of the customer.

NUCLEAR DISCLAIMER

Equipment sold by Eastech Flow Controls is not intended for use in connection with any nuclear facility or activity unless covered by a specific quotation where the conditions of such usage will be detailed. If equipment is used in a nuclear facility or activity without a supporting quotation, Eastech Flow Controls disclaims all liability for any damage, injury or contamination, and the buyer shall indemnify and hold Eastech Flow Controls, its officers, agents, employees, successors, assigns and customers, whether direct or indirect, harmless from and against any and all losses, damages or expenses of whatever form or nature (including attorney's fees and other costs of defending any action) which they, or any of them, may sustain or incur, whether as a result of breach of contract, warranty, tort (including negligence), strict liability or other theories of law, by reason of such use.

7700 Manual Supplemental
Programming Analog Inputs

The Vantage 7700 electronics is available with an option of up to two external analog inputs. The analog inputs may be assigned for redundant level, redundant velocity or an Independent input. The two analog inputs may also be programmed to be data logged with the onboard Eastech data logger.

Redundant level: an external level device may be used as a back up for the primary ultrasonic height sensor in the 7700 systems. If the primary ultrasonic height sensor loses signal for any reason the redundant level sensor may be used for the flow calculations.

The external redundant measurement unit must have a 4-20mA output and be ranged to the same level and engineering units as the primary device if used as a redundant measurement.

Redundant Velocity: an external velocity device may be used as a back up for the primary transit time velocity sensors in the 7700 systems. If the primary ultrasonic velocity sensors lose signal for any reason the redundant velocity sensor may be used for the flow calculations.

The external redundant measurement unit must have a 4-20mA output and be ranged to the same velocity and engineering units as the primary device if used as a redundant measurement.

Independent: Any 4-20mA may be input into the unit and be logged on the data logger. This input will be separate and totally independent of the calculated flow of the 7700. Example of this input could be a rain gauge, a temperature gauge or a separate flow meter in the immediate vicinity.

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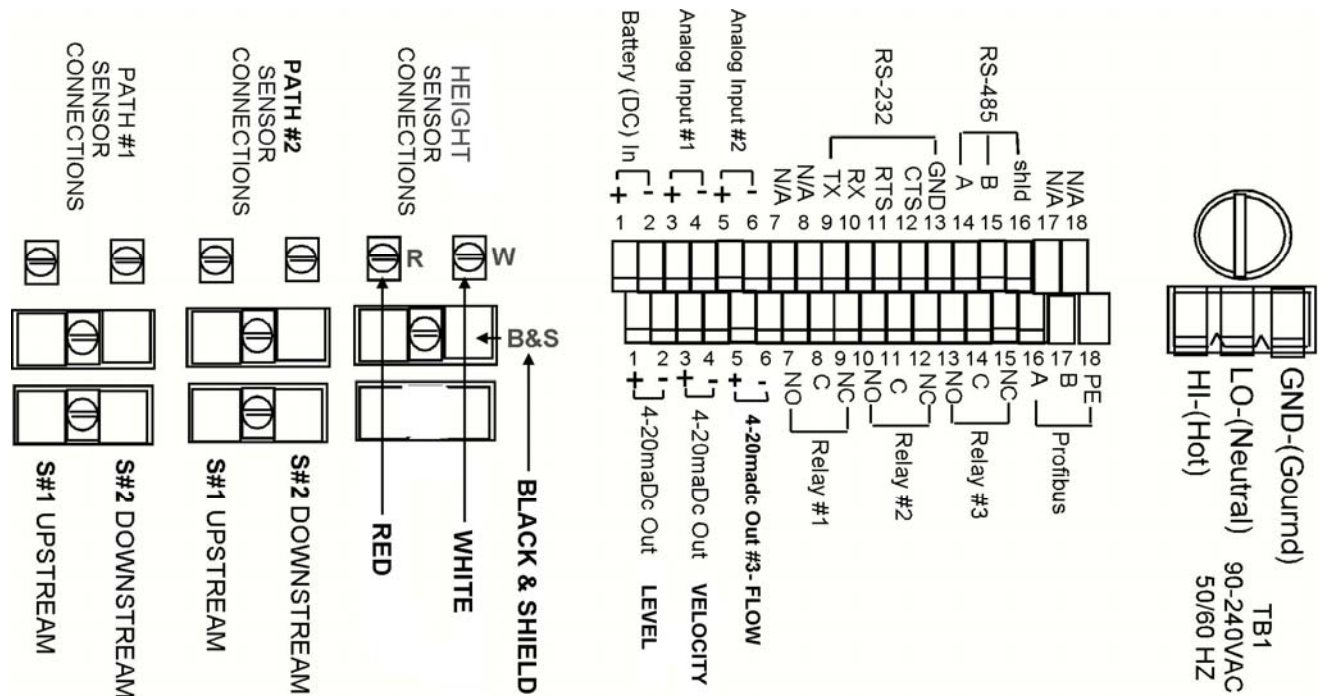
Wiring of Analog Inputs:

Top Row of Terminal strip:
Analog Input Channel #1, (+) is #3,   Analog Input Channel #1, (-) is #4
Analog Input Channel #2, (+) is #5,   Analog Input Channel #2, (-) is #6

To Program the Analog Input Channels:
Press the Menu key, the 05)System Setup keys, Enter pass the password then press 10)Analog Input.
The Analog Input screen will allow the user to assign one or both channels for the desired operation.
Press 01 to assign Channel #1
Press 02 to assign Channel #2
Press 03 to Calibrate Channel #1
Press 04 to Calibrate Channel #2

Assigning Channel #1 or Channel #2

The selections for Assigning the two channels are:
01)Not enabled, This selection is to disable the 4-20mA inputs. Not enabled is the factory default for the analog inputs.
02)Level Redunt. This selection should be selected if the redundant input is to be used for the backup level device. If this selection is programmed then the following screen will ask the user to input the Analog Input Fullscale Level. The external level device should be programmed with the same maximum level and engineering units as the ultrasonic height sensor used in the 7700.
03)Vel Redunt. This selection should be selected if the redundant input is to be used for the backup velocity device. If this selection is programmed then the following screen will ask the user to input the Analog Input Fullscale Velocity. The external velocity device should be programmed with the same maximum velocity and engineering units as the transit time sensors used in the 7700.
04)Independent. This selection should be selected if the input analog channel is not used for any flow calculations but the input is to be data logged. If this selection is programmed then the following screen will ask the user to input the Analog Input Fullscale Value.
This value will be the full scale value for the 20ma. The linear equivalent will be displayed in the logger function for the Channel used.

After programming any of the above selections press the Menu key and then the "Enter" key to store any changes.

To Program the Data Logger for Analog Inputs

To program the Data logger to log the input values for the analog inputs for Channel #1 or Channel #2 press. Menu, 04)Data Logger, press "Enter" pass the password screen then 04)Log Channels.
There are eight channels available for data logging in the 7700 data logger.
A review of the channels and the present settings is also displayed.
Once selecting a channel to be logged.
Press the numbers in front of the Log Channel desired. Log Channel #1 would be 01), etc.
Select:
11)Analog 1 for Analog Channel #1
12)Analog 2 for Analog Channel #2

Press Menu and then "Enter" to store the changes.

To view the Analog Input Values

To view the instantaneous values of the Analog Input Channels:
From the main screen, Press the F1 key three times.
This screen will display Alarms Set, Relays Energized and the Analog Inputs.
The Analog Inputs for Ch #1 and Ch #2 are displayed as the maximum value that is programmed for the channel.
Example: Channel #1 programmed for level. Maximum level programmed is 60 inches.
The displayed value will be 0 to 60 inches. So at 12.00mA input the displayed value would be 30 inches.
To return to the main menu press the F1 key.

This completes programming of the Analog Input Options.