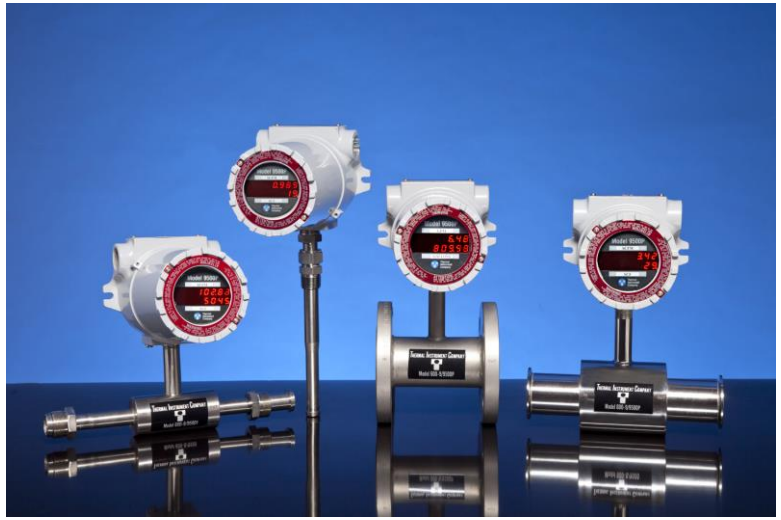
2015
Integral Electronics with Local Menu System



THERMAL INSTRUMENT COMPANY

Trevose, PA

215-355-8400

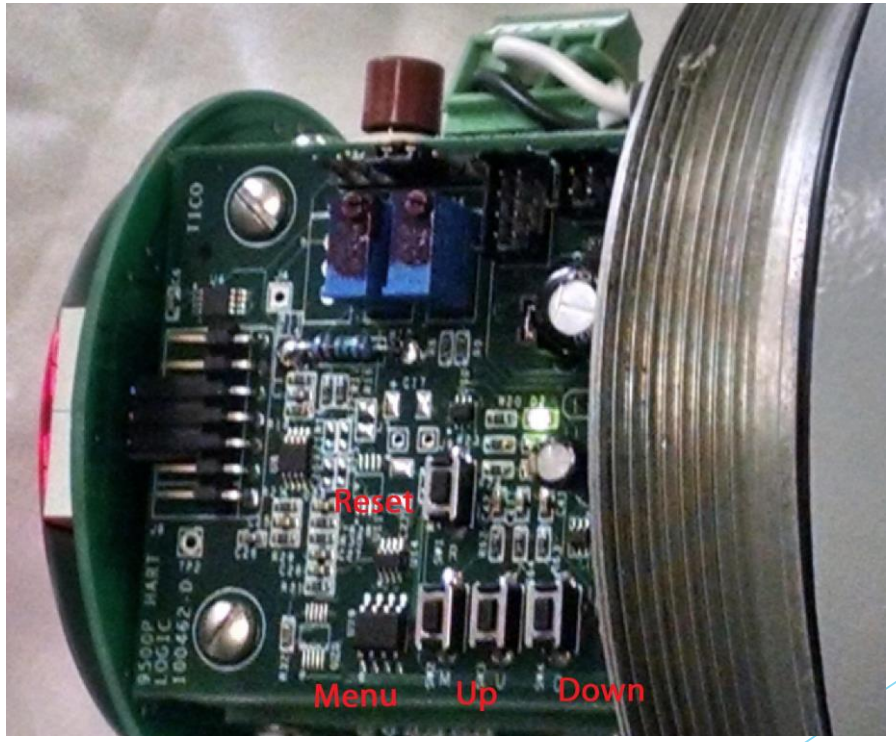
New Menu Features & Benefits

- Available with either Hart Communication or Modbus output
- Visibility to current factory settings
- Ability to change:
  - Filter Factor
  - Zero Cutoff %
  - Flow Factor (K)
  - 20 mA Output
  - Pipe ID
  - Modbus Slave ID (If Modbus equipped)*

* For Demonstration purposes a slave value of 1-16 is displayed. Live production will allow for 255 slave values.

New Features & Benefits (Cont.)

- NEW - 4 Button Menu System
  - Consisting of:
    - Reset Button
    - Menu Button
    - Up Button
    - Down Button
- NEW - Reset Totalizer Command
  - Hold Menu & Up Buttons while pressing Reset Button. Release Reset Button until Display resets.



Instructions

- Unscrew and remove lid. Logic board is on right side.
- Parameters can be viewed or changed using the Menu System. Content within the menu system is arranged in levels which are usually a category of items, or items which are the meter parameters.
- There are four buttons on the Logic board which are used to navigate the menu system. These buttons are labeled:
  - S1 R – This button is the Reset button, it resets the micro-controller or exits the menu system.
  - S2 M - This button is the Menu button, it is used to enter the menu system, select a level, item or parameter and save changes. Changes are saved by pressing and holding the button for about 3 seconds.
  - S3 U – This button is the Up button and is used to increment the level, item or parameter value.
  - S4 D – This button is the Down button and is used to decrement the level, item or parameter value.

Instructions (cont.)

- The menu system is entered by a single short press of the M button. The menu system will start in the level selection mode and the number 1 will be blinking in the upper display. A blinking number indicates that a selection has not yet been made. The level can now be changed by pressing the U or D buttons. Once the number representing the desired level is present in the display, that level can be selected by a single press of the M button.
- The item or parameter can now be changed by pressing the U or D button. Once the desired item or parameter is displayed, it can be saved by again pressing the M button. The display format of items and parameters is different depending on which level had been previously selected.
- When both the correct level and item have been selected, the item value can be saved by pressing and holding the M button until the meter resets.
- Once a level, item, or parameter is selected, that selection cannot be changed. If an incorrect value has been selected the only way to recover is to press the R button and reset the micro-controller and start over.

Instructions (Cont.)
Considerations when entering a floating point number

- The K Factor, Full scale 20 Ma and Pipe ID numbers operate somewhat differently than the other settings. Each number is entered one digit at a time. Each digit can be a 0 to 9 or a 0. to 9. or digits without or with a decimal point.. When digits are selected by pressing the up button, the first 10 do not have the decimal point and the second 10 digits have a decimal point
- For instance if the value 6.25 has to be entered the 6. would be entered by pressing the U button 15 times. When the desired value is on the display the M button is pressed. Now the U button would be pressed 2 times to display a 2 in the next digit location. The M button is again pressed to select the 2. Then the U button would be pressed 5 times to indicate a 5 on the third digit and again the M button is pressed. The display now reads 6.25, since this is the value to be saved, the M button is pressed and held down until the meter resets. The new value is now permanently saved.

Description of Levels & Items

Level 1 – Display Meter Info

- Item 1 View S/N
- Item 2 View Firmware Version
- Item 3 View Build Number
- Item 4 View Filter Factor
- Item 5 View Zero Cutoff %
- Item 6 View Flow Factor
- Item 7 View Flow 20 MA
- Item 8 View Pipe ID
- Item 9 View ModBus Slave ID
- Item 10 View Meter Multiplication (Factory Set)

Level 2 – Fixed Output Current

- Item 1 Set 4 Ma
- Item 2 Set 8 Ma
- Item 3 Set 12 Ma
- Item 4 Set 16 Ma
- Item 5 Set 20 Ma

Description of Levels & Items (cont.)

Level 3 - Read Internal Voltage

- Item E1 View +24 Voltage
- Item E2 View +5.3 Voltage
- Item E3 View Excitation Voltage
- Item E4 Not Used

Level 4 – Change Filter Factor

- Item = 0 - no filter
- Item = 1 - 1/16 second
- Item = 2 - 1/8 second
- Item = 3 - 1/4 second
- Item = 4 - 1/2 second
- Item = 5 - 1 second
- Item = 6 - 2 second
- Item = 7 - 4 second
- Item = 8 - 8 second
- Item = 9 - 16 second
- Item = 10 - 32 second
- Item = 11 - 1 minute
- Item = 12 - 2 minute
- Item = 13 - 4 minute
- Item = 14 - 8 minute
- Item = 15 - 16 minute
- Item = 16 - 32 minute

Description of Levels & Items (cont.)

- Level 5 – Change Zero Cutoff %
  - Item = % Full Scale (Display Cutoff Factor)
- Level 6 - Change Flow Factor (K)
  - Item = .4 to 2.0 (Contact Factory for factor numbers)
- Level 7 – Change 20 mA Full Scale
  - Item = Full Scale Value (float)
- Level 8 – Change Pipe ID
  - Item = Pipe ID (float)

Description of Levels & Items (cont.)

- Level 9 – Change Modbus Slave ID (If Modbus equipped)
  - Item = Modbus Slave ID - 1 to 16
- Level 10 – View only - Meter Multiplication (Factory Set)
  - View Only Totalizer Value
- **Modbus Standard Factory Configuration: (Use TI Parameter Setup Software to Change if necessary)**
  - **Modbus Slave ID = 1**
  - **Baud Rate = 9600**
  - **Byte /Word (Float) = Normal**
  - **Parity = 8 Data, 1 Stop, Even**