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
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.
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.
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