## METER PROGRAM GUIDE (Software Rev. DD.3.0)

### USER INTERFACE & ALPHANUMERIC DISPLAY

There are three push button switches immediately below the display on the front panel of the System-10 BTU meter or D-100 Display. The function of each switch is detailed in the table below.

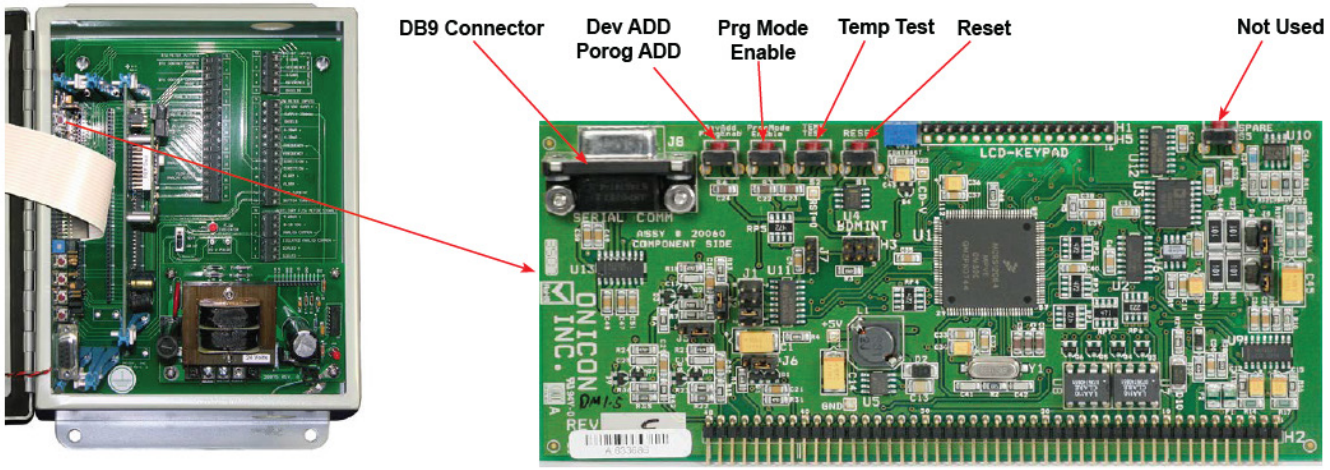
| Name | Symbol | Function |
|---|---|---|
| SCROLL |  | PROGRAM MODE: TOGGLES PARAMETERS<br>RUN MODE - ADVANCES TO THE NEXT DISPLAY PAGE |
| RESET |  | PROGRAM MODE: MOVES CURSOR<br>RUN MODE - (IF ENABLED) ZEROES GALS, BTU |
| PROGRAM |  | PROGRAM MODE: ADVANCES TO THE NEXT DISPLAY PAGE<br>RUN MODE - CHANGES USER INTERFACE MODE TO DEVICE ADDRESS ENTRY OR PROGRAM IF ENABLED |


The alphanumeric display provides two lines of information. The top line consists of 8 large numeric characters. The bottom line displays 16 smaller alphanumeric characters.

During normal (run mode) operation, the top line indicates the current numeric value and the bottom line displays the associated engineering units and scaling multiplier. When operating in the program mode, the top line of the display indicates “PPPPPPPP”.

Shown below is a view of the enclosure with the door open. Also shown is a detailed view of the computer board. Two push button switches located on the computer board are used when programming. Their name, label and function are detailed in the table below.

| Name | Label | Function |
|---|---|---|
| RESET | RESET | Resets the MCU and restarts the program |
| PRG MODE ENABLE | PRG MODE ENABLE | Enables the Program mode to be entered when the appropriate front panel switch is pressed. |




Computer Board (HC12) for System-10 / D-100

## ENTERING THE PROGRAM MODE

The user can enter the program mode by first pressing the PROGRAM MODE ENABLE switch located on the computer board and then pressing the PROGRAM button on the front panel.

In the program mode, pressing the PROGRAM button located on the front panel advances the program mode menu pages. If no button is pressed for 5 minutes, the meter will return to the run mode without saving any changes made to the program.

## SYSTEM-10

**1 Protocol**

Selects option: N2, BNET, MODB (This page does not display for P1 Systems)

**2 Mode**

Selects option: DUAL, SINGLE, BIDIR

Next Menu Page

**3 Model #**

The following options will set the display for energy calculation (System-10)

Selects option: **F-1100, F-1200, F-1300, F-2000Water, F-3100Pulse, F-3100Analog, F-3500Pulse, F-3500Analog, Pulse, Analog, *Flow-Pulse, *Flow Analog, *BTU-STEAMP and *BTU_STEAMA**

Next Menu Page:

***Flow-Pulse, *Flow Analog**: will set the meter as D-100.

Continue to page 10 if you selected these options.

***BTU-STEAMP, *BTU_STEAMA**: Please contact ONICON for guidance if you need to select these options.

***CAUTION***
***The System-10 and D-100 are capable of providing up to four analog outputs (optional). Analog outputs are programmed at the factory based on the displayed engineering units and multipliers. Changing any of the displayed units or multipliers will affect the analog outputs. If any unit or multiplier values are changed at the meter, the analog output value(s) will also be changed. If you are unsure of the ramifications of any changes you are contemplating, please contact ONICON for assistance.***

**4A F-1300 series, F-3100Pulse, F-3500Pulse, Pulse**

**4B F-3100Analog, F-3500Analog, Analog F-2000Water**

**4B-1 FlowMTR UNITS**

Selects option: GPM, GPH, MGD, L/S, L/M, L/H, M3H, PPH, KPH, CFS, CFM

Next Menu Page

**4B-2 FLMAX** (=20mA)

Increments Digits: 0-999,999

Moves Cursor

**4B-3 FLTRH**

Next Menu Page

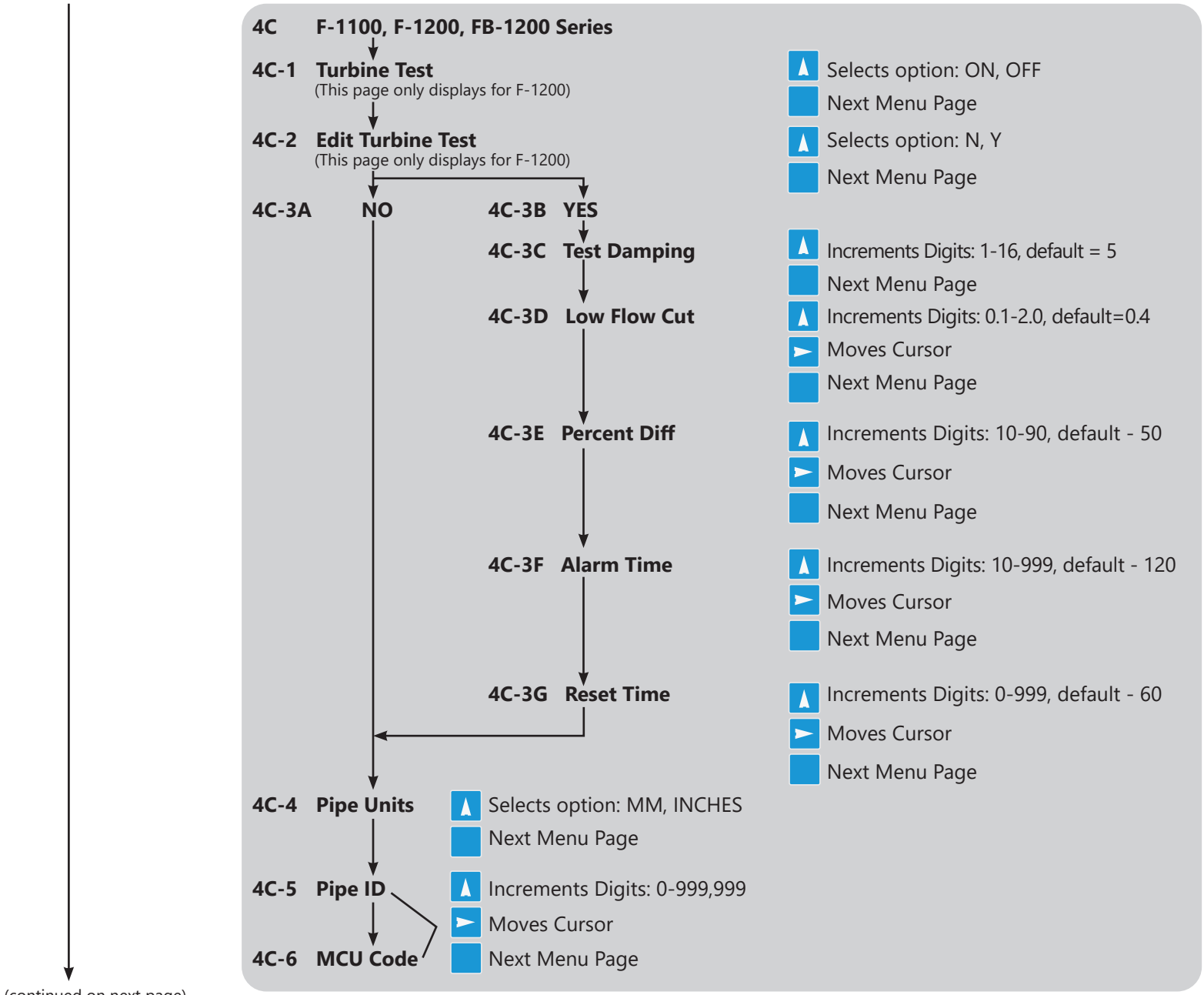
**4C F-1100, F-1200, FB-1200 series (Cont'd on Page 4)**

***IMPORTANT NOTE***
***FLMAX is the full scale value of the analog flow signal. This is defined by the flow meter 4 – 20mA output connected to the System-10.***
***Example: 4 – 20mA flow meter output = 0 – 10,000 GPM, FLMAX = 10,000 GPM.***

***FLTRH is the minimum flow rate the System-10 will respond to. The System-10 will display to flow rate values below this threshold as zero flow. ONICON Recommends that this value be set to value equal to 0.005 x FLMAX.***
***Example: 4 – 20mA flow meter output = 0 – 10,000 GPM, FLTRH = (10,000 GPM x 0.005) or 50 GPM.***

(continued on next page)

SYSTEM-10




(continued on next page)

## SYSTEM-10

**5 MTR FCTR**
(Meter Factor)
On Later Versions: MFAC
- Increments Digits: 000.000 - 999.999
- Moves Cursor
- Next Menu Page

**6 Vol Rate**
- Selects option: GPM, GPH, MGD, L/S, L/M, L/H, M3H, PPH, KPH, CFS, CFM
- Next Menu Page

***IMPORTANT NOTE***
***MGD = Million Gallons per Day***

**7 GPM X 1**
- Selects option: 1, 10, 100, 1K, 10K, 100K, 1MEG
- Next Menu Page

**8 Vol Total**
- Selects option - GALLON, LITER, MTR3, LBMASS, KILOGM, FT3
- Next Menu Page

**9 Gallon X 100**
- Selects option: 1, 10, 100, 1K, 10K, 100K, 1MEG
- Next Menu Page

**10 Damping SEC**
- Selects option: 1-16, increments of 1
- Next Menu Page

**11 Energy Rate**
- Selects option: BTU/HR, TON, KW
- Next Menu Page

**12 BTU/HR x 1**
- Selects option: 1, 10, 100, 1K, 10K, 100K, 1MEG
- Next Menu Page

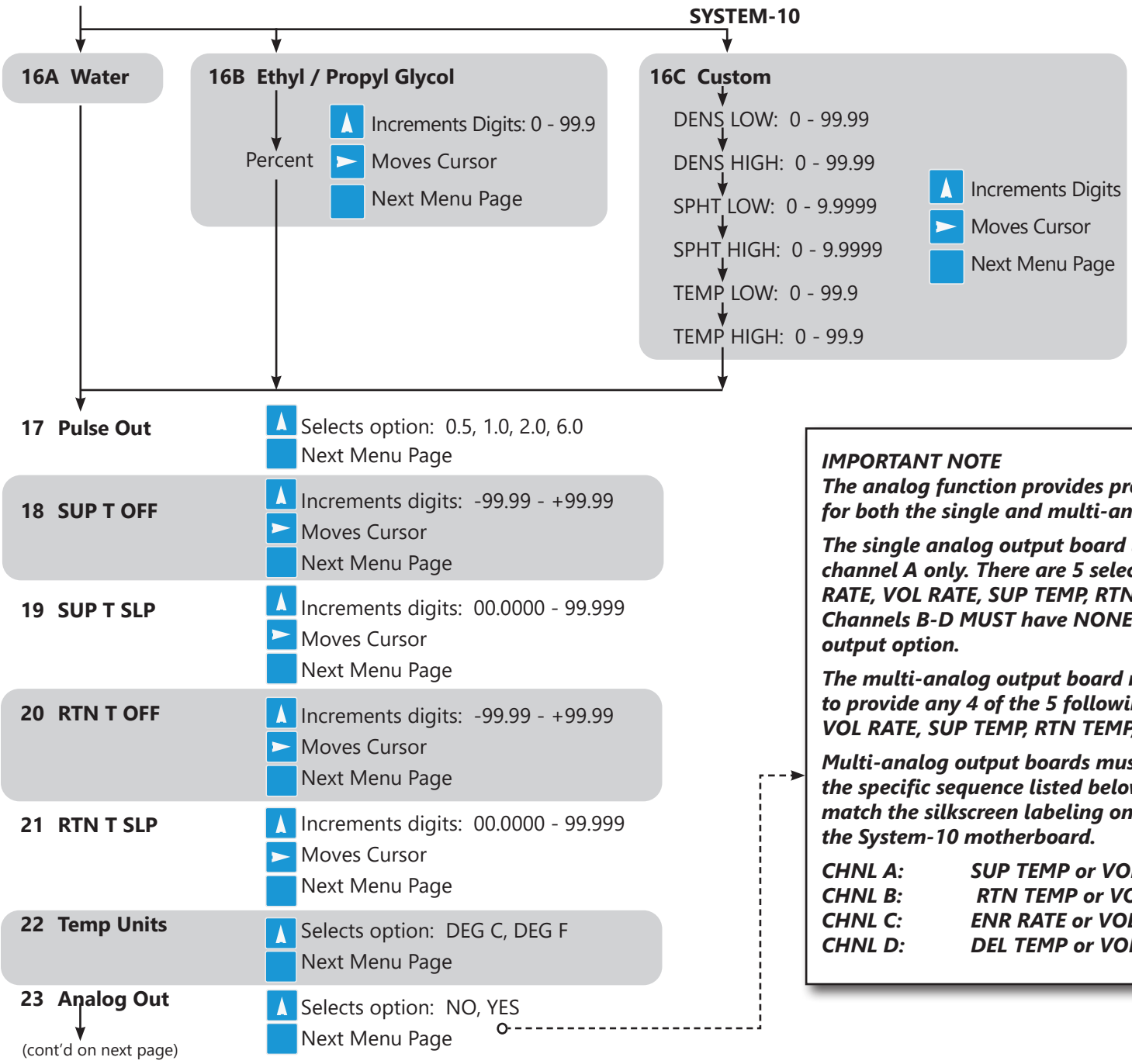
**13 ENERGY**
- Selects option: BTU, TON HR, KWHR
- Next Menu Page

**14 BTU x 1**
- Selects option: 1, 10, 100, 1K, 10K, 100K, 1MEG
- Zero total (when enabled)
- Next Menu Page

**15 Medium**
- Selects option: Water, Ethyl / Propyl Glycol, Custom
- Next Menu Page

***IMPORTANT NOTE***
***Ethyl / Propyl Glycol setting is used for either Ethylene Glycol or Propylene Glycol***

(cont'd on next page)




***IMPORTANT NOTE***

***The analog function provides programming options for both the single and multi-analog output boards.***

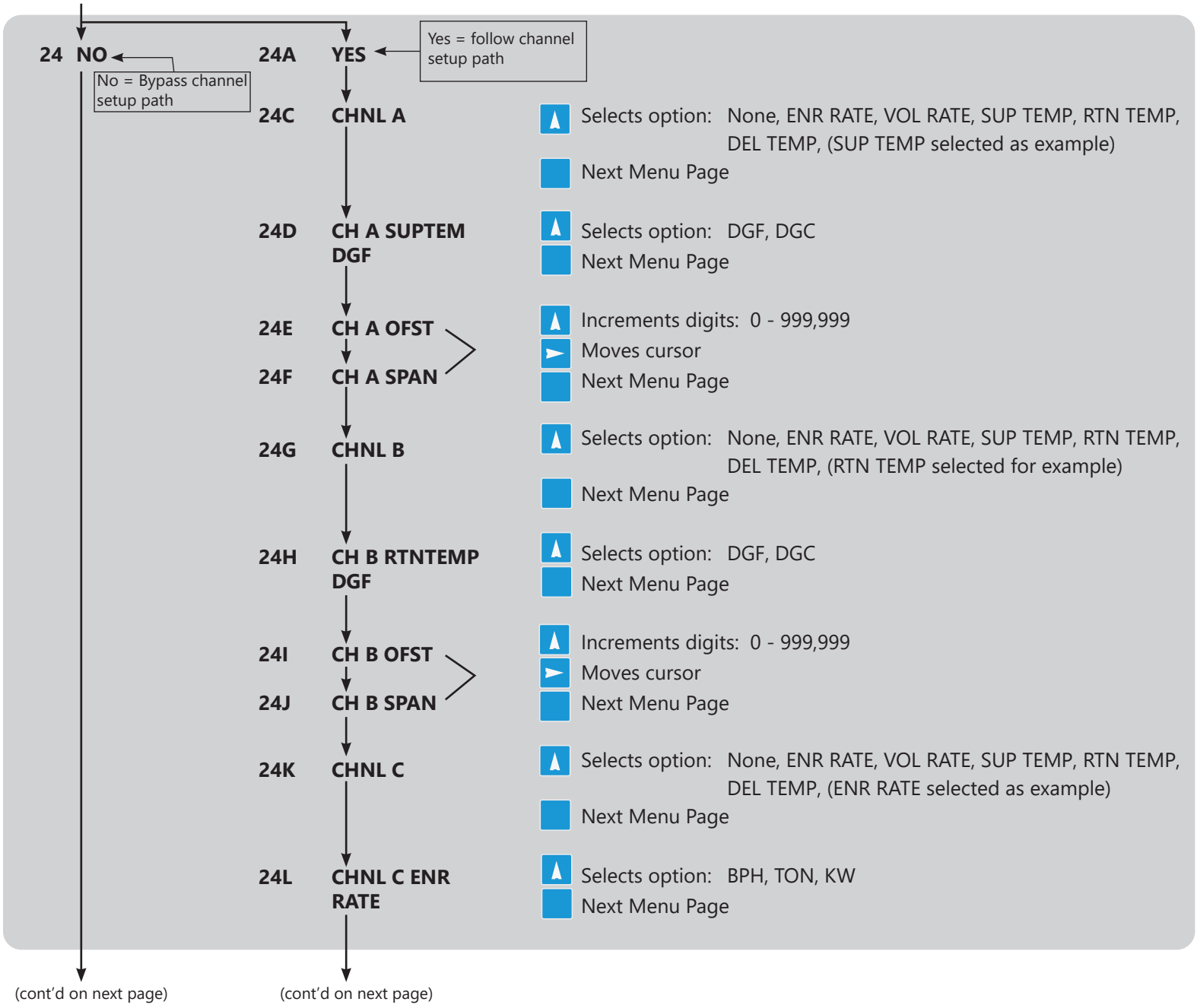
***The single analog output board is programmed on channel A only. There are 5 selectable options: ENR RATE, VOL RATE, SUP TEMP, RTN TEMP, DEL TEMP. Channels B-D MUST have NONE selected as the output option.***

***The multi-analog output board may be programmed to provide any 4 of the 5 following options: ENR RATE, VOL RATE, SUP TEMP, RTN TEMP, DEL TEMP.***

***Multi-analog output boards must be programmed in the specific sequence listed below. This is required to match the silkscreen labeling on terminal block T1 of the System-10 motherboard.***

| | |
|---|---|
| ***CHNL A:*** | ***SUP TEMP or VOL RATE*** |
| ***CHNL B:*** | ***RTN TEMP or VOL RATE*** |
| ***CHNL C:*** | ***ENR RATE or VOL RATE*** |
| ***CHNL D:*** | ***DEL TEMP or VOL RATE*** |

## SYSTEM-10

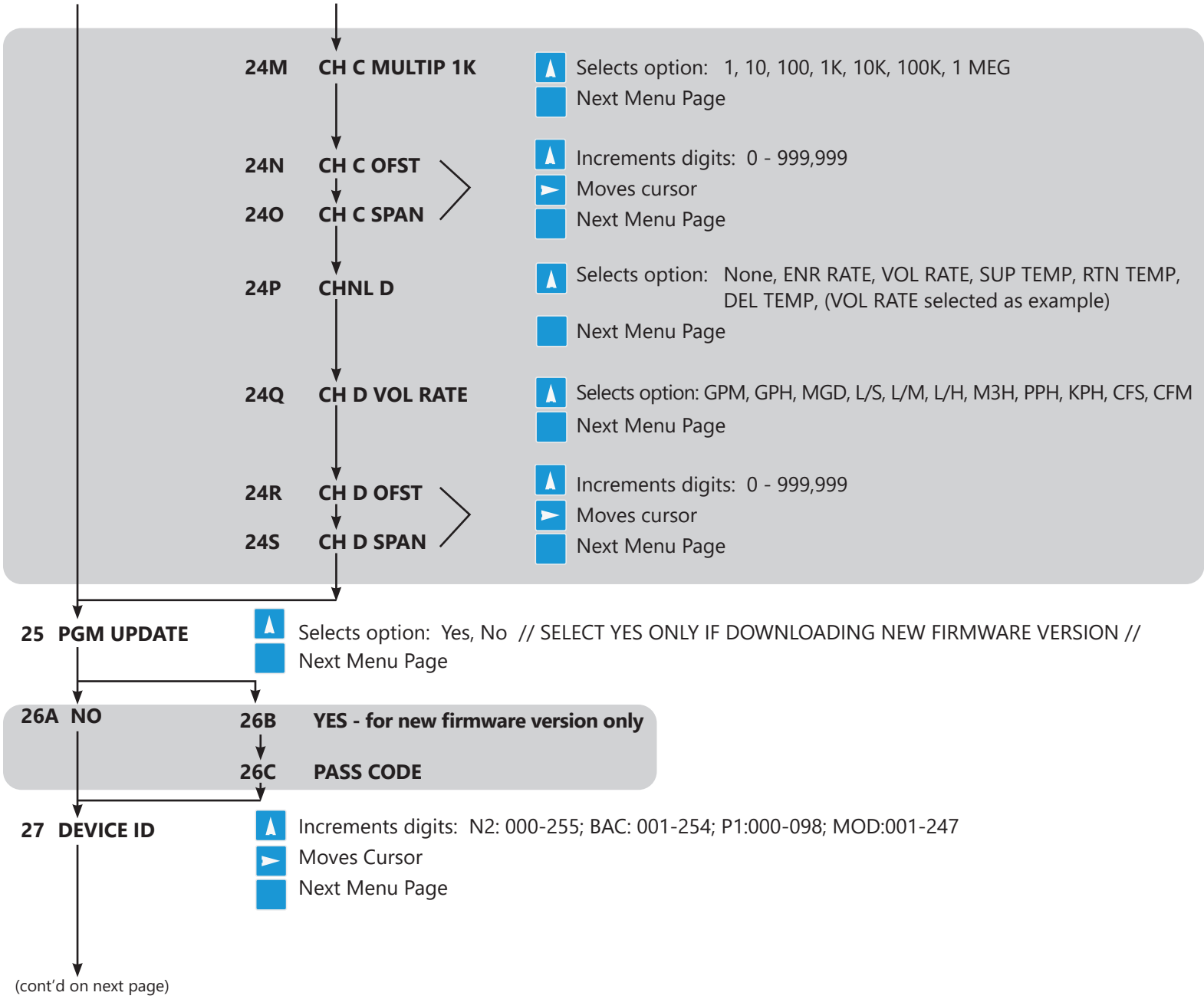



***IMPORTANT NOTE***
***The setup options for CH A will not appear if "NONE" is selected for CHNL A. The menu will skip to 24G "CHNL B"***

***IMPORTANT NOTE***
***The setup options for CH B will not appear if "NONE" is selected for CHNL B. The menu will skip to 24K "CHNL C"***

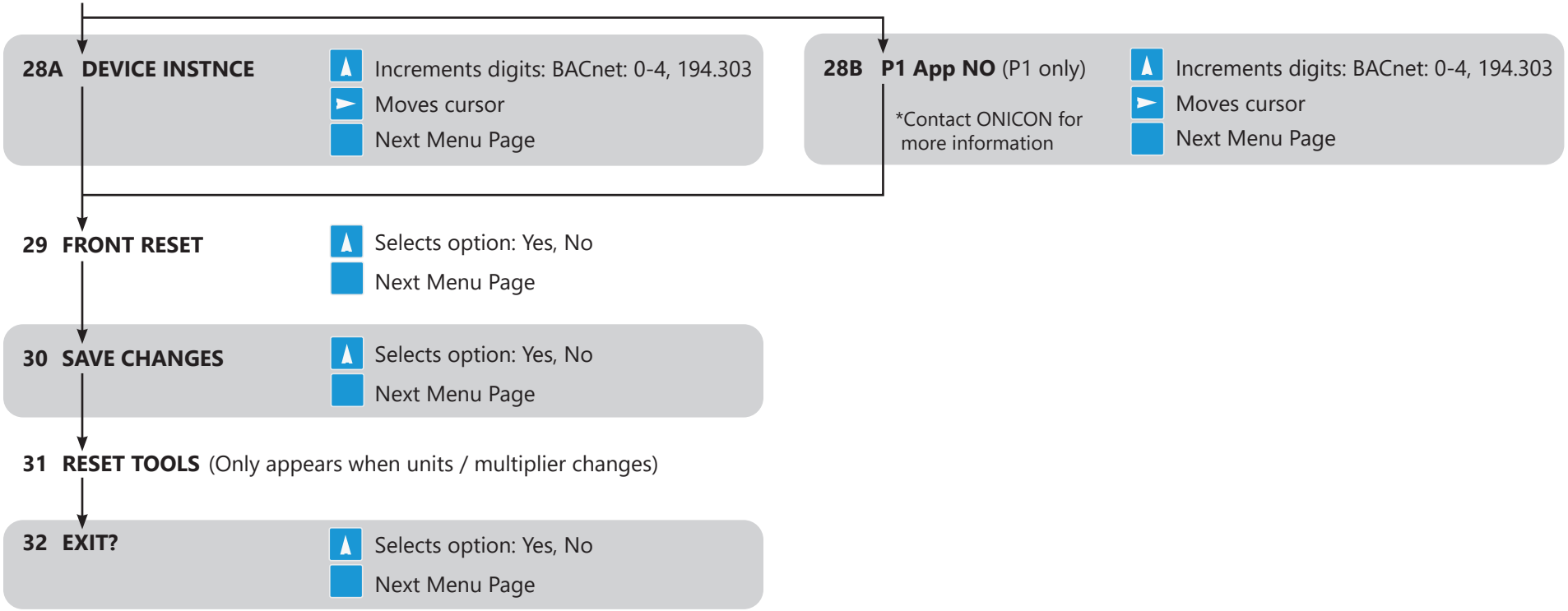
***IMPORTANT NOTE***
***The setup options for CH C will not appear if "NONE" is selected for CHNL C. The menu will skip to 24P "CHNL D"***

## SYSTEM-10




***IMPORTANT NOTE***
***The setup options for CH D will not appear if "NONE" is selected for CHNL D. The menu will skip to 25 "PGM UPDATE"***

**SYSTEM-10**


28A DEVICE INSTNCE
Increments digits: BACnet: 0-4, 194.303
Moves cursor
Next Menu Page
28B P1 App NO (P1 only)
*Contact ONICON for more information
Increments digits: BACnet: 0-4, 194.303
Moves cursor
Next Menu Page
29 FRONT RESET
Selects option: Yes, No
Next Menu Page
30 SAVE CHANGES
Selects option: Yes, No
Next Menu Page
31 RESET TOOLS (Only appears when units / multiplier changes)
32 EXIT?
Selects option: Yes, No
Next Menu Page

## D-100 FLOW-PULSE OR FLOW-ANALOG

(cont'd from Note 1 on page 3)

**4A FLOW-PULSE**

**4A-1 MFAC PPG (pulses per gallon)**

- Increments digits: 000,000 - 999,999
- Moves cursor
- Next Menu Page

**4B FLOW-ANALOG**

**4B-1 FLOWMTR UNITS**

Selects option: GPM, GPH, MGD, L/S, L/M, L/H, M3H, PPH, KPH, CFS, CFM, SCFM, SCFH, NCMH

Next Menu Page

**4B-2 FLMAX (=20mA)**

**4B-3 FLTRH**

**5 VOL RATE**

- Selects option: GPM, GPH, MGD, L/S, L/M, L/H, M3H, PPH, KPH, CFS, CFM
- Next Menu Page

**6 GPM x 1**

- Selects option: 1, 10, 100, 1K, 10K, 100K, 1MEG
- Next Menu Page

**7 VOL TOTAL**

- Selects option: GALLON, LITER, MTR3, LBMASS, KILOGM, FT3
- Next Menu Page

**8 GALLON x**

- Selects option: 1, 10, 100, 1K, 10K, 100K, 1MEG
- Next Menu Page

**9 DAMPING**

- Increments digits: 1-16, default = 5
- Moves cursor
- Next Menu Page

**10 PULSE OUT**

- Selects option: 0.5, 1.0, 2.0, 6.0
- Next Menu Page

(cont'd on next page)

***IMPORTANT NOTE***
***MGD - Million Gallons per Day***

***IMPORTANT NOTE***
***FLMAX is the full scale value of the analog flow signal. This is defined by the flow meter 4 – 20mA output connected to the System-10. Example: 4 – 20mA flow meter output = 0 – 10,000 GPM, FLMAX= 10,000 GPM.***

***FLTRH is the minimum flow rate the System-10 will respond to. The System-10 will display to flow rates values below this threshold as zero flow. ONICON Recommends that this value be set to value equal to 0.005 x FLMAX. Example: 4 – 20mA flow meter output = 0 – 10,000 GPM, FLTRH = (10,000 GPM x 0.005) or 50 GPM.***

## D-100 FLOW-PULSE OR FLOW-ANALOG

**11 AI3 OFF**
- Selects option: 4mA or 0mA Value for device connected to AI3
- Next Menu Page

**12 AI3 SPAN**
- Selects option: 20mA Value for device connected to AI3
- Next Menu Page

**13 A13 UNITS**
- Selects option: DEG G, DEG C, PSI, BAR, KPASCL, GPM, L/S, M3H, CFS, CFM, KBTU/H, KW, TON, %RH, SCFM, SCFH, NCMH, None
- Next Menu Page

**14 AI4 OFF**
- Selects option: 4mA or 0mA Value for device connected to AI4
- Next Menu Page

**15 AI4 SPAN**
- Selects option: 20mA Value for device connected to AI4
- Next Menu Page

**16 AI4 UNITS**
- Selects option: DEG G, DEG C, PSI, BAR, KPASCL, GPM, L/S, M3H, CFS, CFM, KBTU/H, KW, TON, %RH, SCFM, SCFH, NCMH, None
- Next Menu Page

**17 ANALOG OUT**
- Selects option: Yes, No (NO = BYPASS CHANNEL SETUP)
- Next Menu Page

***IMPORTANT NOTE***
***AI3 OFF and AI4 OFF is the value of the 4 mA or 0 mA output defined by the sensor connected to the AI3 input of the D-100. Example: 4-20 mA flow meter output = 50 - 10,000; AI3 OFF = 50.***

***AI3 and AI4 Span is the value of the 20 mA output of the meter connected to the AI3 input, minus the offset. Example: 4-20 mA flow meter ouptut = 50 - 10,000; AI3 Span (10,000 - 50) = 9,500.***

***IMPORTANT NOTE***
***The analog function provides programming options for both the single and multi-analog output boards.***

***The single analog output board is programmed on channel A only and any of the following 4 options may be selected: DI2, AI2, AI3, AI4.***

***The multi-analog output board may be programmed to provide all four options: DI2, AI2, AI3, AI4.***

**17A NO (Bypass setup)**

(cont'd on next page)

**17B YES**

**17C CHNL A**
- Selects option: DI2, AI2, AI3, AI4
- Next Menu Page

**17D CH A UNITS**
- Selects option: Automatically sets units depending on input selected.
- Next Menu Page

**17E CH A OFST**
- Increments digits: 0 - 999,999
- Moves cursor
- Next Menu Page

**17F CH A SPAN**

(cont'd on next page)

***IMPORTANT NOTE***
***The setup options for CH A will not appear if "NONE" is selected for CHNL A. The menu will skip to 17G "CHNL B"***

## D-100 FLOW-PULSE OR FLOW-ANALOG

**17G CHNL B**
- Selects option: DI2, AI2, AI3, AI4
- Next Menu Page

**17H CH B UNITS**
- Selects option: Automatically sets units depending on input selected.
- Next Menu Page

**17I CH B OFST**
- Increments digits: 0 - 999,999
- Moves cursor

**17J CH B SPAN**
- Next Menu Page

***IMPORTANT NOTE***
***The setup options for CH B will not appear if "NONE" is selected for CHNL B. The menu will skip to 17K "CHNL C"***

**17K CHNL C**
- Selects option: DI2, AI2, AI3, AI4
- Next Menu Page

**17L CH C UNITS**
- Selects option: Automatically sets units depending on input selected.
- Next Menu Page

**17M CH C OFST**
- Increments digits: 0 - 999,999
- Moves cursor

**17N CH C SPAN**
- Next Menu Page

***IMPORTANT NOTE***
***The setup options for CH C will not appear if "NONE" is selected for CHNL C. The menu will skip to 17O "CHNL D"***

**17O CHNL D**
- Selects option: DI2, AI2, AI3, AI4
- Next Menu Page

**17P CH D UNITS**
- Selects option: Automatically sets units depending on input selected.
- Next Menu Page

**17Q CH D OFST**
- Increments digits: 0 - 999,999
- Moves cursor

**17R CH D SPAN**
- Next Menu Page

***IMPORTANT NOTE***
***The setup options for CH D will not appear if "NONE" is selected for CHNL D. The menu will skip to 18 "PGM UPDATE"***

## D-100 FLOW-PULSE OR FLOW-ANALOG