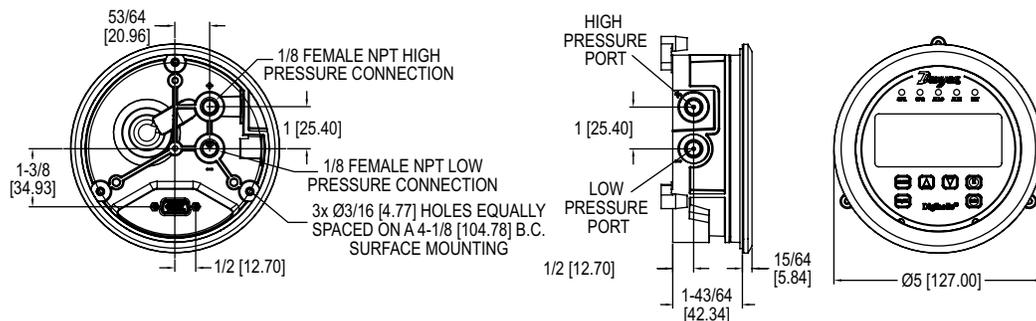




Series DHC Digihelic® Differential Pressure Controller

Specifications - Installation and Operating Instructions



The **Series DHC Digihelic® Differential Pressure Controller** is a 3-in-1 instrument possessing a digital display gage, control relay switches, and a transmitter with both current and voltage outputs. Combining these 3 features allows the reduction of several instruments with one product, saving inventory, installation time, and cost. The Series DHC Digihelic® differential pressure controller is the ideal instrument for pressure, velocity, and volumetric flow applications reading in several commonly used engineering units with optional unidirectional or bidirectional ranges. These units achieve a 1.5% or better accuracy on extremely low ranges, and 0.5% accuracy for ranges at or above 1 in w.c. Calibration can be performed in the field, making maintaining its accuracy more manageable. Additionally, the Series DHC Digihelic® differential pressure controller includes 2 SPDT control relays with adjustable deadbands. Programming the unit is simple using the built-in menu. With scalable 4-20 mA, selectable voltage process outputs, and selectable Modbus® or BACnet communication, this controller can easily fit into your application.

INSTALLATION

Select a clean, dry location that is free from shock and vibration where temperature limits will not be exceeded. Distance from the transmitter to the receiver is limited only by total loop resistance. See WIRING section. The tubing feeding pressure to the instrument can be practically any length required, but longer lengths will slightly increase response time.

All standard models are calibrated for use in a vertical mounting position. The DHC will perform properly when mounted at any angle but should be zeroed before use.

Pressure Connections

For installation convenience, there are two sets of 1/8" female NPT pressure ports; one set is located on the back of the unit and the other is located on the side. Be sure to seal the unused ports with the included pipe plugs (accessory A-330).

- **Positive Pressure:** Connect tubing to the HIGH PRESSURE port (indicated with a "+" sign) and vent the LOW PRESSURE port (indicated with a "-" sign) to atmosphere.
- **Negative (Vacuum) Pressure:** Connect tubing to the LOW PRESSURE port (indicated with a "-" sign) and vent the HIGH PRESSURE port (indicated with a "+" sign) to atmosphere. When operating this device in a dusty environment, install an optional A-331 filter vent plug into the vented port to keep interior clean.
- **Differential Pressure:** Connect tubing from the higher source to the HIGH PRESSURE port (indicated with a "+" sign) and from the lower source to the LOW PRESSURE port (indicated with a "-" sign).

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Material: Polycarbonate.
Accuracy: ±0.5% FSO for all ranges, except 0.5 in w.c. @ ±1% FSO, and ranges at or below ±0.25 in w.c. @ ±1.5% FSO.
Stability: < ±1% / year FSO.
Pressure Limits: Ranges > 1 in w.c.: 6 psi max operation, 6 psi burst; Ranges ≤ 1 in w.c.: 3.6 psi max operation, 6 psi burst.
Temperature Limits: -4 to 158°F (-20 to 70°C).
Thermal Effects: .02% FS / °F (.036% FS / °C).
Power Requirements: 12-28 VDC or 12-28 VAC 50 to 400 Hz.
Power Consumption: 3 VA max.
Output Signal: 4-20 mA (4-wire); 0-10 V, 0-5 V, 1-5 V, and 2-10 V (4-wire).
Communication: BACnet MS/TP or Modbus® RTU.
Supported Baud Rate: 9600, 19200, 38400, 57600, 76800, 115200.
Device Load: 1/8 unit load.
Zero and Span Adjustments: Accessible via menus.
Response Time: 400 ms (damping set to 0).
Display: Backlit LCD display, LED setpoint indicators.
Electrical Connections: 15 pin male high density D-sub connection. 18" (46 cm) cable with 15 conductors included.
Process Connections: 1/8" female NPT ports on side and back.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Not position sensitive.
Size: 5" OD (127 mm) x 1.9" (48 mm) deep.
Weight: 8.8 oz (250 g).
Compliance: BTL, CE.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 1 A @ 30 VAC/VDC.
Set Point Adjustment: Accessible via menus.

MODEL CHART

| Model | Range | Model | Range |
|---------|---------------|---------|-------------|
| DHC-002 | 0.25 in w.c. | DHC-208 | ±5 in w.c. |
| DHC-003 | 0.5 in w.c. | DHC-209 | ±10 in w.c. |
| DHC-004 | 1 in w.c. | DHC-053 | 60 Pa |
| DHC-006 | 2.5 in w.c. | DHC-055 | 125 Pa |
| DHC-008 | 5 in w.c. | DHC-056 | 250 Pa |
| DHC-009 | 10 in w.c. | DHC-253 | ±60 Pa |
| DHC-010 | 25 in w.c. | DHC-255 | ±125 Pa |
| DHC-011 | 50 in w.c. | DHC-256 | ±250 Pa |
| DHC-012 | 100 in w.c. | DHC-082 | 6 mm w.c. |
| DHC-202 | ±0.25 in w.c. | DHC-084 | 25 mm w.c. |
| DHC-203 | ±0.5 in w.c. | DHC-282 | ±6 mm w.c. |
| DHC-204 | ±1 in w.c. | DHC-284 | ±25 mm w.c. |
| DHC-206 | ±2.5 in w.c. | | |

MOUNTING

The DHC may be either panel (flush) mounted or surface mounted.

Panel Mounting Including -SS Bezel:

1. Cut a 4-9/16" (116 mm) diameter hole in the panel.
2. Insert gage and secure in place with provided screws and mounting lugs as shown in Figure 1.

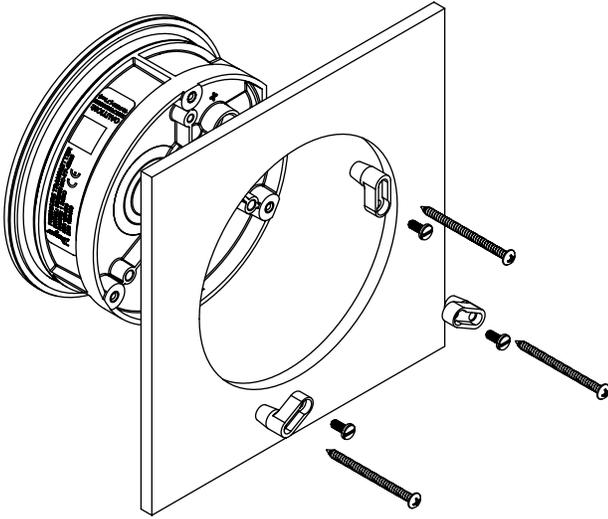


Figure 1: Panel mount

Surface Mounting

1. Use the drill template (Figure 4 on the next page) on the front of the desired mounting surface. Provide three 3/16" diameter holes in panel on a 4-1/8" diameter bolt circle. Cut the opening for the terminal block as shown in Figures 2 and 4.
2. If the rear pressure connections are to be used, also provide 1/2" diameter holes as shown in Figures 2 and 4.
3. Insert 6-32 machine screws from rear of mounting surface, threading them into tapped holes on back of transmitter and tighten.

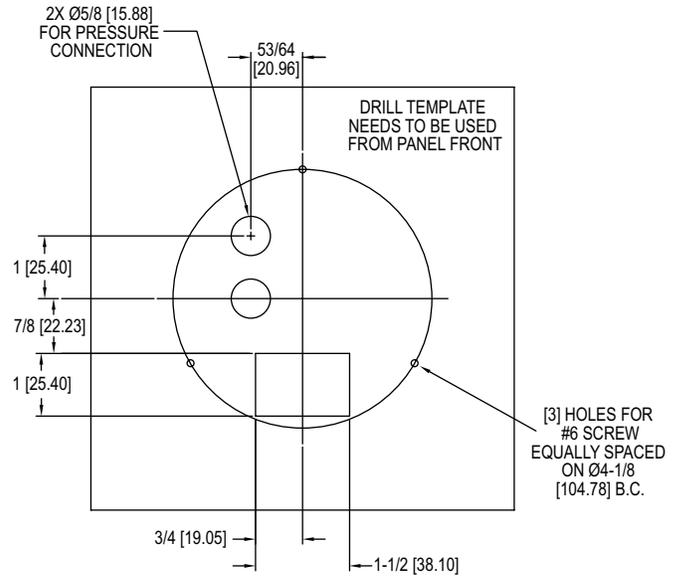


Figure 2: Surface mount

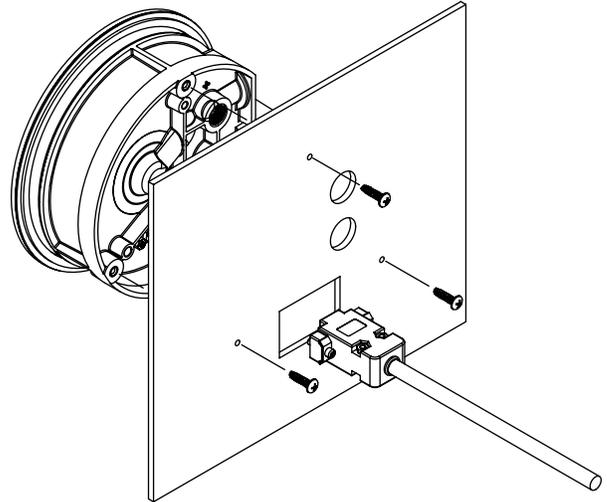


Figure 3: Surface assembly with rear pressure connections

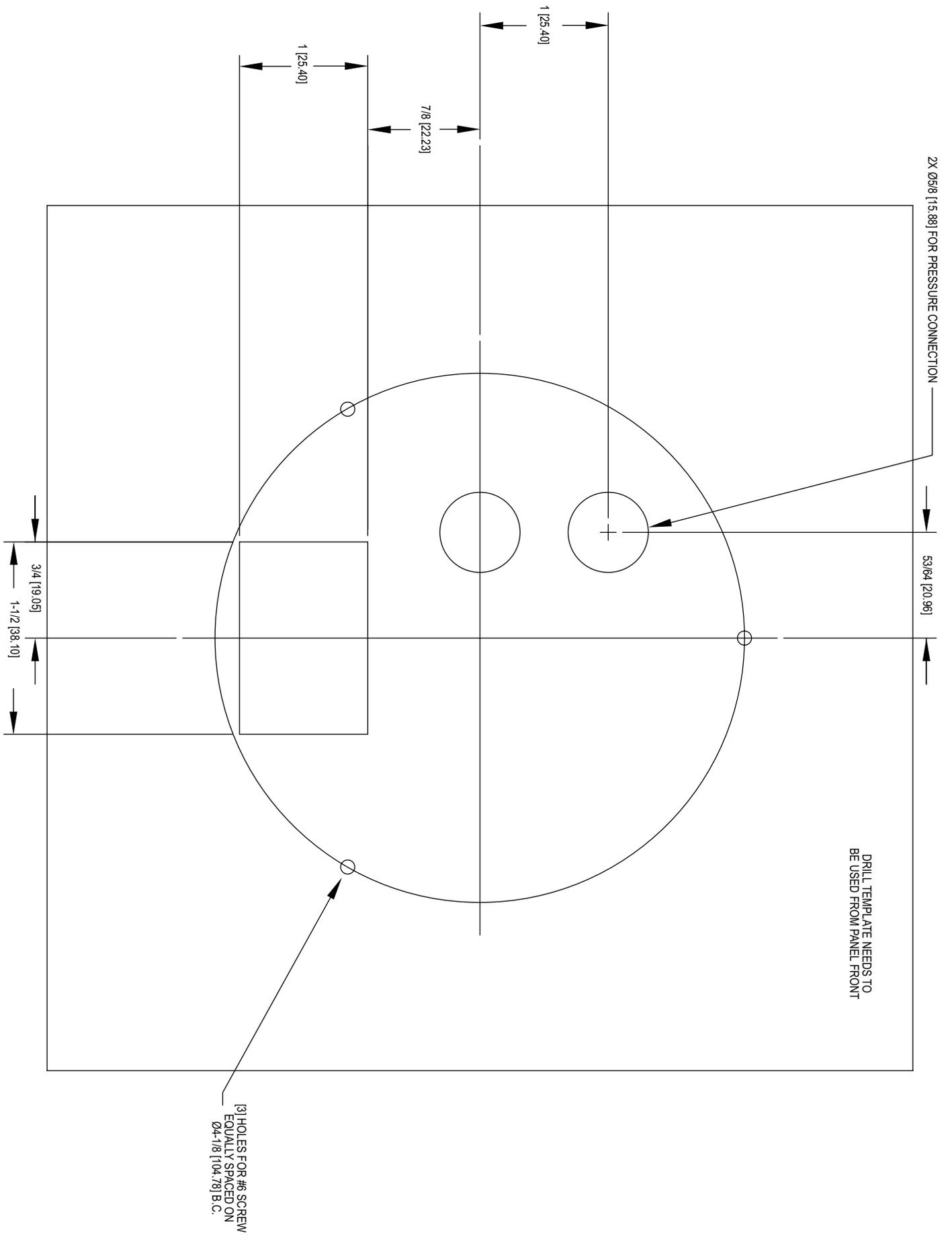


Figure 4: Surface mounting drill template

WIRING

The DHC uses a standard 15 pin male high density D-Sub connector available from most electronic distributors. A pre-wired 18" cable is included with each unit. See below table for cable color wiring information.

| Function | 15 Pin Connector Terminal | Cable Color |
|-----------------------|---------------------------|--------------|
| 12-28 VAC/VDC Power | 1 | Brown |
| 12-28 VAC/VDC Power | 6 | Yellow |
| 4-20 mA Output Signal | 11 | Red |
| 0-10 V Output Signal | 7 | Light Purple |
| External Input Signal | 8 | Light Green |
| Signal Common | 2 | Black |
| Relay #1 N/O | 12 | Violet |
| Relay #1 Common | 13 | Grey |
| Relay #1 N/C | 14 | White |
| Relay #2 N/O | 15 | Dark Blue |
| Relay #2 Common | 10 | Dark Green |
| Relay #2 N/C | 5 | Orange |
| RS-485 B(+) | 4 | Tan |
| RS-485 A(-) | 3 | Pink |
| RS-485 Common | 9 | Light Blue |

NOTICE The input power polarity is unimportant.

CAUTION Wire in accordance with an equivalent national standard or code. Use copper conductors rated for 60°C. All terminals are rated CLASS 2.

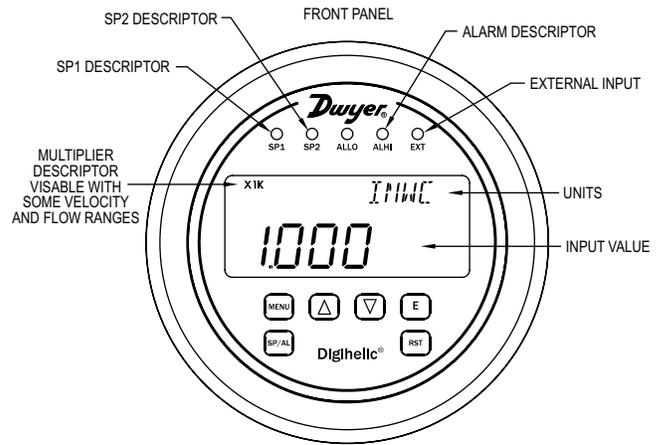
ISOLATION Zones: Each zone has 500 VAC isolation from all other zones.

| Zone | Inputs/Outputs |
|------|---|
| 1 | Power (1,6) |
| 2 | Current (2,11); Voltage (7); External Input (8) |
| 3 | Relay 1 (12,13,14) |
| 4 | Relay 2 (5,10,15) |
| 5 | RS-485 (3,4,9) |

4-20 mA Transmitter – Check the specifications for the device receiving this signal for input resistance. Typical 250 to 600 Ω, 600 Ω maximum.

OPERATION

| KEY FUNCTIONS | | | | | |
|---------------|--|-------------------------|--|---------------------------------|---|
| Keys | Home Position Function | Main Menu Function | Sub Menu Function | Edit Setting Function | Edit Value Function |
| SP/AL | Allows access to the Set Point and Alarm menus | | | | |
| MENU | Allows access to the menus | Return to home position | Return to previous menu | Cancel edit, return to sub Menu | Cancel edit, return to sub Menu |
| UP ARROW | | Sequences through menus | Sequences through sub menus | Previous option | Increment the value |
| DOWN ARROW | | Sequences through menus | Sequences through sub menus | Next option | Decrement the value |
| ENTER | Display full-scale range of unit | Enter into sub menu | Enter edit function for setting | Accept the current option | Short Press: Move caron to next digit. Long Press: Accept the current value |
| RESET | Clear or reset an Alarm (alarm set for manual reset) | | Peak/Valley sub menu resets display to present value | | |



Setting Set Points and Alarms

The **SP/AL** hot key provides direct access to the Set Point and Alarm MENU. The Set Point and Alarm MENUS that are displayed are based upon the Set Point (SP) and Alarm (AL) SUB MENUS. Reference the **"SPAL MENU"** diagram under the **Menu Structure** section for the complete menu structure.

Set Point Adjustment

Adjusting the DHC set points is quick and simple. Instead of setting a set point and deadband, simply adjust "SP1T" or "SP2T" for the desired trigger point, and then adjust "SP1R" or "SP2R" for the desired reset point. The associated LED will light up green when the set point is triggered.

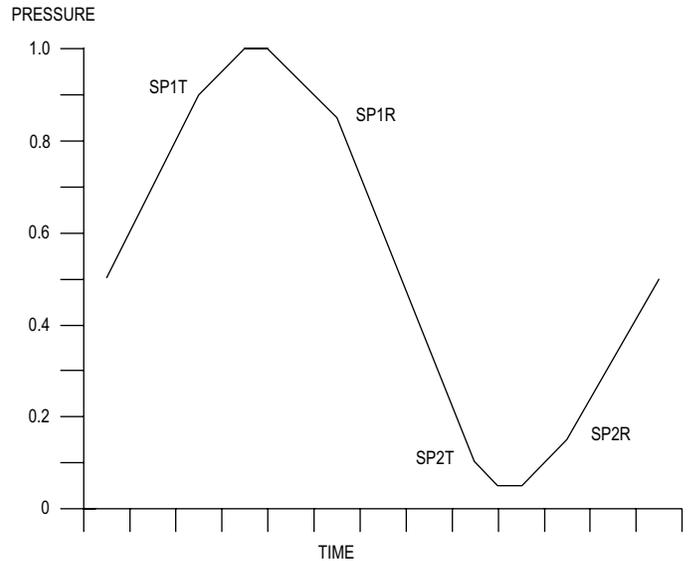


Figure 5: Set points

Using Figure 5 as an example, an instrument with a 1 in w.c. range would have the set point 1 turn on at 0.9 in w.c. and off at 0.85 in w.c. SP1T sets the turn on point and SP1R sets the turn off point. This represents a typical rising pressure set point. The second portion shows set point 2 turn on at 0.1 in w.c. and off at 0.15 in w.c. SP2T sets the turn on point, and SP2R sets the turn off point. This represents a typical falling pressure set point. Either set point can trigger a relay if selected in the rLy1 or rLy2 menus.

MAIN MENUS AND SUBMENUS

Main Menu Selections (Upper Right Display Reads MENU)

- Pin - Set a custom pin code to lock out access to all menu settings
- oPEr Operation - Selection of pressure, velocity or flow mode, display units and output scaling
- SP Set Point - Enable/disable set points
- AL Alarm - Enable/disable alarm limits, other alarm settings
- rLy Relay - Configure relay source and action when active
- inP Input - Configure external input
- diS Display - Monitor and adjust display related settings: Peak, valley, % output and dampening
- Conn Connection - Configure RS-485 serial parameters and protocol
- CAL Calibration - Perform user zero and span, restore factory default settings, view device serial number

Pin - SUB MENU

In order to prevent unauthorized modification of settings, a pin number can be configured. Pin entry is enabled when the configured pin number is anything other than 0000.

oPEr (Operation) MAIN MENU

The oPEr MENU contains SUB MENUS that select the operating mode, display unit, and analog output scaling of the instrument.

The SUB MENUS are:

- ≡odE - Mode
- Unit - Display Unit
- POL - Pressure Output Low
- POH - Pressure Output High
- KFAC - Velocity K-Factor
- VOL - Velocity Output Low
- VOH - Velocity Output High
- AREA - Duct Area
- FOL - Flow Output Low
- FOH - Flow Output High
- uoUt - Voltage Output Range

If the instrument mode is set to Pressure, the oPEr MENU will include the POL and POH SUB MENUS. If the instrument mode is set to Velocity, the oPEr MENU will include the KFAC, VOL and VOH SUB MENUS. If the instrument mode is set to Flow, the oPEr MENU will include KFAC, AREA, FOL and FOH SUB MENUS. These menus will be discussed under their respective sections following the **Unit (Velocity) SUB MENU** and **Unit (Flow) SUB MENUS** sections.

≡odE (Mode) SUB MENU

Set the mode of operation of the instrument.

- PRES - Pressure
- VEL - Velocity
- FLOW - Flow

Unit(Pressure) SUB MENU

For pressure mode, the following units are available:

- INWC - Inches of water column
- FTWC - Feet of water column
- MMWC - Millimeters of water column
- CMWC - Centimeters of water column
- PSI - Pounds per square inch
- INHG - Inches of mercury
- MMHG - Millimeters of mercury
- MBAR - Millibar
- PA - Pascal
- KPA - Kilopascals
- HPA - Hectopascals
- OZIN - Ounce inches

| PRESSURE RANGE VS. AVAILABLE UNITS | | | | | | | | | | | |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| INWC | FTWC | MMWC | CMWC | PSI | INHG | MMHG | MBAR | PA | KPA | HPA | OZIN |
| .1000 | | 2.540 | .2540 | | | .1868 | .2491 | 24.91 | | .2491 | |
| .2500 | | 6.350 | .6350 | | | .4671 | .6227 | 62.27 | | .6227 | .1445 |
| .5000 | | 12.70 | 1.270 | | | .9342 | 1.245 | 124.5 | .1245 | 1.245 | .2890 |
| 1.000 | | 25.40 | 2.540 | | | 1.868 | 2.491 | 249.1 | .2491 | 2.491 | .5780 |
| 2.500 | .2083 | 63.50 | 6.350 | | .1839 | 4.671 | 6.227 | 622.7 | .6227 | 6.227 | 1.445 |
| 5.000 | .4167 | 127.0 | 12.70 | .1806 | .3678 | 9.342 | 12.45 | 1245 | 1.245 | 12.45 | 2.890 |
| 10.00 | .8333 | 254.0 | 25.40 | .3613 | .7356 | 18.68 | 24.91 | 2491 | 2.491 | 24.91 | 5.780 |
| 25.00 | 2.083 | 635.0 | 63.50 | .9032 | 1.839 | 46.71 | 62.27 | 6227 | 6.227 | 62.27 | 14.45 |
| 50.00 | 4.167 | 1270 | 127.0 | 1.806 | 3.678 | 93.42 | 124.5 | | 12.45 | 124.5 | 28.90 |
| 100.0 | 8.333 | 2540 | 254.0 | 3.613 | 7.356 | 186.8 | 249.1 | | 24.91 | 249.1 | 57.80 |

Unit (Velocity) SUB MENU

For velocity measurement, the following units are available:

- SFPM - Standard feet per minute
- M/S - Meters per second

| AVAILABLE VELOCITY RANGES | | |
|---------------------------|------------|-----------|
| Input Range in w.c. | SCFM Range | M/S Range |
| ±0.25 | ±20.02 x1K | ±101.7 |
| ±0.5 | ±28.31 x1K | ±143.8 |
| ±1.0 | ±40.04 x1K | ±203.4 |
| ±2.5 | ±63.31 x1K | ±321.6 |
| ±5.0 | ±89.53 x1K | ±454.8 |
| ±10.0 | ±126.6 x1K | ±643.2 |
| ±25.0 | ±200.2 x1K | ±1017 |
| ±50.0 | ±283.1 x1K | ±1438 |
| ±100.0 | ±400.4 x1K | ±2034 |

NOTICE Air velocity and flow readings are based upon standard dry air conditions with an ambient temperature of 70°F and a barometric pressure of 29.92 INHG. Maximum velocity range is obtained with K-Factor set to maximum value (9.999).

Unit (Flow) SUB MENU

For flow measurements the following units are available:

- SCFM - Standard cubic feet per minute
- M³/H - Cubic meters per hour

The Available Flow Ranges table below shows the flow ranges available with the maximum duct size and K-Factor selected for each input range.

| AVAILABLE FLOW RANGES | | |
|-----------------------|------------|------------|
| Input Range in w.c. | SCFM Range | M³/H Range |
| ±0.25 | ±500.5 x1K | ±850.4 x1K |
| ±0.5 | ±707.8 x1K | ±1.203 x1M |
| ±1.0 | ±1.001 x1M | ±1.701 x1M |
| ±2.5 | ±1.583 x1M | ±2.689 x1M |
| ±5.0 | ±2.238 x1M | ±3.893 x1M |
| ±10.0 | ±3.165 x1M | ±5.378 x1M |
| ±25.0 | ±4.005 x1M | ±8.504 x1M |
| ±50.0 | ±7.078 x1M | ±12.03 x1M |
| ±100.0 | ±10.01 x1M | ±17.01 x1M |

POL and POH SUB MENUS

Pressure output low and pressure output high are used to scale the current and voltage output. Set POL to the desired display reading for 4 mA output. Set POH to the desired display reading for 20 mA output. POL can be greater than POH. In this situation, the analog outputs are reverse acting.

KFAC SUB MENU

The K-Factor sub menu becomes accessible if the instrument mode is set to Velocity or Flow. When the DHC is used with a Pitot tube, the manufacturer may specify a K-Factor. The adjustment range is 0.001 to 9.999. The factory setting is 1.

VOL and VOH SUB MENUS

Velocity output low and velocity output high are used to scale the current and voltage output. Set VOL to the desired display reading for 4 mA output. Set VOH to the desired display reading for 20 mA output. VOL can be greater than VOH. In this situation, the analog outputs are reverse acting.

AREA SUB MENU

The Area sub menu becomes accessible if the instrument mode is set to Flow. The duct area is specified in either ft² or m² depending on the flow unit selected. The adjustment range is 0.13-25.0 ft² (0.012-2.323 m²). The factory setting is 1 ft² (0.093 m²).

FOL and FOH SUB MENUS

Flow output low and flow output high are used to scale the current and voltage output. Set FOL to the desired display reading for 4 mA output. Set FOH to the desired display reading for 20 mA output. FOL can be greater than FOH. In this situation, the analog outputs are reverse acting.

uoUt (Voltage Output Range) SUB MENU

The voltage output range setting allows the voltage output limits to be configured to 1 of 4 common ranges. Available options include: 0-10 V, 0-5 V, 1-5 V, and 2-10 V. The factory setting is 0-10 V.

SP (Set Point) MAIN MENU

The SP MENU allows the individual set points to be enabled or disabled. The SUB MENUS are:

- SP1 - Set Point 1 Enable
- SP2 - Set Point 2 Enable

SP1 (Set Point 1 Enable) SUB MENU

Enable/disable set point 1. When enabled (ON), the set point 1 trigger and reset SUB MENUS will appear in the SPAL menu. The factory setting is ON.

SP2 (Set Point 2 Enable) SUB MENU

Enable/disable set point 2. When enabled (ON), the set point 2 trigger and reset SUB MENUS will appear in the SPAL menu. The factory setting is ON.

AL (Alarm) MAIN MENU

The AL MENU allows the features of the alarm to be configured. The SUB MENUS are:

- ALHi - Alarm High Limit Enable
- ALLo - Alarm Low Limit Enable
- ALrE - Alarm Reset Type
- ALiH - Alarm Inhibit Enable
- ALDL - Alarm Delay Time

ALHi (Alarm High Limit Enable) SUB MENU

Enable/disable the alarm high limit. When enabled (ON), the alarm high limit (ALHi) SUB MENU will appear in the SPAL menu. The factory setting is ON.

ALLo (Alarm Low Limit Enable) SUB MENU

Enable/disable the alarm low limit. When enabled (ON), the alarm low limit (ALLo) SUB MENU will appear in the SPAL menu. The factory setting is ON.

ALrE (Alarm Reset Type) SUB MENU

- AUTO - Automatic reset (factory setting)
- HOLD - Manual reset. An alarm is reset by the RESET key on the front panel.

ALiH (Low Alarm Inhibit) SUB MENU

- ON - Alarm inhibit is on
- OFF - Alarm inhibit is off (factory setting)

If ALiH is selected ON, a low alarm condition is suspended upon power up until the process value passes through the alarm set point once.

ALDL (Alarm Delay) SUB MENU

Sets the amount of time an alarm condition must be continuously met before the alarm condition is recognized. The alarm delay is adjustable from 0-3600 seconds. The factory setting is 0.

rLy (Relay) MAIN MENU

The rLy menu includes options to configure which source will trigger a relay and what happens when a relay is triggered. The SUB MENUS are:

- rLy1 - Relay 1 Source
- rLy2 - Relay 2 Source
- r1At - Relay 1 Action
- r2At - Relay 2 Action

rLy1, rLy2 (Relay 1 Source, Relay 2 Source) SUB MENUS

- OFF - Relay not used
- SP1 - Set Point 1
- SP2 - Set Point 2
- AL - Either Alarm
- ALHI - High Alarm
- ALLO - Low Alarm
- EXT - External Input

The selected source determines when the relay is active. If the source is active, the relay will be active.

r1At, r2At (Relay 1 Action, Relay 2 Action) SUB MENUS

- DIR - Direct Acting/CLSE - Close on Active
- REV - Reverse Acting/OPEN - Open on Active

The selected action determines what happens when the relay is active. If the selected source is an alarm, then the options are CLSE and OPEN.

inP (Input) MAIN MENU

The inP MENU allows the features of the external input to be configured. The SUB MENUS are:

- inP - External Input Enable
- tyPE - External Input Type
- DLY - External Input Delay

inP (External Input Enable) SUB MENU

- ON - External input enabled (factory setting)
- OFF - External input disabled

tyPE (External Input Type) SUB MENU

- NO - Normally Open (factory setting)
- NC - Normally Closed

DLY (External Input Delay) SUB MENU

Sets the amount of time the external input must be continuously active before it is considered active. The delay is adjustable from 0-3600. The factory setting is 0.

diS (Display) MAIN MENU

- PEAK - Peak value
- VALY - Valley value
- PdiS - Process display
- DAMP - Damping Time

PEAK (Peak) SUB MENU

The Peak feature stores the highest process reading the instrument has measured since the last reset or power up. At power up PEAK is reset to the present pressure reading. To manually reset the PEAK value, press the RESET key while in the PEAK SUB MENU.

VALY (Valley) SUB MENU

The valley feature stores the lowest process reading the instrument has measured since the last reset or power up. At power up VALY is reset to the present pressure reading. To manually reset the VALY value, press the RESET key while in the VALY SUB MENU.

PdiS (Process Display) SUB MENU

- STD - Display reads pressure, velocity, or flow values
- PCT - Display reads % of full-scale value

When the display is reading percent, PCT is displayed in the upper right of the display.

DAMP (Damping) SUB MENU

The damping time can be adjusted from 0 to 30 seconds.

Damping stabilizes the display and outputs from instabilities due to circumstances such as vibration and excessive pressure fluctuations. Adjust the damping value until the display reads a stable value for the application.

Conn (Connection) MAIN MENU

The Conn menu contains SUB MENUS to configure the RS-485 serial parameters and selected protocol. The SUB MENUS are:

- Prot - Protocol
- ADDR - Protocol Address
- bAUd - Serial Baud Rate
- PAr - Serial Parity
- StP - Serial Stop Bits

Prot (Protocol) SUB MENU

- MOD - Modbus® Communication (factory setting)
- BAC - BACnet Communication
- NONE - Communication disabled

ADDR (Protocol Address) SUB MENU

This value sets the RS-485 device address. See the table below for protocol specific ranges. The factory setting is 127. SUB MENU not available if protocol is NONE.

| Protocol | Range |
|----------|-------|
| Modbus® | 1-247 |
| BACnet | 0-127 |

bAUd (Serial Baud Rate) SUB MENU

- 96 - 9600 bps
- 192 - 19200 bps
- 384 - 38400 bps
- 576 - 57600 bps
- 768 - 76800 bps
- 1152 - 115200 bps
- AUTO - Auto-baud (factory setting)

If the selected protocol is Modbus® communication, the AUTO setting will also determine the serial parity and serial stopbits. If selected communication protocol is BACnet, serial parity and serial stop bits are fixed to NONE and 1 respectively. SUB MENU not available if protocol is NONE.

PAr (Serial Parity) SUB MENU

- EVEN - Even Parity (factory setting)
- ODD - Odd Parity
- NONE - No Parity

SUB MENU not available if protocol is NONE or BAC or if serial baud rate is AUTO.

StP (Serial Stop Bits) SUB MENU

- 1 - One stop bit
- 2 - Two stop bits

SUB MENU not available if protocol is NONE or BAC or if serial baud rate is AUTO.

CAL (Calibration) Main Menu

The CAL menu contains SUB MENUS to perform field calibration, reset settings, and display information. The SUB MENUS are:

- ZERO - Zero Calibration
- SPAN - Span Calibration
- rSt - Reset Factory Defaults
- Sn 1 - Display Serial Number part 1
- Sn 2 - Display Serial Number part 2

ZERO (Zero Calibration) SUB MENU

For accurate calibration, do not apply any pressure when performing this function. Press and hold the ENTER button until the process value is cleared. The display will show a dash in each digit starting with the left most position. After 4 dashes have been displayed, the process value will be displayed and the new zero will be applied. For best results, perform the zeroing function in the same orientation you will mount the DHC.

SPAN (Span Calibration) SUB MENU

For an accurate calibration, perform a Zero calibration first. The pressure to apply will depend on the selected mode and the POH, VOH or FOH value. Apply a stable pressure equal to the configured output high value. Press and hold the ENTER button until the process value is cleared. The display will show a dash in each digit starting with the left most position. After 4 dashes have been displayed, the process value will be displayed and the new span will be applied. If the span cannot be applied, a FAIL message will be displayed. This error could occur if the applied pressure is too low or too high.

rSt (Reset Factory Defaults) SUB MENU

- NO - Do nothing
- YES - Reset all settings, clear user calibration

After selecting YES the instrument will reboot itself.

Sn 1, Sn 2 (Serial Number Display) SUB MENUS

The serial number of the instrument can be viewed on the display using these menus. The first 4 characters are available with Sn 1 and the second 4 characters are available with Sn 2.

SPAL (Set Point/Alarm) MENU

The SPAL menu contains the set point trigger and reset value as well as the alarm limits. This menu is accessible from the home screen with the SPAL button. If both set points and both alarm limits are disabled, then the SPAL menu will contain no SUB MENUS and pressing the SPAL button will not do anything. The SUB MENUS are:

- SP1T - Set Point 1 Trigger
- SP1R - Set Point 1 Reset
- SP2T - Set Point 2 Trigger
- SP2R - Set Point 2 Reset
- ALLO - Alarm Low Limit
- ALHI - Alarm High Limit

SP1T, SP2T (Set Point Trigger) SUB MENUS

These SUB MENUS set the trigger value for each set point. When the process value equals the set point trigger value, the set point is considered active. These SUB MENUS are only present if their corresponding enable setting is set to ON.

SP1R, SP2R (Set Point Reset) SUB MENUS

These SUB MENUS set the reset value for each set point. When the process value equals the set point reset value, the set point is considered inactive. These SUB MENUS are only present if their corresponding enable setting is set to ON.

ALLO (Alarm Low Limit) SUB MENU

This SUB MENU sets the alarm low limit value. If the process value is less than the alarm low limit value, the low alarm is considered active.

ALHI (Alarm High Limit) SUB MENU

This SUB MENU sets the alarm high limit value. If the process value is greater than the alarm high limit value, the high alarm is considered active.

The range of the alarm limits depends on the selected mode. If both low and high alarm limits are enabled, they cannot be closer than 2% of full-scale to each other. The dead bands of the alarm limits are fixed at 1% of full-scale.

AUTO SERIAL CONFIGURATION

Auto serial configuration enables the device to determine the baud rate, parity and stop bits directly from the serial traffic. This allows a device to be quickly and easily deployed after a valid RS-485 MAC address is chosen. Note that the auto configuration procedure assumes a serial configuration appropriate to the selected protocol as follows:

| SUPPORTED SERIAL CONFIGURATIONS | | | | |
|---------------------------------|----------------------|-----------|--------|-----------|
| Protocol | Supported Baud Rates | Data Size | Parity | Stop Bits |
| BACnet - MS/TP | 9600 | 8 | None | 1 |
| Modbus® - RTU | 19200 | | Even | |
| | 38400 | Odd | | |
| | 57600 | None | | |
| | 78600 | None | 2 | |
| | 115200 | | | |

When Modbus® communications protocol is selected, and the device is setup offline or away from the main network, it is necessary to generate traffic in order to configure the serial communication. Attempting to read input registers is a good method to generate traffic. Note that while serial configuration is in progress, the device may not respond to requests. The device may require multiple read requests to complete the serial configuration process.

The auto serial configuration process will complete once a message addressed to the device is received and processed successfully. The serial configuration parameters are then saved to non-volatile storage and loaded by default each time the device starts. If the serial configuration of the bus changes, a power cycle of the device is required to restart the auto serial configuration process.

BACnet Communication Protocol Services

Device Communication Control Service (DM-DCC-B)

This device supports the Device Communication Control Service BIBB. The optional time duration in minutes is also supported. This device is configured with a password that must be provided to successfully execute this command. **The password is "Dwyer"**.

Reinitialize Device Service (DM-RD-B)

This device supports the Reinitialize Device Service BIBB. The supported device states are COLDSTART and WARMSTART. All other states return error. This device is configured with a password that must be provided to successfully execute this command. **The password is "Dwyer"**.

BACnet Communication Protocol Objects Overview

The instrument supports the following objects:

| SUPPORTED BACNET COMMUNICATION PROTOCOL OBJECTS | | | | |
|---|-----------------------|-----------------------|-------------------|---------------------------------|
| Object Type | Dynamically Creatable | Dynamically Deletable | Object Identifier | Object Name |
| Device | No | No | 607xxx | DHC 607xxx |
| Analog Input | No | No | AI1 | Pressure |
| Analog Value | No | No | AV1 | Velocity |
| Analog Value | No | No | AV2 | Flow |
| Analog Value | No | No | AV3 | Peak |
| Analog Value | No | No | AV4 | Valley |
| Analog Value | No | No | AV5 | Velocity K-Factor |
| Analog Value | No | No | AV6 | Flow Area |
| Analog Value | No | No | AV7 | Process Output Low |
| Analog Value | No | No | AV8 | Process Output High |
| Analog Value | No | No | AV9 | Set Point 1 Trigger Value |
| Analog Value | No | No | AV10 | Set Point 1 Reset Value |
| Analog Value | No | No | AV11 | Set Point 2 Trigger Value |
| Analog Value | No | No | AV12 | Set Point 2 Reset |
| Analog Value | No | No | AV13 | Alarm High limit |
| Analog Value | No | No | AV14 | Alarm Low Limit |
| Multi-State Value | No | No | MSV1 | Process Mode |
| Multi-State Value | No | No | MSV2 | Voltage Output Range |
| Multi-State Value | No | No | MSV3 | Relay 1 Source |
| Multi-State Value | No | No | MSV4 | Relay 1 Action |
| Multi-State Value | No | No | MSV5 | Relay 2 Source |
| Multi-State Value | No | No | MSV6 | Relay 2 Action |
| Multi-State Value | No | No | MSV7 | External Input Type |
| Binary Value | No | No | BV1 | Enable Set Point 1 |
| Binary Value | No | No | BV2 | Set Point 1 Status |
| Binary Value | No | No | BV3 | Enable Set Point 2 |
| Binary Value | No | No | BV4 | Set Point 2 Status |
| Binary Value | No | No | BV5 | Enable Alarm High Limit |
| Binary Value | No | No | BV6 | Alarm High Limit Status |
| Binary Value | No | No | BV7 | Enable Alarm Low Limit |
| Binary Value | No | No | BV8 | Alarm Low Limit Status |
| Binary Value | No | No | BV9 | Manual Alarm Reset |
| Binary Value | No | No | BV10 | Power Up Alarm Inhibit |
| Binary Value | No | No | BV11 | Enable External Input |
| Binary Value | No | No | BV12 | External Input Status |
| Positive | No | No | PIV1 | Alarm Delay |
| Integer Value | | | | |
| Positive | No | No | PIV2 | External Input Activation Delay |
| Integer Value | | | | |
| Positive | No | No | PIV3 | Damping Time |
| Integer Value | | | | |

Note: The default object identifier is 607xxx, where xxx is replaced by the MS/TP MAC address set in the ADDR SUB MENU under the Conn MENU. The object identifier value will change as the MS/TP MAC address changes. However, if a specific object identifier is written via BACnet communication protocol, then that value is stored and changes to the MS/TP MAC address will no longer affect the object identifier. Similarly, the default object name includes 607xxx. The object name will reflect the current object identifier. If a specific object name is written via BACnet communication protocol, then that value is stored and changes to the object identifier will no longer affect the object name.

BACnet Communication Protocol Objects

Device Object

| Property | Default Value | Property Data Type | Access |
|---------------------------------|---------------------------|---|------------|
| Object Identifier | 607127 | BACnet Object Identifier | Read/Write |
| Object Name | "DHC 607127" | Character String(32) | Read/Write |
| Object Type | Device | BACnet Object Type | Read |
| System Status | Operational | BACnet Device Status | Read |
| Vendor Name | "Dwyer Instruments, LLC." | Character String | Read |
| Vendor Identifier | 607 | Unsigned | Read |
| Model Name | "DHC-xxx-xxx" | Character String | Read |
| Firmware Version | "x.x" | Character String | Read |
| Application Software Version | "x.x.x" | Character String | Read |
| Location | "" | Character String(32) | Read/Write |
| Description | "" | Character String(32) | Read/Write |
| Protocol Version | 1 | Unsigned | Read |
| Protocol Revision | 16 | Unsigned | Read |
| Protocol Services Supported | See PICS | BACnet Services Supported | Read |
| Protocol Object Types Supported | See Table Above | BACnet Object Types Supported | Read |
| Object List | See Table Above | BACnet Array | Read |
| Maximum APDU Length Accepted | 480 | Unsigned | Read |
| Segmentation Supported | No Segmentation | BACnet Segmentation | Read |
| APDU Timeout | 0 | Unsigned | Read |
| Number of APDU Retires | 0 | Unsigned | Read |
| Max Master | 127 | Unsigned | Read/Write |
| Max Info Frames | 1 | Unsigned | Read |
| Device Address Binding | {} | BACnet Address Binding | Read |
| Database Revision | 0 | Unsigned | Read |
| Property List | This Table | BACnet Array[N] of BACnet Property Identifier | Read |
| Serial Number | "xxxxxx" | Character String | Read |

Analog Input - Pressure

This object represents the current pressure reading in the selected unit of measure. The pressure unit is set via the units property and is independent of the display unit.

| Property | Default Value | Property Data Type | Access |
|-------------------|-------------------|--------------------------|------------|
| Object Identifier | A11 | BACnet Object Identifier | Read |
| Object Name | "Pressure" | Character String | Read |
| Object Type | Analog Input | BACnet Object Type | Read |
| Preset Value | Current Reading | Real | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | *Model Specific | BACnet Engineering Units | Read/Write |

Supported pressure units:

- inches-of-water(58)
- feet-of-water*(530)
- millimeters-of-water(206)
- centimeters-of-water(57)
- pounds-force-per-square-inch(56)
- inches-of-mercury(61)
- millibars(134), pascals(53)
- hectopascals(133)
- kilopascals(54)
- ounce-force-per-square-inch*(531)

*Non-standard unit

Analog Value - Velocity

This object represents the current velocity reading in the selected unit measure. The velocity unit is set via the units property and is independent of the display unit.

| Property | Default Value | Property Data Type | Access |
|-------------------|-------------------|--------------------------|------------|
| Object Identifier | AV1 | BACnet Object Identifier | Read |
| Object Name | "Velocity" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Current Reading | Real | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | *Model Specific | BACnet Engineering Units | Read/Write |

Supported velocity units:

- feet-per-minute(77)
- meters-per-second(74)

Analog Value - Flow

This object represents the current flow reading in the selected unit measure. The flow unit is set via the units property and is independent of the display unit.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------|--------------------------|------------|
| Object Identifier | AV2 | BACnet Object Identifier | Read |
| Object Name | "Flow" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Current Reading | Real | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Process Value Unit | BACnet Engineering Units | Read |

Supported flow units:

- cubic-feet-per-minute(84)
- cubic-meters-per-hour(135)

Analog Value - Peak

This object represents the maximum process value measured since the last power cycle or reset. The unit of measure matches the selected process value. This value cannot be reset remotely.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------|--------------------------|------------|
| Object Identifier | AV3 | BACnet Object Identifier | Read |
| Object Name | "Peak" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Current Reading | Real | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Process Value Unit | BACnet Engineering Units | Read |

Analog Value - Valley

This object represents the minimum process value measured since the last power cycle or reset. The unit of measure matches the selected process value. This value cannot be reset remotely.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------|--------------------------|------------|
| Object Identifier | AV4 | BACnet Object Identifier | Read |
| Object Name | "Valley" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Current Reading | Real | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Process Value Unit | BACnet Engineering Units | Read |

Analog Value - Velocity K-Factor

This object represents the Velocity K-Factor setting. When the instrument is used with a Pitot tube, the manufacturer may specify a K-Factor in order to properly convert differential pressure to velocity.

| Property | Default Value | Property Data Type | Access |
|-------------------|---------------------|--------------------------|------------|
| Object Identifier | AV5 | BACnet Object Identifier | Read |
| Object Name | "Velocity K-Factor" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | 1.0 | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | no-units | BACnet Engineering Units | Read |
| Max Pres Value | 9.999 | Real | Read |
| Min Pres Value | 0.001 | Real | Read |

Analog Value - Flow Area

This object represents the cross sectional area of the duct where flow is to be measured. The area is specific in either ft² or m² depending on the flow unit selected. The adjustment range is 0.13-25.0 ft² (0.012-2.323 m²). The factory setting is 1 ft² (0.093 m²).

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------------------|--------------------------|------------|
| Object Identifier | AV6 | BACnet Object Identifier | Read |
| Object Name | "Flow Area" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | 1.0 (0.093) | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | square-feet (square-meters) | BACnet Engineering Units | Read |
| Max Pres Value | 25.0 (2.323) | Real | Read |
| Min Pres Value | 0.13 (0.093) | Real | Read |

Multi-State Value - Process Mode

This object represents the process or operating mode of the instrument. This setting determines which process variable is output on the analog channels and measurement unit of the peak, valley, set points and alarm limits.

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------------------|--|------------|
| Object Identifier | MSV1 | BACnet Object Identifier | Read |
| Object Name | "Process Mode" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 1 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 3 | Unsigned | Read |
| State Text | "Pressure", "Velocity", "Flow" | BACnet Array[N] of Character String | Read |

Analog Value - Process Output Low

This object represents the process value at which the analog output channels will be at their minimum value. The unit of this value matches the unit of the selected process mode.

| Property | Default Value | Property Data Type | Access |
|-------------------|----------------------|--------------------------|------------|
| Object Identifier | AV7 | BACnet Object Identifier | Read |
| Object Name | "Process Output Low" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Analog Value - Process Output High

This object represents the process value at which the analog output channels will be at their maximum value. The unit of this value matches the unit of the selected process mode.

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------|--------------------------|------------|
| Object Identifier | AV8 | BACnet Object Identifier | Read |
| Object Name | "Process Output High" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Multi-State Value - Voltage Output Range

This object represents the nominal range of the voltage output channel.

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------------------|-------------------------------------|------------|
| Object Identifier | MSV2 | BACnet Object Identifier | Read |
| Object Name | "Voltage Output Range" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 1 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 4 | Unsigned | Read |
| State Text | {"0-10V", "0-5V", "2-10V", "1-5"} | BACnet Array[N] of Character String | Read |

Binary Value - Enable Set Point 1

This object represents the enable state of set point 1. When enabled, the set point 1 trigger and reset values are compared against the current process value.

| Property | Default Value | Property Data Type | Access |
|-------------------|----------------------|--------------------------|------------|
| Object Identifier | BV1 | BACnet Object Identifier | Read |
| Object Name | "Enable Set Point 1" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Active | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Analog Value - Set Point 1 Trigger Value

This object represents the process value at which set point 1 transitions from inactive to active. The unit of this value matches the unit of the selected process mode.

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------------|--------------------------|------------|
| Object Identifier | AV9 | BACnet Object Identifier | Read |
| Object Name | "Set Point 1 Trigger Value" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Analog Value - Set Point 1 Reset Value

This object represents the process value at which set point 1 transitions from active to inactive. The unit of this value matches the unit of the selected process mode.

| Property | Default Value | Property Data Type | Access |
|-------------------|---------------------------|--------------------------|------------|
| Object Identifier | AV10 | BACnet Object Identifier | Read |
| Object Name | "Set Point 1 Reset Value" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Binary Value - Set Point 1 Status

This object represents the current status of set point 1. When active, the SP1 LED on the instrument face is illuminated.

| Property | Default Value | Property Data Type | Access |
|-------------------|----------------------|--------------------------|------------|
| Object Identifier | BV2 | BACnet Object Identifier | Read |
| Object Name | "Set Point 1 Status" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Binary Value - Enable Set Point 2

This object represents the enable state of set point 2. When enabled, the set point 2 trigger and reset values are compared against the current process value.

| Property | Default Value | Property Data Type | Access |
|-------------------|----------------------|--------------------------|------------|
| Object Identifier | BV3 | BACnet Object Identifier | Read |
| Object Name | "Enable Set Point 2" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Active | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Analog Value - Set Point 2 Trigger Value

This object represents the process value at which set point 2 transitions from inactive to active. The unit of this value matches the unit of the selected process mode.

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------------|--------------------------|------------|
| Object Identifier | AV11 | BACnet Object Identifier | Read |
| Object Name | "Set Point 2 Trigger Value" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Analog Value - Set Point 2 Reset Value

This object represents the process value at which set point 2 transitions from active to inactive. The unit of this value matches the unit of the selected process mode.

| Property | Default Value | Property Data Type | Access |
|-------------------|---------------------------|--------------------------|------------|
| Object Identifier | AV12 | BACnet Object Identifier | Read |
| Object Name | "Set Point 2 Reset Value" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Binary Value - Set Point 2 Status

This object represents the current status of set point 2. When active, the SP2 LED on the instrument face is illuminated.

| Property | Default Value | Property Data Type | Access |
|-------------------|----------------------|--------------------------|------------|
| Object Identifier | BV4 | BACnet Object Identifier | Read |
| Object Name | "Set Point 2 Status" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Binary Value - Enable Alarm High Limit

This object represents the enable state of the alarm high limit. When enabled, the alarm high limit value is compared against the current process value.

| Property | Default Value | Property Data Type | Access |
|-------------------|---------------------------|--------------------------|------------|
| Object Identifier | BV5 | BACnet Object Identifier | Read |
| Object Name | "Enable Alarm High Limit" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Active | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Analog Value - Alarm High Limit

This object represents the process value at which the alarm high status transitions from inactive to active. The unit of this value matches the unit of the selected process mode. The alarm high status transitions from active to inactive at 1% full-scale less than this value.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------|--------------------------|------------|
| Object Identifier | AV13 | BACnet Object Identifier | Read |
| Object Name | "Alarm High Limit" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Model Specific | Real | Read |
| Min Pres Value | Alarm Low Limit | Real | Read |

Binary Value - Alarm High Limit Status

This object represents the current status of the alarm high limit. When active, the ALHI LED on the instrument face is illuminated.

| Property | Default Value | Property Data Type | Access |
|-------------------|---------------------------|--------------------------|--------------|
| Object Identifier | BV6 | BACnet Object Identifier | Read |
| Object Name | "Alarm High Limit Status" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read/Write** |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

**The high alarm status can be reset to inactive by writing inactive to the present value property. This is allowed only if the Manual Alarm Reset is Active and the process value no longer satisfies the alarm high condition. In all other cases a BACnet communication protocol error is returned.

Binary Value - Enable Alarm Low Limit

This object represents the enable state of the alarm low limit. When enabled, the alarm low limit value is compared against the current process value.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------------|--------------------------|------------|
| Object Identifier | BV7 | BACnet Object Identifier | Read |
| Object Name | "Enable Alarm Low Limit" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Active | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Analog Value - Alarm Low Limit

This object represents the process value at which the alarm low status transitions from inactive to active. The unit of this value matches the unit of the selected process mode. The alarm low status transitions from active to inactive at 1% full-scale greater than this value.

| Property | Default Value | Property Data Type | Access |
|-------------------|-------------------|--------------------------|------------|
| Object Identifier | AV14 | BACnet Object Identifier | Read |
| Object Name | "Alarm Low Limit" | Character String | Read |
| Object Type | Analog Value | BACnet Object Type | Read |
| Preset Value | Model Specific | Real | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | Alarm High Limit | Real | Read |
| Min Pres Value | Model Specific | Real | Read |

Binary Value - Alarm Low Limit Status

This object represents the current status of the alarm low limit. When active, the ALLO LED on the instrument face is illuminated.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------------|--------------------------|--------------|
| Object Identifier | BV8 | BACnet Object Identifier | Read |
| Object Name | "Alarm Low Limit Status" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read/Write** |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

**The low alarm status can be reset to inactive by writing inactive to the present value property. This is allowed only if the Manual Alarm Reset is Active and the process value no longer satisfies the alarm low condition. In all other cases a BACnet communication protocol error is returned.

Binary Value - Manual Alarm Reset

This object represents the alarm type setting (ALrE in the menu). When active, the alarm status will remain active after the alarm condition has passed.

| Property | Default Value | Property Data Type | Access |
|-------------------|----------------------|--------------------------|------------|
| Object Identifier | BV9 | BACnet Object Identifier | Read |
| Object Name | "Manual Alarm Reset" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Binary Value - Power Up Alarm Inhibit

This object represents the Low Alarm Inhibit (ALiH) SUB MENU. When enabled, the process value must be greater than the alarm low limit before an alarm low condition is considered active.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------------|--------------------------|------------|
| Object Identifier | BV10 | BACnet Object Identifier | Read |
| Object Name | "Power Up Alarm Inhibit" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Positive Integer Value - Alarm Delay

This object represents the amount of time an alarm condition must be continuously met before the alarm status becomes active.

| Property | Default Value | Property Data Type | Access |
|-------------------|------------------------|--------------------------|------------|
| Object Identifier | PIV1 | BACnet Object Identifier | Read |
| Object Name | "Alarm Delay" | Character String | Read |
| Object Type | Positive Integer Value | BACnet Object Type | Read |
| Preset Value | 0 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | 3600 | Real | Read |
| Min Pres Value | 0 | Real | Read |

Multi-State Value - Relay 1 Source

This object represents the relay 1 source setting. The selected source determines when the relay is active. If the source is active, the relay will be active.

| Property | Default Value | Property Data Type | Access |
|-------------------|--|-------------------------------------|------------|
| Object Identifier | MSV3 | BACnet Object Identifier | Read |
| Object Name | "Relay 1 Source" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 2 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 7 | Unsigned | Read |
| State Text | {"Off", "Set Point 1", "Set Point 2", "Any Alarm", "Alarm High Llimit", "Alarm Low Limit", "External Input"} | BACnet Array[N] of Character String | Read |

Multi-State Value - Relay 1 Action

This object represents the relay 1 action setting. The selected action determines what happens when the relay is active. If the selected source is an alarm, then the state text values are "Close" and "Open".

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------|-------------------------------------|------------|
| Object Identifier | MSV4 | BACnet Object Identifier | Read |
| Object Name | "Relay 1 Action" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 1 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 2 | Unsigned | Read |
| State Text | {"Direct", "Reverse"} | BACnet Array[N] of Character String | Read |

Multi-State Value - Relay 2 Source

This object represents the relay 2 source setting. The selected source determines when the relay is active. If the source is active, the relay will be active.

| Property | Default Value | Property Data Type | Access |
|-------------------|--|-------------------------------------|------------|
| Object Identifier | MSV5 | BACnet Object Identifier | Read |
| Object Name | "Relay 2 Source" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 3 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 7 | Unsigned | Read |
| State Text | {"Off", "Set Point 1", "Set Point 2", "Any Alarm", "Alarm High Llimit", "Alarm Low Limit", "External Input"} | BACnet Array[N] of Character String | Read |

Multi-State Value - Relay 2 Action

This object represents the relay 2 action setting. The selected action determines what happens when the relay is active. If the selected source is an alarm, then the state text values are "Close" and "Open".

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------|-------------------------------------|------------|
| Object Identifier | MSV6 | BACnet Object Identifier | Read |
| Object Name | "Relay 2 Action" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 1 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 2 | Unsigned | Read |
| State Text | {"Direct", "Reverse"} | BACnet Array[N] of Character String | Read |

Binary Value - Enable External Input

This object represents the enable state of the external input. When enabled, the external input is monitored and can be used to active a relay.

| Property | Default Value | Property Data Type | Access |
|-------------------|-------------------------|--------------------------|------------|
| Object Identifier | BV11 | BACnet Object Identifier | Read |
| Object Name | "Enable External Input" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Active | BACnet Binary PV | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Multi-State Value - External Input Type

This object represents the type of contact/switch connected to the external input.

| Property | Default Value | Property Data Type | Access |
|-------------------|--------------------------------------|-------------------------------------|------------|
| Object Identifier | MSV7 | BACnet Object Identifier | Read |
| Object Name | "External Input Type" | Character String | Read |
| Object Type | Multi-State Value | BACnet Object Type | Read |
| Preset Value | 1 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Number of States | 2 | Unsigned | Read |
| State Text | {"Normally Open", "Normally Closed"} | BACnet Array[N] of Character String | Read |

Positive Integer Value - External Input Activation Delay

This object represents the amount of time the external input must be continuously active before it is considered active.

| Property | Default Value | Property Data Type | Access |
|-------------------|-----------------------------------|--------------------------|------------|
| Object Identifier | PIV2 | BACnet Object Identifier | Read |
| Object Name | "External Input Activation Delay" | Character String | Read |
| Object Type | Positive Integer Value | BACnet Object Type | Read |
| Preset Value | 0 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | 3600 | Units | Read |
| Min Pres Value | 0 | Real | Read |

Binary Value - External Input Status

This object represents the current status of the external input. When active, the EXT LED on the instrument face is illuminated.

| Property | Default Value | Property Data Type | Access |
|-------------------|-------------------------|--------------------------|------------|
| Object Identifier | BV12 | BACnet Object Identifier | Read |
| Object Name | "External Input Status" | Character String | Read |
| Object Type | Binary Value | BACnet Object Type | Read |
| Preset Value | Inactive | BACnet Binary PV | Read |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |

Positive Integer Value - Damping Time

This object represents the time, in seconds, for the process measurement to reach 99.8% of the current input value. A value of 0 disables the damping feature.

| Property | Default Value | Property Data Type | Access |
|-------------------|------------------------|--------------------------|------------|
| Object Identifier | PIV3 | BACnet Object Identifier | Read |
| Object Name | "Damping Time" | Character String | Read |
| Object Type | Positive Integer Value | BACnet Object Type | Read |
| Preset Value | 0 | Unsigned | Read/Write |
| Status Flags | {0,0,0,0} | BACnet Status Flags | Read |
| Event State | Normal | BACnet Event State | Read |
| Reliability | No Fault Detected | BACnet Reliability | Read |
| Out Of Service | FALSE | Boolean | Read/Write |
| Units | Mode Specific | BACnet Engineering Units | Read |
| Max Pres Value | 30 | Real | Read |
| Min Pres Value | 0 | Real | Read |

Modbus® Communications Protocol Overview

NOTICE

Modbus® communications protocol installations should comply with Modbus® Communication Protocol over Serial Line Specification and Implementation Guide V1.02, Modbus® Organization, Inc., 2006

NOTICE

Communications wiring must be in a daisy-chain fashion. Star connections and T connections are not permitted

Modbus® Communications Protocol Functions

The DHC supports the following functions.

Modbus® Communications Protocol Registers

Input Registers

The String data type is read as a stream of ASCII characters with the first character sent in the MSB of the first register and the second character sent in the LSB of the first register and so on. If the string is shorter than the allotted size, the remaining bytes will be zero padded.

| INPUT REGISTERS | | | |
|-----------------|-----------------------|---------------|----------------------|
| Register | Description | Data Type | Range |
| 0001-0002 | Pressure | 32bit float | - |
| 0003-0004 | Velocity | 32bit float | - |
| 0005-0006 | Flow | 32bit float | - |
| 0007-0008 | Peak | 32bit float | - |
| 0009-0010 | Valley | 32bit float | - |
| 0011 | Set Point 1 Status | 16bit integer | 0=Inactive, 1=Active |
| 0012 | Set Point 2 Status | 16bit integer | 0=Inactive, 1=Active |
| 0013 | External Input Status | 16bit integer | 0=Inactive, 1=Active |
| 0014-0015 | Error Flags | 32bit integer | See Table Below |
| 8001-8016 | Model Number | String(32) | "DHC-XXX-XXX" |
| 8017-8020 | Serial Number | String(8) | "XXXXXX" |
| 8021-8028 | Firmware Version | String(16) | "X.X.X" |
| 8029-8032 | Date Code | String(8) | "XXXXXX" |

| Display Errors | Error Flags | |
|----------------|--------------|--------------------------|
| | Bit Position | Description |
| EADR | 0 | Invalid Address |
| ouEr | 1 | Over Range |
| Undr | 2 | Under Range |
| ER 1 | 3 | Sensor Range Exceeded |
| ER 2 | 4 | Sensor Error |
| ER 3 | 5 | No Sensor |
| ER 4 | 6 | User Settings Invalid |
| ER 5 | 7 | Factory Settings Invalid |
| ER 6 | 8 | External Memory Failure |
| ER 7 | 9 | Internal Memory Failure |

Holding Registers

| INPUT REGISTERS | | | |
|-----------------|---------------------------------|---------------|---|
| Register | Description | Data Type | Range |
| 0001-0016 | Device Name | String(32) | "DHC" |
| 0017 | Process Mode | 16bit integer | 0=Pressure, 1=Velocity, 2=Flow |
| 0018 | Pressure Unit | 16bit integer | 0=inWC, 1=ftWC, 2=mmWC, 3=cmWC, 4=PSI, 5=inHG, 6=mmHg, 7=mBar, 8=Pa, 9=kPa, 10=hPa, 11=ozin |
| 0019 | Velocity Unit | 16bit integer | 0=ft/min, 1=m/s |
| 0020 | Flow Unit | 16bit integer | 0=ft ³ /min, 1=m ³ /hr |
| 0021-0022 | Velocity K-Factor | 32bit float | 0.001-9.999 |
| 0023-0024 | Flow Area | 32bit float | 0.125-25ft ² (0.0116-2.3226m ²) |
| 0025-0026 | Process Output Low | 32bit float | - |
| 0027-0028 | Process Output High | 32bit float | - |
| 0029 | Voltage Output Range | 16bit integer | 0=0-10V, 1=0-5V, 2=1-5V, 3=2-10V |
| 0030 | Set Point 1 Enable | 16bit integer | 0=False, 1=True |
| 0031-0032 | Set Point 1 Trigger Value | 32bit float | - |
| 0033-0034 | Set Point 1 Reset Value | 32bit float | - |
| 0035 | Set Point 2 Enable | 16bit integer | 0=False, 1=True |
| 0036-0037 | Set Point 2 Trigger Value | 32bit float | - |
| 0038-0039 | Set Point 2 Reset Value | 32bit float | - |
| 0040 | Enable Alarm High Limit | 16bit integer | 0=False, 1=True |
| 0041-0042 | High Alarm Limit | 32bit float | - |
| 0043 | Enable Alarm Low Limit | 16bit integer | 0=False, 1=True |
| 0044-0045 | Low Alarm Limit | 32bit float | - |
| 0046 | Manual Alarm Reset | 16bit integer | 0=Disabled, 1=Enabled |
| 0047 | Power Up Alarm Inhibit | 16bit integer | 0=Disabled, 1=Enabled |
| 0048 | Alarm Delay | 16bit integer | 0-3600 |
| 0049 | Alarm High Limit Status | 16bit integer | 0=Inactive, 1=active |
| 0050 | Alarm Low Limit Status | 16bit integer | 0=Inactive, 1=active |
| 0051 | Relay 1 Source | 16bit integer | 0=Off, 1=Set Point 1, 2=Set Point 2, 3=Any Alarm, 4=High Alarm Limit, 5=Low Alarm Limit, 6=External Input |
| 0052 | Relay 1 Action | 16bit integer | 0=Direct, 1=Reverse |
| 0053 | Relay 2 Source | 16bit integer | 0=Off, 1=Set Point 1, 2=Set Point 2, 3=Any Alarm, 4=High Alarm Limit, 5=Low Alarm Limit, 6=External Input |
| 0054 | Relay 2 Action | 16bit integer | 0=Direct, 1=Reverse |
| 0055 | Enable External Input | 16bit integer | 0=False, 1=True |
| 0056 | External Input Type | 16bit integer | 0=Normally Open, 1=Normally Closed |
| 0057 | External Input Activation Delay | 16bit integer | 0-3600 |
| 0058 | Damping Time | 16bit integer | 0-30 |

Pressure/Velocity/Flow Units: The unit selected is independent of the display unit.

Alarm High/Low Limit Status: The alarm status can be reset to inactive by writing inactive to the status register. This is allowed only if Manual Alarm Reset is Enabled and the process value no longer satisfies the alarm condition. In all other cases a Modbus® communications protocol error is returned.

Multi-Address Support

Multi-address support allows a register to be read or written to using different byte orientations specified by the address range. For example, input register 0001 can also be read at 2001, 4001 and 6001 with different byte orientations as listed in the table below. Registers that do not have multi-address support are only available in Big-Endian byte orientation (Modbus® communications protocol standard).

| Byte Order | Address Range | 32bit Values | | | | 16bit Values | |
|---------------|---------------|--------------|---|------------|-----|--------------|-----|
| | | Register 1 | | Register 1 | | Register 1 | |
| | | MSB | | | LSB | MSB | LSB |
| Big-Endian | 0001-2000 | A | B | C | D | A | B |
| Byte Swap | 2001-4000 | B | A | D | C | B | A |
| Word Swap | 4001-6000 | C | D | A | B | A | B |
| Little-Endian | 6001-8000 | D | C | B | A | B | A |

MAINTENANCE

Upon final installation of the Series DHC, no routine maintenance is required. The Series DHC is not field serviceable and should be returned if repair is needed. Field repair should not be attempted and may void warranty.

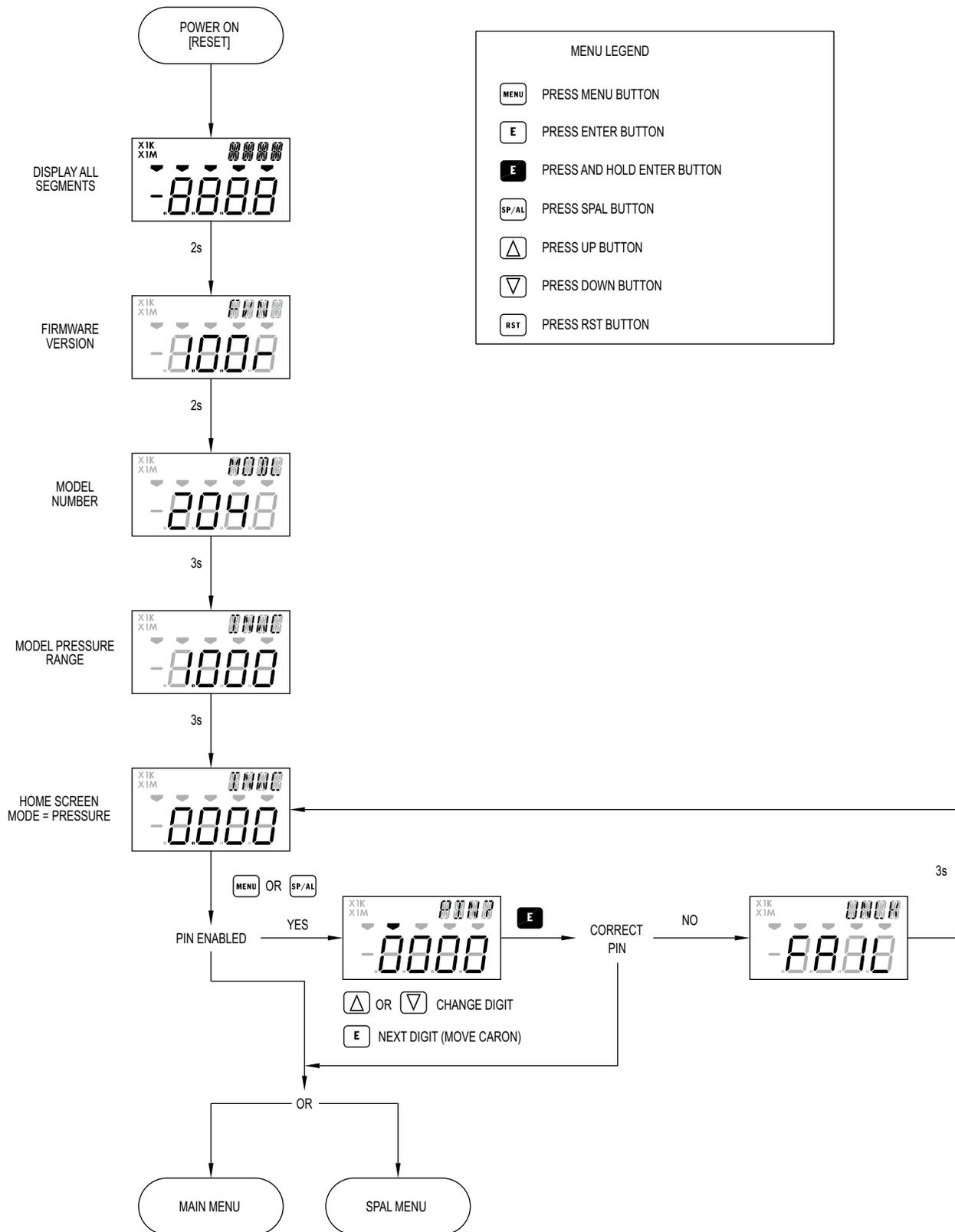


This symbol indicates waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.

WARRANTY/RETURN

Refer to "Terms and Conditions of Sale" in our catalog and on our website. Contact customer service to receive a Return Materials Authorization (RMA) number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

MENU MAPS

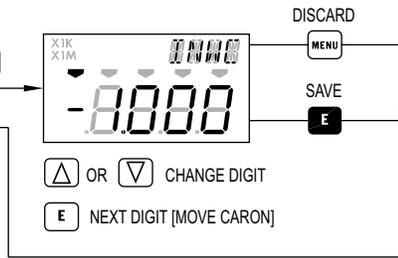
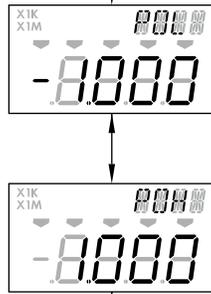


OPERATION MENU
[CONTINUED]

AVAILABLE WHEN
MODE = PRESSURE

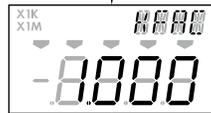
PRESSURE
OUTPUT LOW

PRESSURE
OUTPUT HIGH



AVAILABLE WHEN
MODE = VELOCITY
OR FLOW

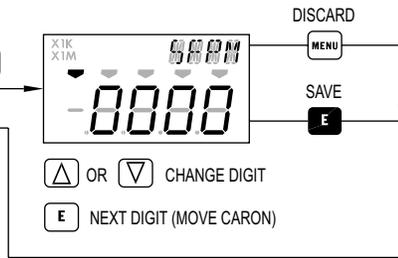
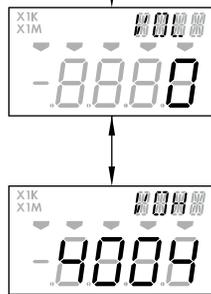
VELOCITY
K-FACTOR



AVAILABLE WHEN
MODE = VELOCITY

VELOCITY
OUTPUT LOW

VELOCITY
OUTPUT HIGH

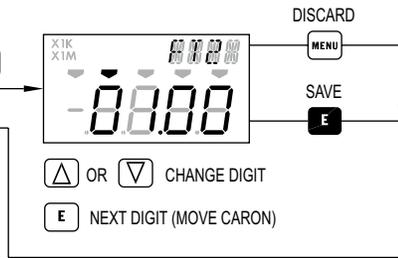
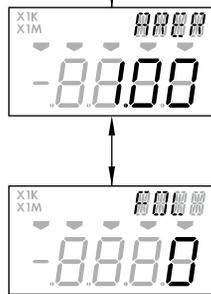


AVAILABLE WHEN
MODE = FLOW

DUCT AREA

FLOW OUTPUT
LOW

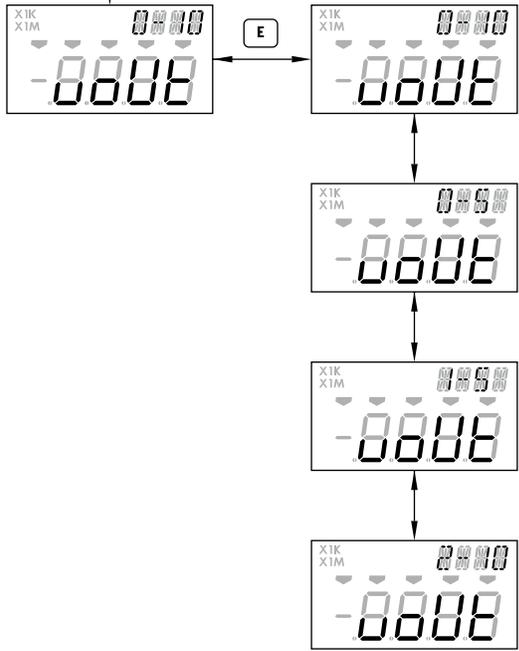
FLOW OUTPUT
HIGH

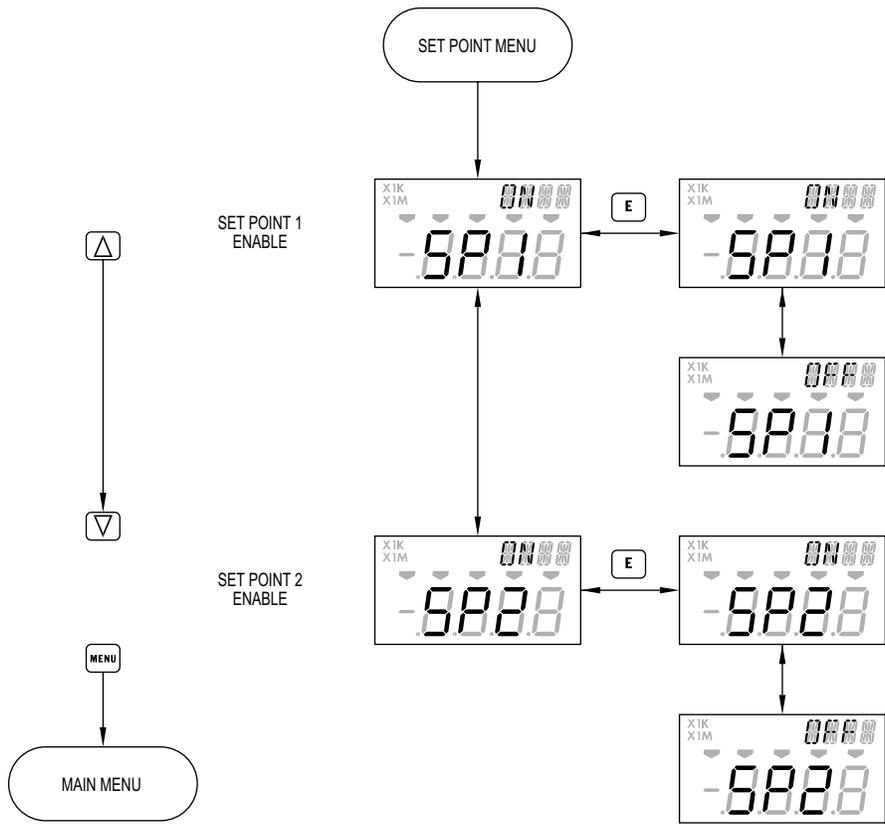


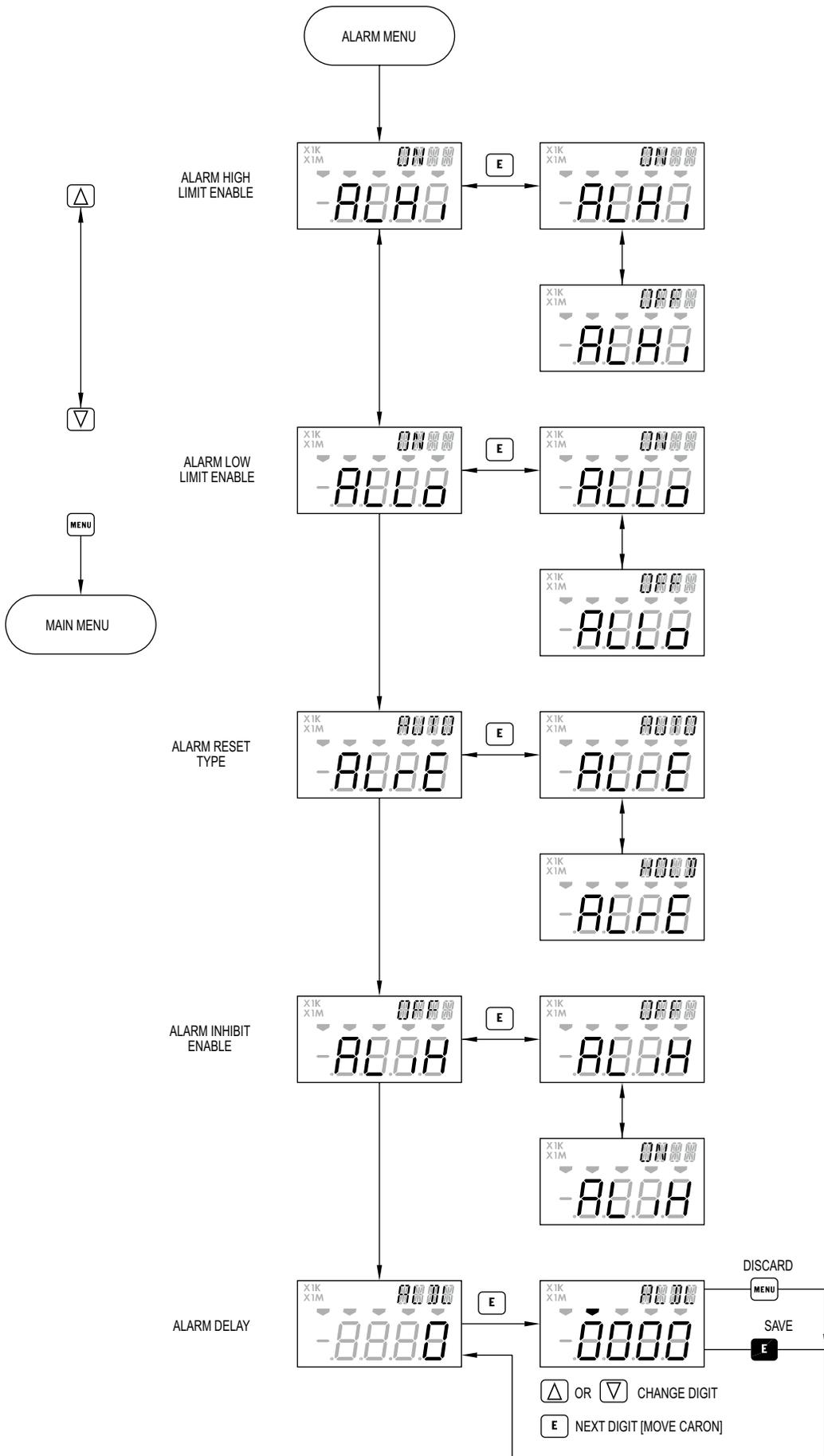
OPERATION MENU
[CONTINUED]

OPERATION MENU
[CONTINUED]

VOLTAGE OUTPUT
RANGE







ALARM MENU

ALARM HIGH
LIMIT ENABLE

ALARM LOW
LIMIT ENABLE

ALARM RESET
TYPE

ALARM INHIBIT
ENABLE

ALARM DELAY



MENU

MAIN MENU

E

E

E

E

E

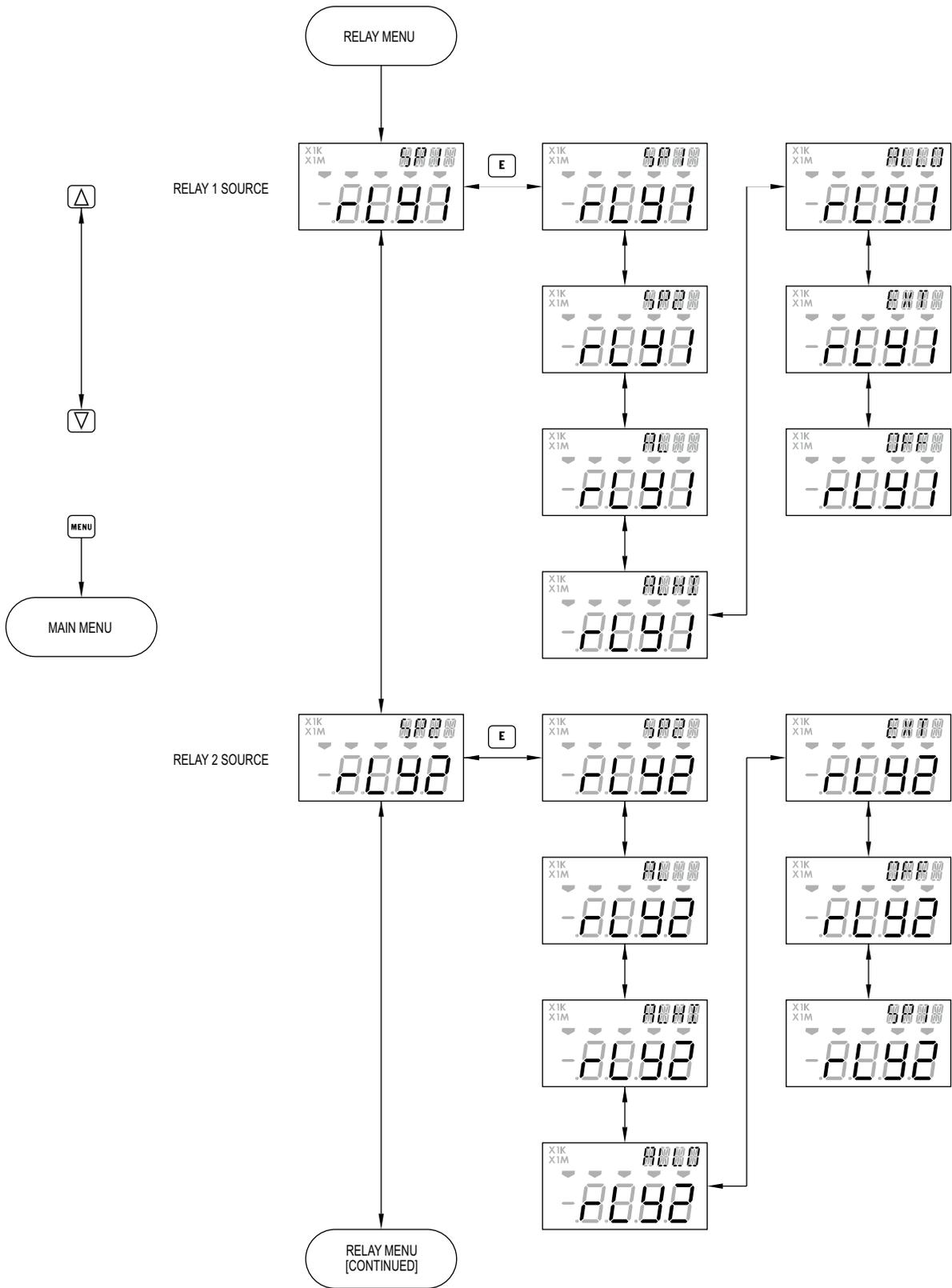
DISCARD

MENU

SAVE

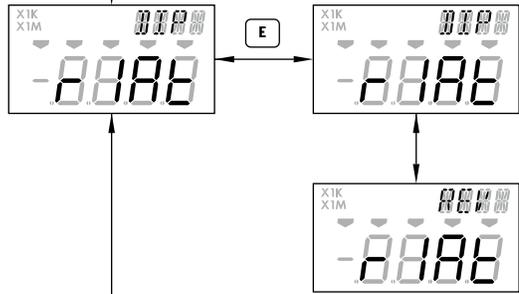
▲ OR ▼ CHANGE DIGIT

E NEXT DIGIT [MOVE CARON]

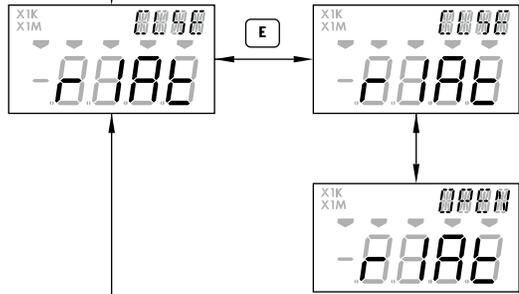


RELAY MENU
[CONTINUED]

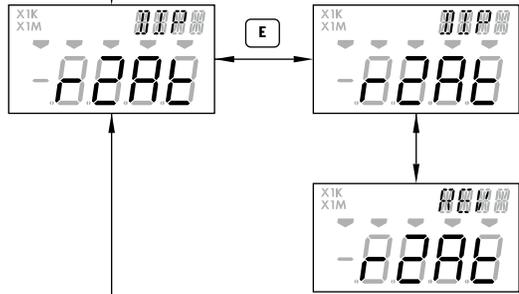
RELAY 1 ACTION
IF RELAY 1 SOURCE = SP1, SP2, OR EXT



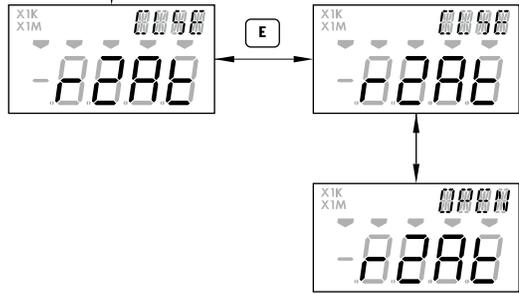
RELAY 1 ACTION
IF RELAY 1 SOURCE = AL, ALHI, OR ALLO

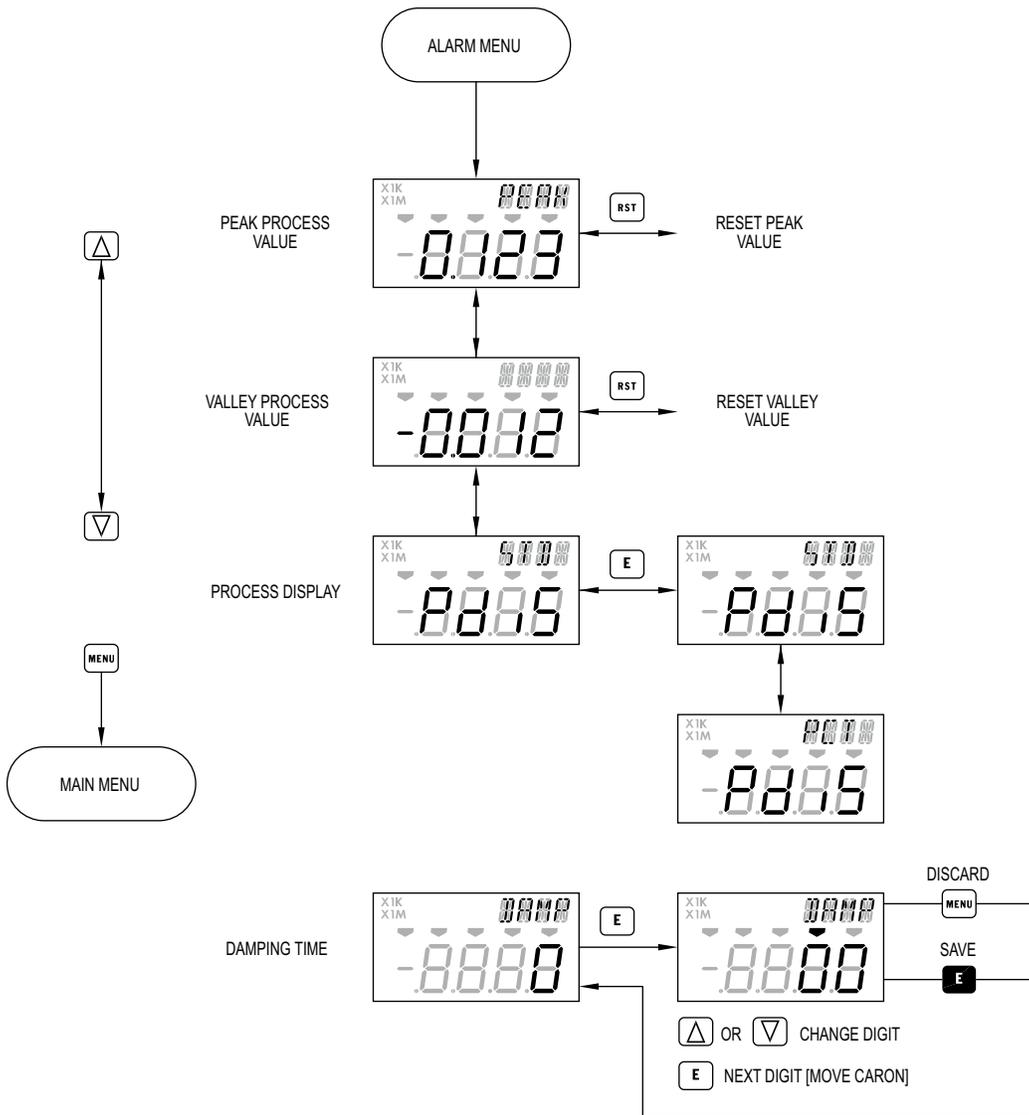


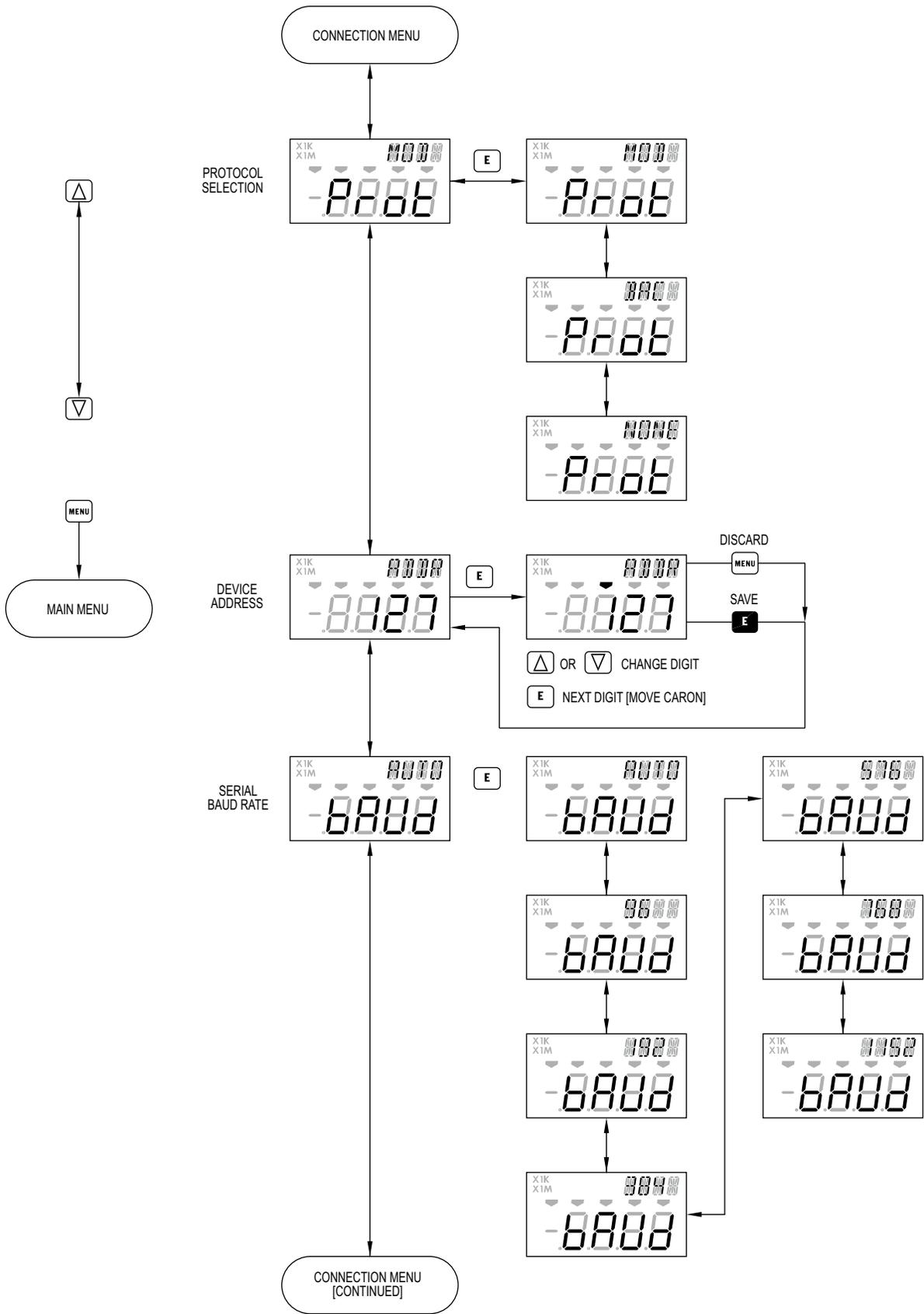
RELAY 2 ACTION
IF RELAY 2 SOURCE = SP1, SP2, OR EXT



RELAY 2 ACTION
IF RELAY 2 SOURCE = AL, ALHI, OR ALLO





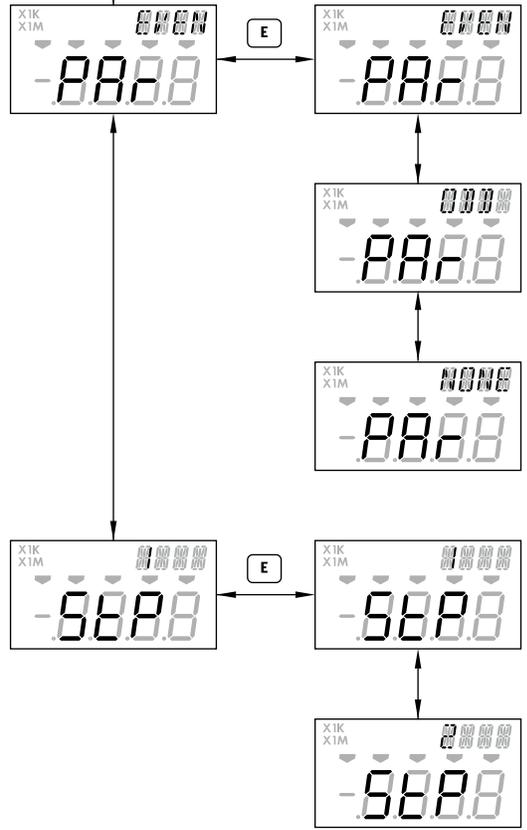


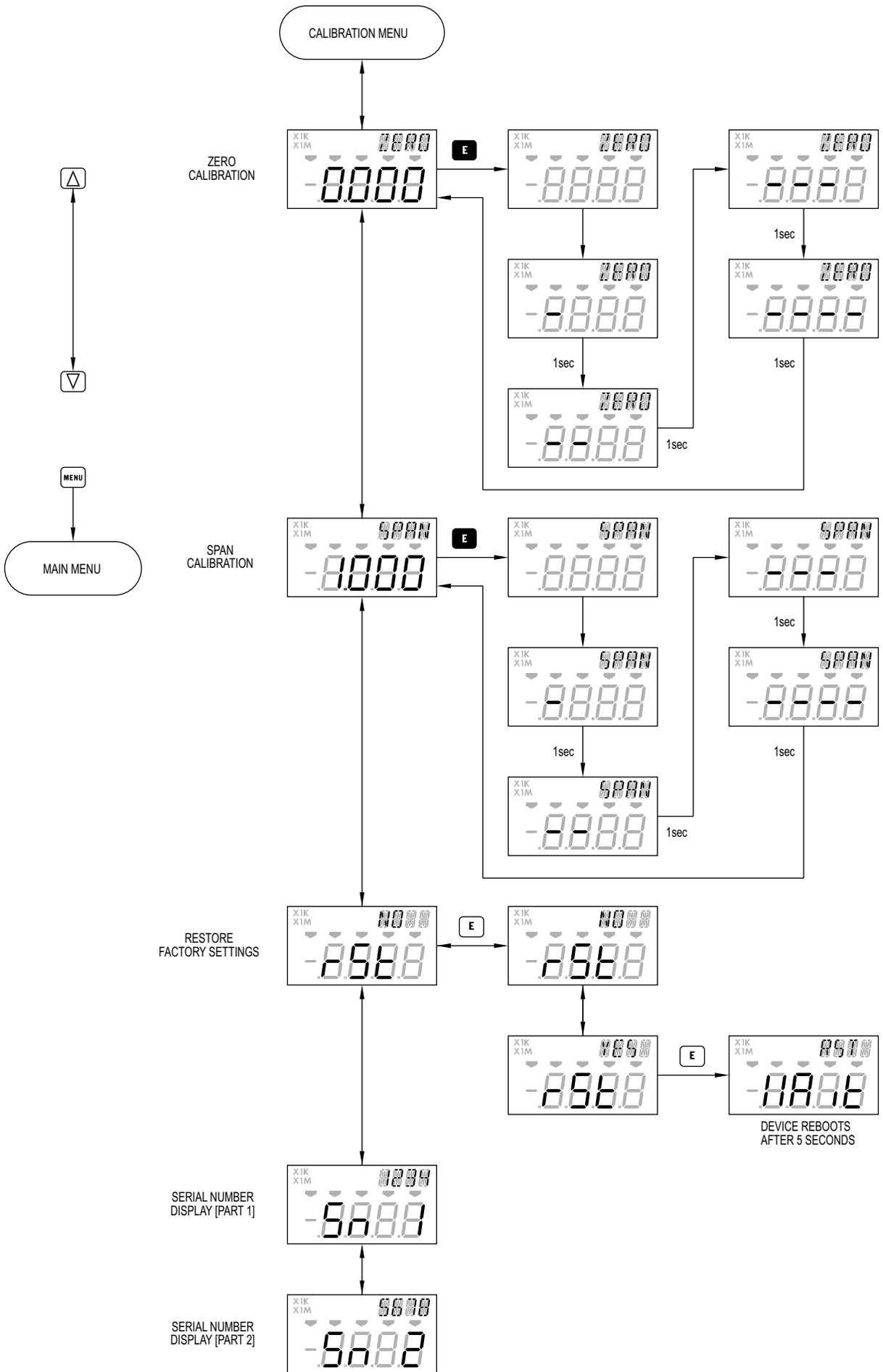
OPERATION MENU
[CONTINUED]

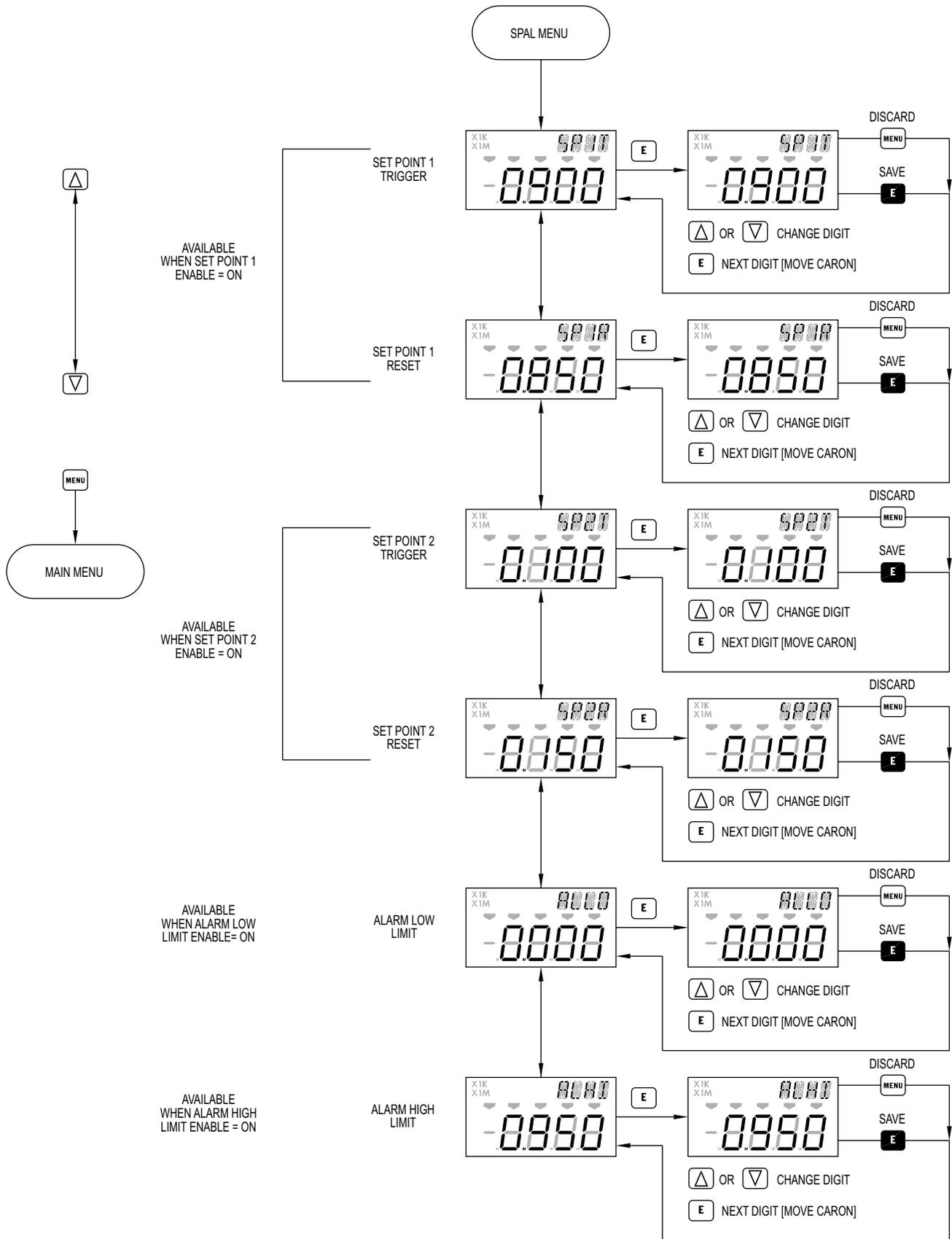
AVAILABLE WHEN
PROTOCOL SELECTION = MODBUS®
AND
SERIAL BAUD RATE ≠ AUTO

SERIAL PARITY

SERIAL STOP BITS







Modbus® is a registered trademark of Schneider Automation, Inc.