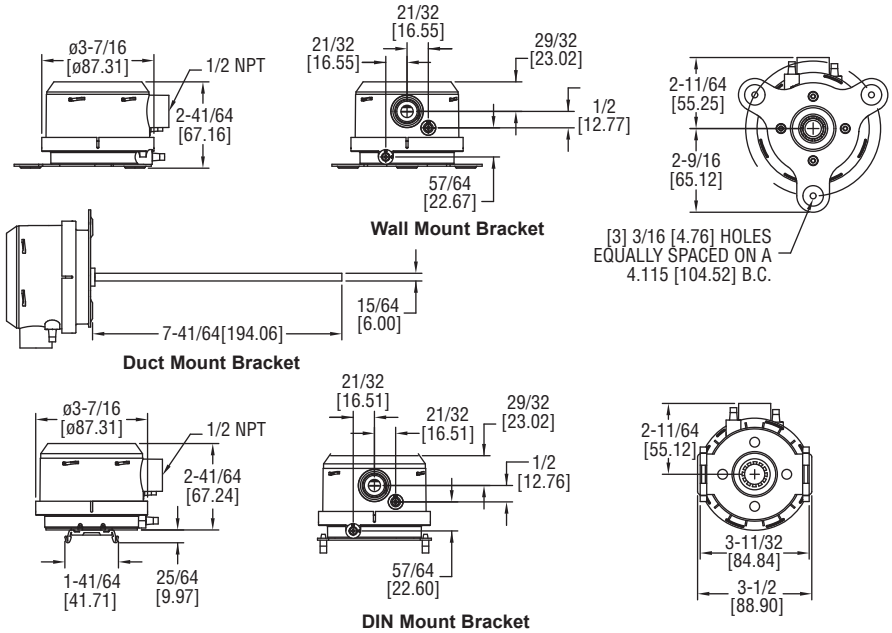
Series MS2 Magnesense® II Differential Pressure Transmitter with BACnet Communication

Specifications - Installation and Operating Instructions



The Series MS2 Magnesense® II Differential Pressure Transmitter with BACnet Communication Protocol combines the proven stable Hall Effect sensing technology of our original MS Series with additional features to reduce installation time and simplify ordering. When using the pluggable integral display, either Metric or English engineering units can be selected by changing the dip switch position. A major benefit of the communications is the transmitters can be daisy-chained together to reduce wiring time and installation cost. The communications allow for the transmitter to integrate seamlessly into the existing building automation control.

Like the original Series MS, the second generation transmitter can display pressure or velocity with the square root extraction internal to the transmitter. Additional parameters have been included to expand the square root capability to include flow measurements.

INSTALLATION

Surface Mount:
The transmitter should be mounted on a vertical surface with the connections directed down to prevent moisture from entering either the pressure ports or the electrical cable entry. The diaphragm must be vertical to minimize gravity effects on the diaphragm. Attach the mounting flange to a flat surface using three #8 x 1/2″ pan head sheet metal screws. Do not over tighten.

Duct Mount:
The transmitter should be mounted away from fans, corners, heating and cooling coils and other equipment that will affect the measurement of the pressure.
1. To mount the transmitter, drill a 9/16″ (12.70 mm) diameter hole into the duct.
2. Insert transmitter probe into the duct.
3. Mark location of three mounting holes on duct using mounting flange as template. Drill holes.
4. Attach mounting flange to duct with three #8 x 1/2″ pan head sheet metal screws. Do not over tighten screws.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±1% FS for 0.25″ (50 Pa), 0.5″ (100 Pa), 2″ (500 Pa), 5″ (1250 Pa), 10″ (2 kPa), 15″ (3 kPa), 25″ (5 kPa); ±2% FS for 0.1″ (25 Pa), 1″ (250 Pa), and all bi-directional ranges.
Stability: ±1% / year FSO.
Temperature Limits: 0 to 150°F (-18 to 66°C).
Pressure Limits: 1 psi max., operation; 10 psi burst.
Power Requirements: 10 to 36 VDC or isolated 21.6 to 33 VAC.
Output Signals: BACnet MS/TP communication protocol.
Response Time: Averaging, adj 0 to 240 s.
Zero & Span Adjustments: Digital push buttons.
Current Consumption: 40 mA max.
Display (optional): 5-digit LCD.
Electrical Connections: 5-wire terminal block, 18 to 24 AWG.
Electrical Entry: 1/2″ NPS thread; Accessory (A-151): Cable gland for 5 to 10 mm diameter cable.
Process Connection: 3/16″ ID tubing (5 mm ID); Max. OD 9 mm.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Diaphragm in vertical position.
Weight: 8.0 oz (230 g).
Agency Approvals: CE.

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Electrical Wiring

NOTICE Wiring should comply with *Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems, TIA/EIA-485-A-1998*, Telecommunications Industry Association, 1998.

NOTICE Wiring should comply with *ANSI/ASHRAE Standard 135-2010 BACnet A Data Communication Protocol for Building Automation and Control Networks*, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 2010.

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

NOTICE Cable shield must be connected to earth ground at one location only.

Figure 1 shows how to connect the MS2 in a network containing a common power supply. Use a cable containing two twisted pairs. One pair is to be used for B(+) and A(-). The other pair is to be used for power and common. This configuration is not suitable for AC supplies. Use a DC supply only. Care should be taken that there are not too many devices powered from the same supply as voltage drops will occur in the wiring. If you have many devices, or have long cable runs, the local supply configuration may be a better choice.

Figure 2 shows how to connect the MS2 in a network containing individual local supplies. Use a cable containing a twisted pair and a single conductor. The pair is to be used for B(+) and A(-). The single conductor is to be used for common. Both AC and DC supplies are suitable for this configuration.

In either configuration you must use shielded cable. The MS2 has a shield terminal for a convenient location to make connections. It is not electrically connected to the MS2. Connect the shield to earth ground at one location only to prevent ground loops.

All devices in the network should be daisy chained. Star connections and T connections are not permitted.

The B(+) and A(-) lines must be terminated at both ends with a 120 ohm resistor. If the MS2 is an end device it has an on-board resistor that may be used. See DIP SWITCH SETTINGS to enable it.

The network must be biased properly. If needed, there are bias resistors on-board the MS2. No more than two sets of bias resistors should be enabled in the network. See DIP SWITCH SETTINGS to enable them.

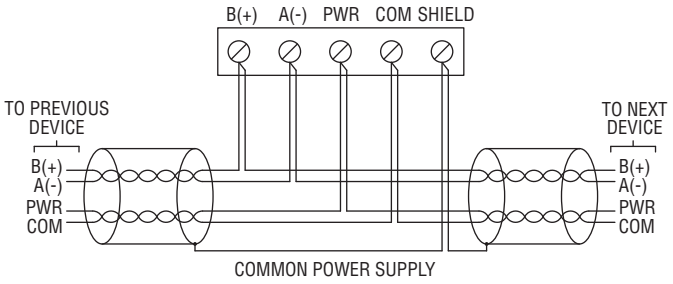


Figure 1

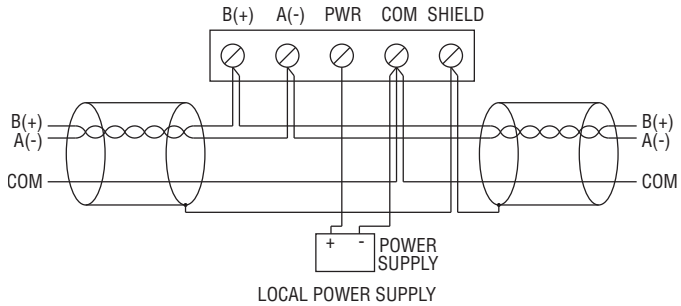


Figure 2

Dip Switch Configurations

Figure 3

Use the left DIP Switch SW1 to configure the BACnet MS/TP MAC communication protocol address of the device. The LCD will show the address when the transmitter is powered on. Valid addresses range from 1 to 127. By default, the device is shipped with the address 127 (as shown in Figure 3). A valid and unused address should be set before connecting to an existing network. However, the address can be changed while the device is operational. If the address is changed, the device will stop responding to the currently configured address immediately. The device waits 15 seconds after the last switch change before applying the new address. The device will not function properly if an invalid address is set. The red LED will periodically blink once indicating an invalid address. The LCD will display "A Err" when the transmitter is powered on if the address is invalid. See Appendix I for setting the BACnet MS/TP MAC address of the device.

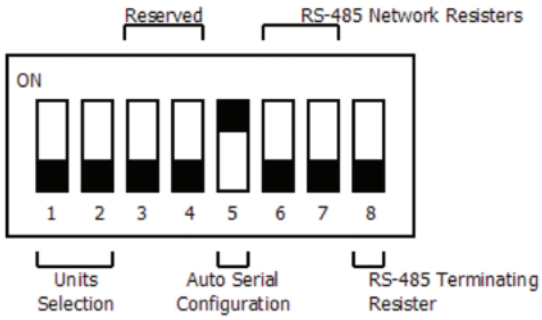


Figure 4

Use the right DIP Switch SW2 to configure other hardware and software options.

Table 1: DIP Switch SW2 Functions

Switch	On	Off
1-2 – Display Units Selection (See Table 2)		
3-4 – Reserved		
5 - Reset BACnet Configuration to factory defaults	Reset settings at Power On	Settings Preserved
6 - B(+) Network Resister	511Ω Pull-up to 5V	Pull-up not connected
7 - A(-) Network Resister	511Ω Pull-down to GND	Pull-down not connected
8 - Terminating Resister	120Ω between A(-) and B(+)	Open

Table 2: Display Units Selection

Switch 1	Switch 2	Unit
OFF	OFF	Inches of Water Column (in WC)
ON	OFF	Pascal (Pa)
OFF	ON	Millimeters of Water Column (mm WC)
ON	ON	Kilo-Pascal (kPa)

NOTICE When using the on-board buttons, there is a 5 second delay from the time the zero or span calibration button is released until the time that the change in calibration takes place. This delay is used to prevent stress related offsets on the lower ranges.

NOTICE The security level that is set in the Programming Menu Section of the manual will determine which calibrations, if any, may be adjusted by the user through the on-board buttons, but the calibration can be changed at any time through the communications.

Zero Calibration
The zero calibration can be set by applying zero pressure to both the pressure ports and pressing the zero button for 3 seconds. If the local LCD is present, the display will read Zero and then sequence back to the home display.

Span Calibration
The span calibration can be adjusted only after setting the zero adjustment. It must be completed within 5 minutes of the last zero calibration. The span calibration button will be ignored until the zero calibration is completed. Apply pressure to the port of the transmitter that is associated with the maximum end of the transmitter range. Press and hold the span button for 3 seconds. If the local LCD is present, the display will read SPAn and then sequence back to the home display. If the span calibration is attempted before adjusting the zero calibration, the FAIL error message will flash on the display.

LCD Display
The Magnesense® II Differential Pressure Transmitter can be ordered with an optional, integral LCD. If the display is not needed for normal operation, the transmitter can be ordered without the LCD. A Model A-MS2-LCD field upgradeable display is available. It comes with a housing cover with the overlay cut out for the display. The display will plug into the pins as shown in Figure 5.

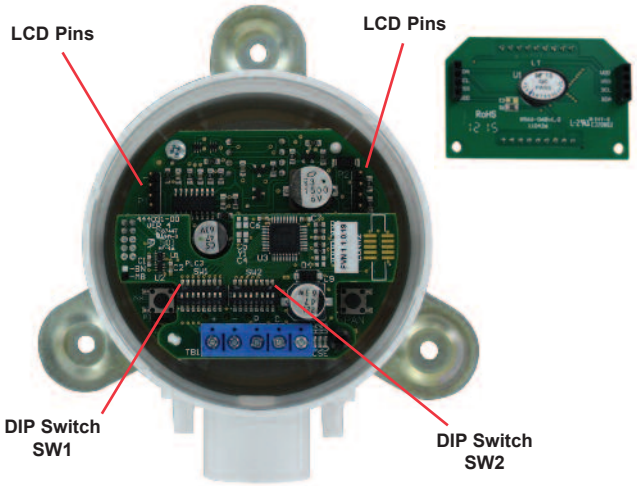


Figure 5

Display Error Messages
ovEr = The applied pressure is greater than the maximum span value causing an Over Range Error.
UndEr = The applied pressure is less than the minimum span value causing an Under Range Error.
FAiL = When the span or zero buttons are pressed, the pressure value is out of the range to allow a correct setting. This may be due to a sensor failure or incorrect pressure being applied.
Err1 = The sensor is damaged.

PROGRAMMING MENUS

Home Menu
During normal operation, the display will be in the Home Menu and will display the current measured pressure and the engineering units.

Menu Access Security
While in the Home Menu, press and hold the Zero and Span buttons simultaneously until SECUr appears on the display in order to access the other programming menus. Upon releasing the buttons, the display will indicate the current security level.

If the current security level is the security level desired (i.e. Security Level 0), press and hold the span button for three seconds to enter the Pressure, Velocity, or Air Flow Menu.

If the security level is not the desired level, it can be changed temporarily to a lower security level or permanently to a higher level of security by pressing the zero button. A security code will be shown on the display and it can be changed to one of the codes listed in the below table. The span button chooses which digit and the zero button increments the value of that digit. Pressing and holding the span button will store the value.

Security Level	Setting	Access			
		View Menu	Edit Menu	Span	Zero
0	000	Yes	Yes	Yes	Yes
1	111	Yes	No	No	Yes
2	222	No	No	No	Yes
3	333	No	No	No	No

The level of access to the programming menus and the calibration is limited based on the security level. The above table details the level of access for each security level.

Programming Via BACnet MS/TP Communication Protocol

Supported BACnet Communication Protocol MS/TP Configurations

Supported Baud Rates	Data Size	Parity	Stop Bits
9600 19200 38400 57600 76800 115200	8	None	1

Auto-Baud Serial Configuration
Auto-baud serial configuration enables the device to determine the baud rate directly from the serial traffic. This allows a device to be quickly and easily deployed after a valid BACnet Communication Protocol MS/TP address is chosen.

To activate auto-baud serial configuration, set a valid BACnet Communication Protocol MS/TP address using the left DIP switch SW1, connect the serial bus and power wires, and then apply power. The device will power up and begin examining the serial bus for communication. The Red LED will repeatedly flash twice, indicating that auto-baud serial configuration is in progress.

If the device is setup offline or away from the main network, it is necessary to generate BACnet Communication Protocol MS/TP traffic in order to configure the serial communication. Initiating a WhoIs command is a good method to generate BACnet Communication Protocol MS/TP traffic and verify the device is working properly. Note that while serial configuration is in progress, the device may not respond to requests. The device may require multiple requests to complete the serial configuration process.

The auto-baud serial configuration process will complete once a WhoIs or ReadProperty command is successfully received and processed.

The auto-baud serial configuration procedure is started after a power-cycle and after a change to the MS/TP address.

BACnet Communication Protocol Object Overview
The device supports the following objects

Object Type	Dynamically Creatable	Dynamically Deletable	Object Identifier	Object Name
Device	No	No	607xxx	MS2 Pressure
Analog Input	No	No	AI1 AI2 AI3 AI4	Pressure inWC Pressure Pascals Pressure Kilo-Pascals Pressure mmWC
Analog Value	No	No	AV1 AV2 AV3 AV4 AV5 AV6 AV7	Velocity FPM Velocity MPS Flow CFM Flow CMH Velocity K Value Flow Area SqFt Sensor Present
Binary Value	No	No	BV1 BV2 BV3 BV4	Use Default K Value Zero Span Restore Factory Pressure Values

Device Information

The default device object identifier is 607xxx, where xxx is replaced by the MS/TP MAC address set by the left DIP switch SW1. 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. See Appendix II for the device object property table.

NOTICE Changes to Max Master and Max Info frames require a power cycle/reset to take effect.

Accessing the Measurements

The analog input object AI1 through AI4 are for viewing the pressure measurement in the desired engineering units. The object property tables for these analog input objects can be found in Appendix III.

Analog value object AV1 through AV4 are for viewing the Air Velocity or Air Flow calculated values in the desired engineering units. The object property tables for the analog value objects can be found in Appendix IV.

Setting the K Factor and Area

There is an additional analog object value (AV5) for setting the K factor used to calculate the velocity and air flow. The present value would be the value of the K factor and can be set from 0 to 9.999.

For flow measurements, the area will also have to be set using analog value object AV6. The present value would be the area in square feet. The area can be set from 0.01 to 999.99 square feet.

The object property tables for the analog value objects can be found in Appendix IV.

From the factory, a K factor and the area are preset to be 1.000. If at any time the user would like to default back to these values, they can disable the programmed K factor and area mentioned above using the binary value object (BV1). The present value of this object determines how the velocity and flow will be calculated. When this value is ACTIVE (1), the default values for the K factor and area will be used. If the value is INACTIVE (0), the presently set values for the K factor and area will be used. The object property tables for the binary value objects can be found in Appendix V.

Zero Calibration

Zero calibration can be done either with the push buttons or using BACnet communications. Both pressure ports should either be vented to atmospheric pressure or should have no pressure applied. When using BACnet communications, the binary value object (BV2) will be used to signal the transmitter to zero the reading. The present value of this object will be set to ACTIVE (1) to initiate the re-calibration of the zero point of the sensor. The zero function will only work if the current pressure is within ±2% of the span pressure of the previous zero. If the current pressure is outside of this valid band, the zero function will fail and the present value will be changed to INACTIVE (0). The zero function takes at most 10 seconds to complete. If after this time the present value remains ACTIVE (1), then the command was executed successfully. The object property tables for the binary value objects can be found in Appendix V.

Span Calibration

In order to adjust the span calibration, apply pressure to the ports of the transmitter that is associated with the maximum end of the transmitter range. The binary value object (BV3) will be used to signal the transmitter to adjust span. The present value will be set to ACTIVE (1) to initiate the span calibration. The span calibration can be adjusted only after setting the zero adjustment. It must be completed within 5 minutes of the last zero calibration. The span calibration command will fail until the zero calibration is completed and the present value will be returned to INACTIVE (0). The span function takes at most 10 seconds to complete. If after this time, the present value remains ACTIVE (1), then the command was executed successfully. The object property tables for the binary value objects can be found in Appendix V.

Reset Factory Defaults

Present values for the zero, span, K factor, area, and Use Default K Factor can be restored to the factory settings using the binary value object (BV4). The present value will be set to ACTIVE (1) to initiate the factory default procedure. The factory default takes at most 10 seconds to complete. If after this time, the present value remains ACTIVE (1), then the command was executed successfully. The object property tables for the binary value objects can be found in Appendix V.

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”.

LED Status

The device provides three LEDs to indicate status and activity. The LEDs are located to the right of the terminal block and are arranged from left to right as green, yellow, and red. The green LED indicates communication with the pressure sensor. This LED will flash very quickly most of the time, even without requests from the BACnet Communication Protocol interface. The yellow LED indicates BACnet Communication Protocol MS/TP communication addressed to this specific device. The frequency and duration of this LED depends on the baud rate and size of request sent. The red LED indicates error states by flashing specific error codes periodically.

Number of Flashes	Error Description
Solid On (not flashing)	Invalid Factory Configuration
1	Invalid BACnet Communication Protocol MS/TP Address
2	Auto Baud Configuration in progress, unit may not respond to requests
3	Communication with pressure sensor failed

MAINTENANCE/REPAIR
Upon final installation of the Series MS2 Differential Pressure Transmitter, no routine maintenance is required. The Series MS2 is not field serviceable and it is not possible to repair the unit. Field repair should not be attempted and may void warranty.

WARRANTY/RETURN
Refer to “Terms and Conditions of Sales” in our catalog and on our website. Contact customer service to receive a Return Goods Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

Appendix I: Setting BACnet Communication Protocol MS/TP MAC Address of Unit

Switch Position	1	2	3	4	5	6	7	8
Address Value	128	64	32	16	8	4	2	1

The address assignment is determined by adding the values for each of the switches that are in the ON position. The transmitter comes from the factory with all of the dip switches, except position 1, in the ON position as shown in Figure 6 below. The address of the transmitter would be 127 as it would be 64+32+16+8+4+2+1 = 127. Another example would be if the address desired was 008, the only dip switch position in the ON position would be position 5 as shown in Figure 7 below.

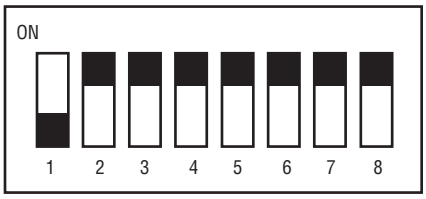


Figure 6: Address of Transmitter is 127

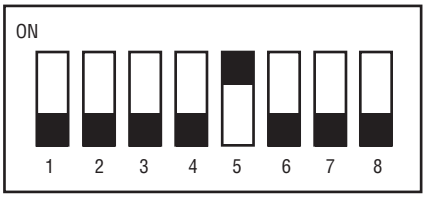


Figure 7: Address of Transmitter is 008

NOTICE Though the minimum possible address would be address 0 when all the dip switch positions were set to OFF, and the maximum possible address would be address 255 when all of the dip switches were set to ON, the transmitter only has valid address from 1 to 127. Any address outside of this range will give an error code.

Appendix II: Device Object Property Table

Property	Default Value	Property Data Type	Access
Object Identifier	607xxx	BACnetObjectIdentifier	Read/Write
Object Name	MS2 Pressure	CharacterString(32)	Read/Write
Object Type	DEVICE(8)	BACnetObjectType	Read
System Status	Operational(0)	BACnetDeviceStatus	Read
Vendor Name	“Dwyer Instruments, Inc.”	CharacterString	Read
Vendor Identifier	607	Unsigned	Read
Model Name	“MS2”	CharacterString	Read
Firmware Revision	“X.X.X”	CharacterString	Read
Application Software Version	“X.X.X.X”	CharacterString	Read
Location		CharacterString(32)	Read/Write
Description	“Diff. Pressure Transmitter”	CharacterString(32)	Read/Write
Protocol Version	1	Unsigned	Read
Protocol Revision	12	Unsigned	Read
Protocol Services Supported	See PICS	BACnet ServicesSupported	Read
Protocol Object Types Supported	See Table on page 4	BACnetObjectTypes Supported	Read
Object List	See Table on page 4	BACnetArray	Read
Maximum APDU Length Accepted	128	Unsigned	Read
Segmentation Supported	NO_SEGMENTATION (3)	BACnet Segmentation	Read
APDU Timeout	0	Unsigned	Read
Number of APDU Retries	0	Unsigned	Read
Max Master	127	Unsigned	Read/Write
Max Info Frames	1	Unsigned	Read/Write
Device Address Binding	Empty	BACnetAddress Binding	Read
Database Revision	0	Unsigned	Read
Serial Number (1000)		CharacterString	Read
Sensor Serial Number (1001)		CharacterString	Read

Appendix III: Analog Input Object Property Table

Property	Default Value	Property Data Type	Access
Object Identifier	AI1	BACnetObjectIdentifier	Read
Object Name	Pressure inWC	CharacterString	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Inches-of-water (58)	BACnetEngineeringUnits	Read

Analog Input (AI1): Pressure in inches of water column.

Property	Default Value	Property Data Type	Access
Object Identifier	AI2	BACnetObjectIdentifier	Read
Object Name	Pressure Pascals	CharacterString	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	pascals (53)	BACnetEngineeringUnits	Read

Analog Input (AI2): Pressure in Pascals.

Property	Default Value	Property Data Type	Access
Object Identifier	AI3	BACnetObjectIdentifier	Read
Object Name	Pressure Kilo-Pascals	CharacterString	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	kilopascals (54)	BACnetEngineeringUnits	Read

Analog Input (AI3): Pressure in Kilo-Pascals.

Property	Default Value	Property Data Type	Access
Object Identifier	AI4	BACnetObjectIdentifier	Read
Object Name	Pressure mmWC	CharacterString	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Millimeters-of-water (206)	BACnetEngineeringUnits	Read

Analog Input (AI4): Pressure in millimeters of water column.

Appendix IV: Analog Value Object Property Table

Property	Default Value	Property Data Type	Access
Object Identifier	AV1	BACnetObjectIdentifier	Read
Object Name	Velocity FPM	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Feet-per-minute (77)	BACnetEngineeringUnits	Read

Analog Value (AV1): Velocity in Feet per Minute.

Property	Default Value	Property Data Type	Access
Object Identifier	AV2	BACnetObjectIdentifier	Read
Object Name	Velocity MPS	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Meters-per-second (74)	BACnetEngineeringUnits	Read

Analog Value (AV2): Velocity in Meters per Second.

Property	Default Value	Property Data Type	Access
Object Identifier	AV3	BACnetObjectIdentifier	Read
Object Name	Flow CFM	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Cubic-feet-per-minute (84)	BACnetEngineeringUnits	Read

Analog Value (AV3): Volumetric Flow in Cubic Feet per Minute.

Property	Default Value	Property Data Type	Access
Object Identifier	AV4	BACnetObjectIdentifier	Read
Object Name	Flow CMH	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	Current reading	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Cubic-meters-per-hour (135)	BACnetEngineeringUnits	Read

Analog Value (AV4): Volumetric Flow in Cubic Meters per Hour.

Property	Default Value	Property Data Type	Access
Object Identifier	AV5	BACnetObjectIdentifier	Read
Object Name	Velocity K Value	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	1	Real	Read/Write
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	No units (95)	BACnetEngineeringUnits	Read

Analog Value (AV5): Setting K Factor Range (0 to 9.999).

Property	Default Value	Property Data Type	Access
Object Identifier	AV6	BACnetObjectIdentifier	Read
Object Name	Flow Area SqFt	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	1	Real	Read/Write
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	Square-feet (1)	BACnetEngineeringUnits	Read

Analog Value (AV6): Setting Area in Square Feet (0.01 to 999.99).

Property	Default Value	Property Data Type	Access
Object Identifier	AV7	BACnetObjectIdentifier	Read
Object Name	Sensor Present	CharacterString	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	Model Specific	Real	Read
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write
Units	No units (95)	BACnetEngineeringUnits	Read

Analog Value (AV7): Detecting if the Sensor is Working properly.

NOTICE The present value of this object represents the type of pressure sensor used in the specific model and can indicate if there is a problem with the sensor. See Sensor Table for sensor types.

Present Value	Sensor
0	No Sensor (Error)
1	Hall Effect Sensor
2	Piezo Sensor
3	Capcell Sensor

Sensor Types for AV7.

Appendix V: Binary Value Object Property Table

Property	Default Value	Property Data Type	Access
Object Identifier	BV1	BACnetObjectIdentifier	Read
Object Name	Use Default K Value	CharacterString	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	ACTIVE (1)	BACnetBinaryPV	Read/Write
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write

Binary Value (BV1): Use Default K Factor and Area.

Property	Default Value	Property Data Type	Access
Object Identifier	BV2	BACnetObjectIdentifier	Read
Object Name	Zero	CharacterString	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read/Write
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write

Binary Value (BV2): Zero Calibration.

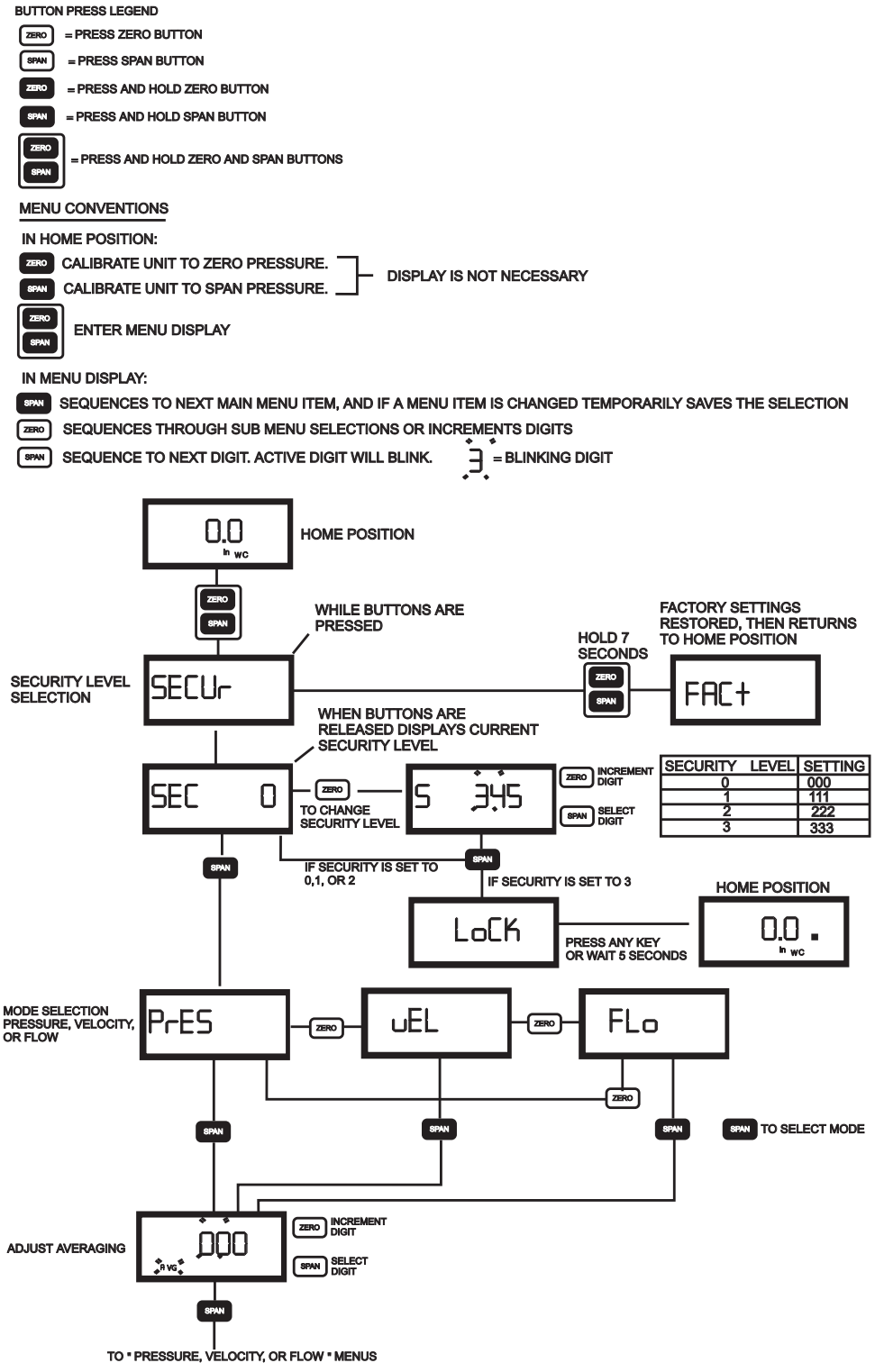
Property	Default Value	Property Data Type	Access
Object Identifier	BV3	BACnetObjectIdentifier	Read
Object Name	Span	CharacterString	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read/Write
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write

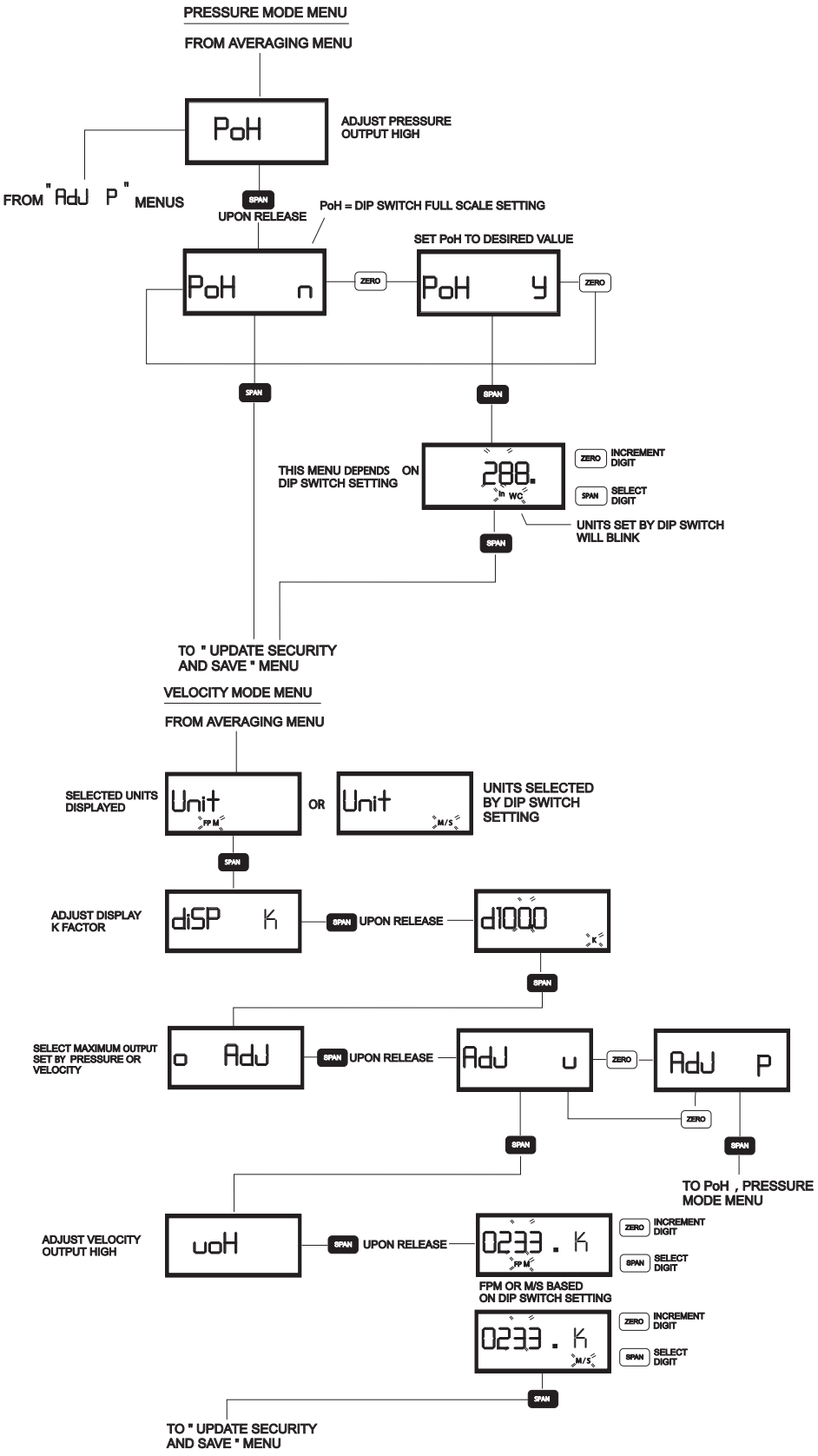
Binary Value (BV3): Span Calibration

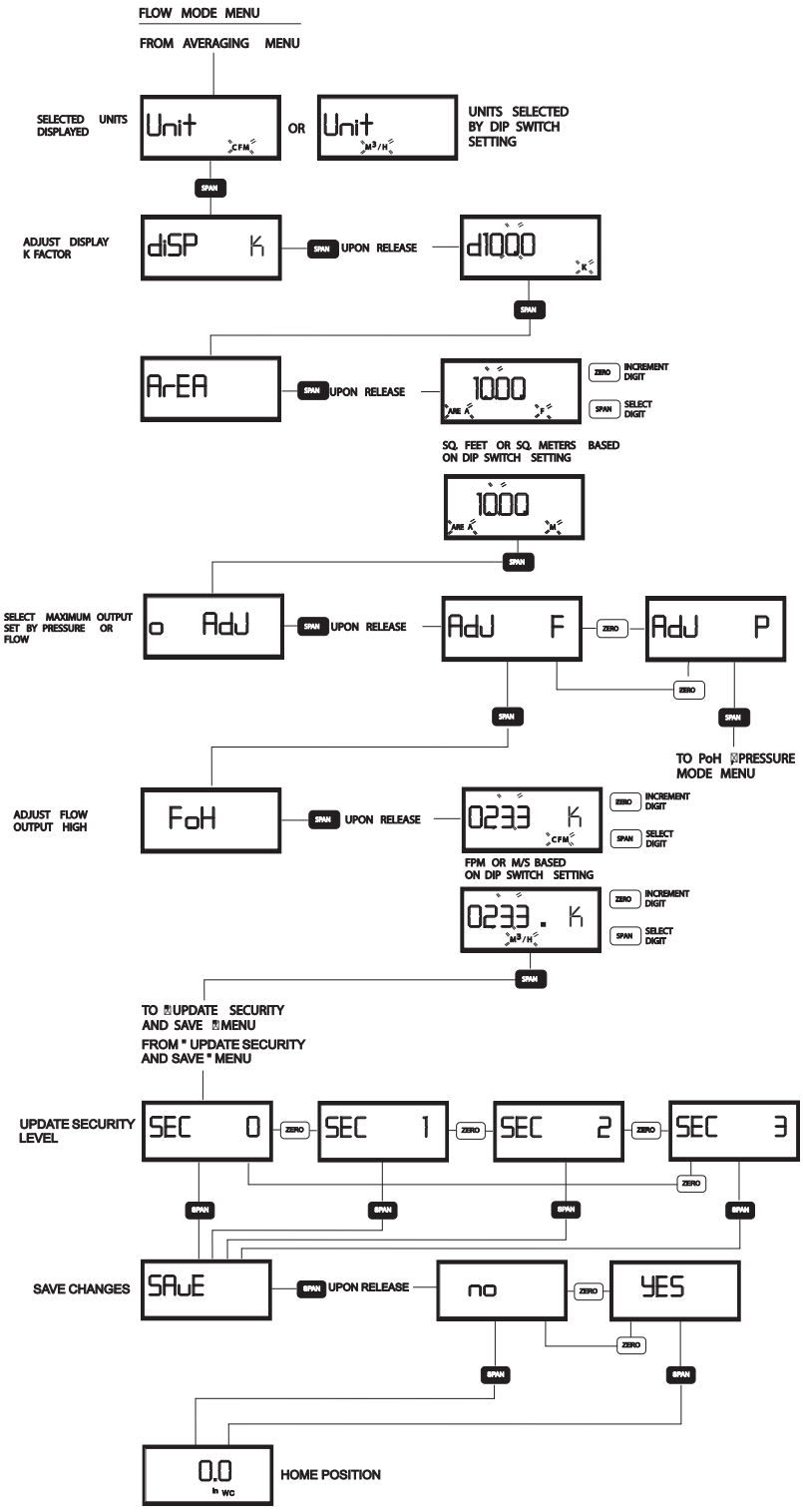
Property	Default Value	Property Data Type	Access
Object Identifier	BV4	BACnetObjectIdentifier	Read
Object Name	Restore Factory Pressure Values	CharacterString	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read/Write
Status Flags	0	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED(0)	BACnetReliability	Read
Out Of Service	FALSE (0)	Boolean	Read/Write

Binary Value (BV4): Restore Factory Default Present Values.

Appendix VI: Menu Flow Chart




PRESSURE MODE MENU
FROM AVERAGING MENU
PoH
ADJUST PRESSURE OUTPUT HIGH
FROM " AdJ P " MENUS
SPAN
UPON RELEASE
PoH = DIP SWITCH FULL SCALE SETTING
SET PoH TO DESIRED VALUE
PoH n
ZERO
PoH y
ZERO
SPAN
SPAN
THIS MENU DEPENDS ON DIP SWITCH SETTING
288.
IN WC
ZERO INCREMENT DIGIT
SPAN SELECT DIGIT
UNITS SET BY DIP SWITCH WILL BLINK
SPAN
TO " UPDATE SECURITY AND SAVE " MENU
VELOCITY MODE MENU
FROM AVERAGING MENU
SELECTED UNITS DISPLAYED
Unit
FP M
OR
Unit
M/S
UNITS SELECTED BY DIP SWITCH SETTING
SPAN
ADJUST DISPLAY K FACTOR
diSP K
SPAN UPON RELEASE
d1000
K
SPAN
SELECT MAXIMUM OUTPUT SET BY PRESSURE OR VELOCITY
o AdJ
SPAN UPON RELEASE
AdJ u
ZERO
AdJ P
ZERO
SPAN
SPAN
TO PoH , PRESSURE MODE MENU
ADJUST VELOCITY OUTPUT HIGH
uoH
SPAN UPON RELEASE
0233 . K
FP M
ZERO INCREMENT DIGIT
SPAN SELECT DIGIT
FPM OR M/S BASED ON DIP SWITCH SETTING
0233 . K
M/S
ZERO INCREMENT DIGIT
SPAN SELECT DIGIT
SPAN
TO " UPDATE SECURITY AND SAVE " MENU


FLOW MODE MENU
FROM AVERAGING MENU
SELECTED UNITS DISPLAYED
Unit
CFM
OR
Unit
M3/H
UNITS SELECTED BY DIP SWITCH SETTING
SPAN
ADJUST DISPLAY K FACTOR
diSP K
SPAN UPON RELEASE
d1000
K
SPAN
ArEA
SPAN UPON RELEASE
1000
ARE
F
ZERO INCREMENT DIGIT
SPAN SELECT DIGIT
SQ. FEET OR SQ. METERS BASED ON DIP SWITCH SETTING
1000
ARE
M
SPAN
SELECT MAXIMUM OUTPUT SET BY PRESSURE OR FLOW
o AdJ
SPAN UPON RELEASE
AdJ F
ZERO
AdJ P
ZERO
SPAN
SPAN
TO PoH PRESSURE MODE MENU
ADJUST FLOW OUTPUT HIGH
FoH
SPAN UPON RELEASE
0233 K
CFM
ZERO INCREMENT DIGIT
SPAN SELECT DIGIT
FPM OR M/S BASED ON DIP SWITCH SETTING
0233. K
M3/H
ZERO INCREMENT DIGIT
SPAN SELECT DIGIT
SPAN
TO UPDATE SECURITY AND SAVE MENU
FROM " UPDATE SECURITY AND SAVE " MENU
UPDATE SECURITY LEVEL
SEC 0
ZERO
SEC 1
ZERO
SEC 2
ZERO
SEC 3
ZERO
SPAN
SPAN
SPAN
SPAN
SAVE CHANGES
SAuE
SPAN UPON RELEASE
no
ZERO
YES
ZERO
SPAN
SPAN
0.0
In WC
HOME POSITION

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