Dwyer DH-015

Dwyer® Digihelic® Differential Pressure Controller

Model DH-015 Instruction Manual

1. Introduction

The Dwyer® Series DH Digihelic® Differential Pressure Controller is an advanced 3-in-1 instrument designed for precise measurement and control. It integrates a digital display gage, control relay switches, and a transmitter with current output into a single compact unit. This combination streamlines inventory, reduces installation time, and offers significant cost savings. The Digihelic controller is ideally suited for a wide range of pressure, velocity, and flow applications, providing high accuracy across various ranges.

2. Safety Information

Please read this manual thoroughly before installing, operating, or performing maintenance on the Digihelic controller. Failure to follow these instructions may result in equipment damage, personal injury, or death. Always adhere to local electrical codes and safety regulations.

- **Electrical Safety:** Ensure power is disconnected before wiring or servicing the unit. Only qualified personnel should perform electrical connections.
- **Pressure Limits:** Do not exceed the specified pressure limits for the device. Over-pressurization can cause damage to the sensor and potentially lead to hazardous conditions.
- **Environmental Conditions:** Operate the device within the specified temperature and humidity ranges to ensure proper function and longevity.
- **Mounting:** Securely mount the device according to installation guidelines to prevent accidental dislodgement.

3. Product Overview

The Digihelic controller offers exceptional flexibility and functionality. It can operate in pressure, velocity, or volumetric flow modes, supporting various engineering units. It includes two SPDT control relays with adjustable dead bands and a scalable 4-20 mA process output. For velocity or flow modes, the 4-20 mA signal provides a square root output to align with the actual flow curve. The unit supports both 120/220 VAC and 24 VDC power, making it suitable for diverse control panel setups.



Figure 1: Front view of the Dwyer Digihelic Differential Pressure Controller. The display shows '2.000 INWC'. Below the display are control buttons: SP/AL, MENU, Up arrow, Down arrow, E, and RST. Indicator lights for SP1, SP2, ALLO, and ALHI are also visible.

Front Panel Controls:

- **Display:** Large digital display showing current readings and menu options.
- **SP/AL Button:** Used to access and adjust set points and alarm settings.
- **MENU Button:** Navigates through the programming menus.
- **Up (▲) / Down (▼) Buttons:** Used to adjust values and navigate menu options.
- **E Button:** Enter or confirm selection.
- **RST Button:** Reset function, often for alarms or peak/valley readings.
- **SP1/SP2 Indicators:** Lights indicating the status of Set Point 1 and Set Point 2 relays.
- **ALLO/ALHI Indicators:** Lights indicating low alarm and high alarm conditions.

4. Setup

4.1 Mounting

The Digihelic controller is designed for panel mounting. Ensure adequate space for wiring and ventilation. Refer to the detailed mounting template provided with the packaging for precise cutout dimensions and mounting hole locations.

4.2 Electrical Connections

Connect the power supply and output wiring according to the wiring diagram provided in the full product manual. Ensure all connections are secure and comply with local electrical codes.

- **Power Requirements:**
  - High Voltage Power: 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC.
  - Low Voltage Power: 24 VAC ±20%.

- **Power Consumption:**
  - Low Voltage Power: 24 VDC - 130 mA max.
  - High Voltage Power: 100 to 240 VAC, 132 to 240 VDC - 7VA max.
- **Process Connections:** Connect pressure tubing to the appropriate ports. Ensure tubing is free of kinks and leaks.

5. Operating Instructions

5.1 Power On

Once properly wired and mounted, apply power to the unit. The display will illuminate and show the current process reading.

5.2 Programming and Configuration

The Digihelic controller features a user-friendly menu system accessed via the MENU key. There are five simplified menus for configuration:

- **Security Level:** Set access levels for configuration parameters.
- **Operation Mode:** Select between pressure, velocity, or flow operation.
- **Engineering Units:** Choose desired units (e.g., in. w.c., psi, Pa, m/s, CFM).
- **K-factor:** Input K-factor for use with flow sensors.
- **Duct Type:** Specify rectangular or circular duct for area input in flow applications.
- **Set Point Control:** Configure SPDT control relays for set point or set point and alarm operation.
- **Alarm Operation:** Define alarm as high, low, or high/low, and set automatic or manual alarm reset.
- **Alarm Delay:** Set a delay for alarm activation.
- **Peak/Valley Readings:** View peak and valley process readings.
- **Digital Damping:** Apply damping to smooth erratic process applications.
- **4-20 mA Output Scaling:** Scale the 4-20 mA process output to fit your application's range.
- **Modbus Communications:** Configure Modbus settings for integration with control systems.
- **Field Calibration:** Perform field calibration as needed.

Use the Up/Down arrows to navigate and adjust values, and the E button to confirm selections. Refer to the detailed programming section in the complete product manual for step-by-step instructions for each parameter.

6. Maintenance

The Dwyer Digihelic controller is designed for minimal maintenance. Regular checks can help ensure continued accurate operation.

- **Cleaning:** Clean the exterior of the unit with a soft, damp cloth. Do not use abrasive cleaners or solvents.
- **Pressure Connections:** Periodically inspect pressure tubing and connections for signs of wear, kinks, or leaks. Replace as necessary.
- **Calibration:** While the unit is factory calibrated, periodic field calibration may be performed if required by your application or quality standards. Refer to the field calibration section in the programming instructions.

7. Troubleshooting

If the Digihelic controller is not functioning as expected, consider the following common issues:

- **No Display/No Power:** Check power connections and ensure the correct voltage is applied. Verify circuit breakers or fuses.
- **Inaccurate Readings:**
  - Verify pressure connections are secure and free of leaks.
  - Check for blockages in pressure lines.
  - Ensure the correct engineering units and K-factor (if applicable) are configured.
  - Consider performing a field calibration.
- **Relays Not Activating:**
  - Check set point values and dead bands.
  - Verify the relay output wiring.
  - Ensure the unit is in the correct operating mode (e.g., control mode, not just display).
- **4-20 mA Output Issues:**
  - Verify wiring to the receiving device.
  - Check the scaling of the 4-20 mA output in the menu.

For persistent issues, contact Dwyer technical support or your authorized distributor.

8. Specifications

Parameter	Value
Pressure Limits	Ranges ≤ 2.5 in w.c. = 2 psi; 5": 5 psi; 10": 5 psi; 25": 5 psi; 50": 5 psi; 100": 9 psi
Temperature Limits	32 to 140°F (0 to 60°C)
Power Requirements	High Voltage: 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC; Low Voltage: 24 VAC ±20%
Power Consumption	Low Voltage: 24 VDC - 130 mA max; High Voltage: 100 to 240 VAC, 132 to 240 VDC - 7VA max
Agency Approvals	CE, UL
Item Weight	1.5 Pounds
Manufacturer	Dwyer Instruments, Inc.
Date First Available	May 25, 2012
ASIN	B007IAW81E

9. Warranty and Support

For warranty information, please refer to the documentation provided with your purchase or contact Dwyer Instruments, Inc. directly. Technical support is available to assist with any questions regarding the installation, operation, or troubleshooting of your Digihelic controller.
Contact Information: Please visit the official Dwyer Instruments website or contact your local authorized distributor for support and service.

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