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› Red Lion Controls PXU41DB0 PID Controller User Manual

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Model: PXU41DB0

1. PRODUCT OVERVIEW

The Red Lion Controls PXU41DB0 is a 1/16 DIN PID controller designed for precise process control applications. It features a linear voltage output, DC power input, RS-485 communication, a second relay output, a user input, and a remote set point capability. This controller is suitable for a wide range of industrial automation tasks requiring accurate temperature, pressure, flow, or level control.



Figure 1: Front view of the Red Lion Controls PXU41DB0 PID Controller, showing the digital display and control buttons. The display shows "72.9°F" and a set point of "75.0".

2. SAFETY INFORMATION

Read all instructions carefully before installation and operation. Failure to follow these instructions may result in equipment damage or personal injury. This device should only be installed and serviced by qualified personnel.

- Disconnect all power before making any electrical connections.
- Ensure proper grounding to prevent electrical shock.
- Do not operate the device in environments exceeding its specified temperature and humidity ratings.
- Protect the device from moisture and corrosive substances.
- Use appropriate personal protective equipment (PPE) during installation and maintenance.

3. PACKAGE CONTENTS

Verify that all items are present and undamaged upon unpacking:

- Red Lion Controls PXU41DB0 PID Controller
- Mounting hardware (clips/brackets)
- Quick Start Guide (if included)

If any items are missing or damaged, contact your supplier immediately.

4. SETUP AND INSTALLATION

4.1 Mounting

The PXU41DB0 is designed for 1/16 DIN panel mounting. Ensure adequate clearance for wiring and ventilation. Cut a panel cutout of 45mm x 45mm (1.77" x 1.77"). Insert the controller into the cutout and secure it using the provided mounting clips.

4.2 Wiring

Refer to the wiring diagram provided with the controller or in the full technical manual for specific terminal assignments. Ensure all connections are secure and comply with local electrical codes.

- **Power Supply:** Connect the DC power supply to the designated terminals. Verify the voltage matches the controller's requirements.
- **Sensor Input:** Connect your process sensor (e.g., thermocouple, RTD, 0-10V, 4-20mA) to the input terminals. Ensure correct polarity for analog inputs.
- **Linear Voltage Output:** Connect the control output to your actuator or final control element.
- **Relay Output 2:** Connect the second relay output for alarm or auxiliary control functions.
- **RS-485 Communication:** Connect the RS-485 A and B lines to your communication network.
- **User Input:** Connect external switches or signals to the user input terminal for specific functions.
- **Remote Set Point:** Connect an external signal for remote set point adjustment if desired.

Caution: *Incorrect wiring can damage the controller and connected equipment. Double-check all connections before applying power.*

5. OPERATING INSTRUCTIONS

5.1 Initial Power-Up

Once wired, apply power to the controller. The display will illuminate, and the controller will perform a self-test. The current process value and set point will typically be displayed.

5.2 Basic Operation

- **Set Point Adjustment:** Use the ▲ (Up) and ▼ (Down) buttons to adjust the desired set point.
- **Function Buttons (F1, F2):** These buttons provide access to various menus and parameters. Their specific functions depend on the controller's configuration. Refer to the full manual for detailed menu navigation.
- **Display Button (D):** Cycles through different display modes, such as process value, set point, output percentage, or alarm status.
- **Program Button (P):** Enters programming mode for advanced configuration. Access to this mode may require a password.

5.3 PID Tuning

For optimal control performance, the PID parameters (Proportional, Integral, Derivative) may need to be tuned. The

PXU41DB0 typically supports auto-tuning features. Consult the detailed manual for auto-tuning procedures and manual tuning guidelines.

6. MAINTENANCE

The Red Lion PXU41DB0 is designed for reliable operation with minimal maintenance. However, periodic checks are recommended:

- **Cleaning:** Keep the front panel clean using a soft, damp cloth. Do not use abrasive cleaners or solvents.
- **Connections:** Periodically inspect wiring connections for tightness and signs of corrosion.
- **Environment:** Ensure the operating environment remains within specified temperature and humidity limits.
- **Firmware:** Check the Red Lion Controls website for any available firmware updates.

7. TROUBLESHOOTING

This section provides solutions to common issues. For more complex problems, refer to the full technical manual or contact technical support.

Problem	Possible Cause	Solution
Controller does not power on.	No power supply; incorrect wiring; faulty power supply.	Verify power connections and voltage. Check power supply.
Display shows "OPEN" or "S.ERR".	Sensor open circuit; incorrect sensor type selected; faulty sensor.	Check sensor wiring. Verify sensor type in settings. Replace sensor if faulty.
Output not responding.	Incorrect output wiring; output disabled in settings; PID parameters incorrect.	Check output wiring. Verify output settings. Retune PID parameters.
RS-485 communication failure.	Incorrect wiring; wrong communication settings (baud rate, parity); address conflict.	Verify A/B wiring. Check communication parameters. Ensure unique device address.

8. SPECIFICATIONS

- **Model:** PXU41DB0
- **Type:** PID Controller
- **Size:** 1/16 DIN
- **Output:** Linear Voltage Out
- **Power:** DC Power
- **Communication:** RS-485
- **Additional Features:** 2nd Relay Output, User Input, Remote Set Point
- **Manufacturer:** Red Lion Controls
- **ASIN:** B07NN8QLD4
- **First Available:** February 12, 2019

9. WARRANTY AND SUPPORT

Red Lion Controls products are typically covered by a limited warranty against defects in materials and workmanship. For

specific warranty terms and conditions, please refer to the official Red Lion Controls website or the documentation included with your purchase.

For technical support, product inquiries, or service, please visit the official Red Lion Controls website or contact their customer service department. You can often find detailed technical manuals, FAQs, and software downloads on their support pages.

Official Website: www.redlion.net