AVIMYA HDT-500

AVIMYA HDT-500 Pt100 Temperature Transmitter User Manual

Model: HDT-500 (0-200°C 4-20mA LED Variant)
Brand: AVIMYA

1. Introduction

The AVIMYA HDT-500 integrated temperature transmitter is designed to accurately measure the temperature of various media. It operates by utilizing the resistance change of a platinum resistor (Pt100) as a function of temperature. This device integrates a temperature sensor, a compensation circuit, and a conversion circuit into a single unit, offering stable performance, high sensitivity, and reliable operation.

Featuring an all-welded active thread structure, the HDT-500 is designed for ease of installation. It is suitable for a wide range of industrial applications, including petroleum machinery, chemical machinery, pumps and compressors, electric power generation, boilers, natural gas systems, and other automated temperature measurement and control systems.

2. Key Features

- **Integrated Design:** Combines sensor, compensation, and conversion circuits.
- **High Accuracy:** 0.5% F.S. accuracy level.
- **Stable Performance:** Long-term stability of 0.2% F.S./year.
- **Fast Response:** Thermal response time of 30 seconds.
- **Robust Construction:** All-welded active thread structure with IP65 enclosure protection.
- **LED Display:** Provides real-time temperature readings (for LED models).
- **Standard Output:** 4-20mA current output (for LED models).
- **Wide Application:** Suitable for various industrial temperature monitoring needs.

3. Specifications

Parameter	Value

Parameter	Value
Measuring Range (HDT-500 Series)	-200°C to 600°C
Measuring Range (This Model)	0°C to 200°C
Power Supply	24V DC
Output Signal (with LED)	4-20mA
Accuracy Level	0.5% F.S.
Sensitive Element	Pt100
Insulation Strength	100MΩ
Long-term Stability	0.2% F.S./year
Thermal Response Time	30 seconds
Insertion Diameter	6mm (Standard)
Insertion Length	20mm (Standard)
Screw Size	M20*1.5 (Default), G1/2"
Explosion-proof Grade	ExiaIICT6
Enclosure Protection	IP65
Item Weight	1.76 ounces (approx. 50g)
Product Dimensions	1.18 x 0.79 x 0.39 inches (approx. 30 x 20 x 10 mm)

Note: The general measuring range for the HDT-500 series is -200°C to 600°C. This specific model is configured for a 0°C to 200°C range with 4-20mA output and LED display. Other output options (0-10V, RS485) are available for models without an LED display.

4. Installation

The HDT-500 temperature transmitter features an all-welded active thread structure for straightforward installation. Proper installation is crucial for accurate and reliable operation.

4.1 Pre-Installation Checks

- Verify that the transmitter's measuring range (0-200°C for this model) matches your application requirements.
- Ensure the power supply is 24V DC.
- Confirm the insertion depth and thread size (M20*1.5 or G1/2") are compatible with your process connection.

4.2 Mounting

1. Identify the appropriate mounting point in your system where temperature measurement is required.
2. Ensure the process connection (e.g., pipe, tank) has a compatible threaded port for the transmitter's screw size (M20*1.5 or G1/2").
3. Carefully thread the transmitter into the port. Use appropriate sealing material (e.g., PTFE tape) if necessary to ensure a leak-free connection.

4. Tighten the transmitter securely, but do not overtighten, to avoid damaging the threads or the device.
5. Ensure the insertion diameter (6mm) and length (20mm) allow the sensor tip to be adequately immersed in the medium for accurate readings.

Figure 1: AVIMYA HDT-500 Pt100 Temperature Transmitter, vertical view. This image shows the overall structure of the transmitter, including the sensor probe, threaded connection, main body with LED display, and electrical connector at the top.

Figure 2: AVIMYA HDT-500 Pt100 Temperature Transmitter, angled view. This perspective highlights the G1/2" threaded connection and the digital LED display on the transmitter body.

Figure 3: AVIMYA HDT-500 Pt100 Temperature Transmitter, showing the electrical connector and LED display. This view provides a clearer look at the top electrical connection point and the user interface.

Figure 4: Close-up of the AVIMYA HDT-500 LED display and control buttons. The red LED display shows the temperature reading, and the up/down arrow buttons are visible for potential configuration or display adjustments.

4.3 Electrical Connection

- Connect the 24V DC power supply to the designated terminals on the transmitter. Refer to the wiring diagram provided with the product for correct polarity.
- Connect the 4-20mA output signal to your control system, PLC, or data acquisition device. Ensure proper wiring to avoid signal interference.
- Ensure all electrical connections are secure and insulated to prevent short circuits or electrical hazards.

5. Operation

Once installed and powered, the AVIMYA HDT-500 Pt100 Temperature Transmitter will begin measuring the temperature of the medium.

5.1 Temperature Reading

- The integrated LED display will show the current temperature reading in degrees Celsius (°C).
- The 4-20mA output signal will correspond to the measured temperature within the 0-200°C range. A 4mA output typically represents 0°C, and a 20mA output represents 200°C.

5.2 Calibration (If Applicable)

While the HDT-500 is factory calibrated, periodic calibration may be required depending on application standards and environmental conditions. Consult a qualified technician for advanced calibration procedures. The up/down buttons on the display may allow for minor adjustments or display mode changes; refer to specific product documentation if available for detailed button functionality.

6. Maintenance

The AVIMYA HDT-500 is designed for robust industrial use and requires minimal maintenance. However, regular checks can ensure optimal performance and longevity.

- **Cleaning:** Periodically clean the exterior of the transmitter, especially the LED display, to ensure readability. Use a soft, damp cloth. Do not use abrasive cleaners or solvents.
- **Connection Integrity:** Regularly inspect electrical and mechanical connections for tightness and signs of corrosion or damage.
- **Sensor Probe:** Ensure the sensor probe remains free of excessive buildup or deposits from the measured medium, which could affect accuracy. Clean gently if necessary, following safety protocols for your process.
- **Environmental Conditions:** Ensure the operating environment remains within the specified IP65 protection limits and temperature ranges.

7. Troubleshooting

If you encounter issues with your AVIMYA HDT-500 temperature transmitter, consider the following troubleshooting steps:

- **No Display/No Output:**
  - Check the 24V DC power supply connection and ensure it is active.
  - Verify wiring for correct polarity and secure connections.
- **Inaccurate Readings:**
  - Ensure the sensor probe is fully immersed in the medium and not affected by external temperatures.
  - Check for any buildup or damage on the sensor probe.
  - Confirm the transmitter's range (0-200°C) is appropriate for the measured temperature.
  - If possible, compare readings with a known accurate reference thermometer.
- **Fluctuating Readings:**
  - Check for electrical interference in the wiring.
  - Ensure the medium's temperature is stable and not rapidly changing.
  - Verify secure mechanical mounting to prevent vibrations.
- **Output Signal Issues (4-20mA):**
  - Check the receiving device (PLC, controller) for proper configuration and input range.
  - Inspect the signal wiring for breaks or short circuits.

If problems persist after performing these checks, contact AVIMYA customer support or a qualified technician for further assistance.

8. Safety Information

Always observe standard safety precautions when installing, operating, or maintaining the temperature transmitter.

- **Electrical Safety:** Disconnect power before making any electrical connections or performing maintenance. Ensure proper grounding.
- **Process Safety:** Be aware of the temperature, pressure, and chemical properties of the medium being measured. Use appropriate personal protective equipment (PPE).
- **Installation:** Ensure the transmitter is securely mounted to prevent accidental dislodgement.
- **Explosion Protection:** The device has an explosion-proof grade of ExiaIICT6. Ensure installation and operation comply with relevant hazardous area classifications and regulations.

9. Warranty and Support

Specific warranty information for the AVIMYA HDT-500 Pt100 Temperature Transmitter is typically provided at the point of purchase or with the product packaging. Please retain your proof of purchase for warranty claims.

For technical support, service, or inquiries regarding replacement parts, please contact your AVIMYA product supplier or authorized distributor. Provide the model number (HDT-500) and any relevant purchase details when seeking support.