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Danfoss 060L2151

Danfoss KPU19 Thermostat User Manual

Model: 060L2151

1. INTRODUCTION

This manual provides essential information for the safe and effective installation, operation, and maintenance of the Danfoss KPU19 Thermostat, model 060L2151. The KPU19 is a robust and versatile temperature-operated electric switch designed for precise temperature control in various applications, including deep freeze, refrigeration, and air conditioning systems. It functions as a single-pole, double-throw (SPDT) switch, suitable for direct connection to single-phase AC motors up to approximately 2 kW, or for integration into the control circuits of DC motors and larger AC motors. Beyond regulation, KPU19 thermostats are also commonly used in safety monitoring systems.

2. SAFETY INFORMATION

Important: Read all instructions carefully before installation and operation. Failure to follow these instructions may result in equipment damage, personal injury, or death.

- Always disconnect power before performing any installation, maintenance, or troubleshooting.
- Installation and servicing must be performed by qualified personnel only, in accordance with all local and national electrical codes.
- Ensure proper grounding of the thermostat and associated equipment.
- Do not exceed the specified electrical ratings for the thermostat.
- Protect the thermostat from physical damage and extreme environmental conditions outside its specified operating range.

3. PRODUCT OVERVIEW AND FEATURES

The Danfoss KPU19 Thermostat is designed for reliability and ease of use. Key features include:

- **Soft Thermoplastic Cable Entry:** Accommodates cables ranging from 6 to 14 mm in diameter with ease, ensuring secure connections.
- **Hassle-Free Installation and Maintenance:** Engineered with user convenience in mind.
- **Bottom and Rear Knockouts:** Facilitate flexible wiring options.
- **Differential Adjustment Dial:** Allows for precise control over temperature differential.
- **Tamper-Resistant Design:** Enhances security and prevents unauthorized adjustments.
- **Durable Thermoplastic Housing:** Provides robust protection for internal components.
- **Welded Bellows Elements:** Incorporates for heightened reliability and extended operational life.

- **Compact Dimensions:** Enables effortless installation in various spaces, including refrigerated counters or cold rooms.
- **Swift Response Time:** Ultra-short bounce times ensure prolonged operational life, minimal wear, and enhanced reliability.
- **Convenient Front-Facing Electrical Connection:** Facilitates rack mounting and saves valuable space.
- **Versatile Application:** Suitable for deep freeze, refrigeration, and air conditioning systems, compatible with both alternating and direct current applications.
- **Frost Protection:** Available with adsorption charge for effective frost protection applications.





Figure 3.1: Front view of the Danfoss KPU19 Thermostat with its remote bulb sensor and coiled capillary tube.

4. INSTALLATION

The KPU19 thermostat is designed for straightforward installation. Follow these guidelines:

- 1. Mounting:** Select a suitable location for mounting the thermostat. The compact design allows for installation in refrigerated counters or cold rooms. Utilize the bottom and rear knockouts for secure mounting.
- 2. Wiring:** Ensure power is disconnected before wiring. The soft thermoplastic cable entry accommodates cables from 6 to 14 mm. Use the convenient front-facing electrical connection for ease of wiring and rack mounting. Refer to the wiring diagram for correct connections.
- 3. Sensor Placement:** Position the remote bulb sensor in the area where temperature control is required. Ensure the sensor is not exposed to direct airflow or heat sources that could affect its accuracy.
- 4. Capillary Tube:** Handle the capillary tube carefully to avoid kinking or damage. The robust capillary tube connects the sensor to the thermostat.

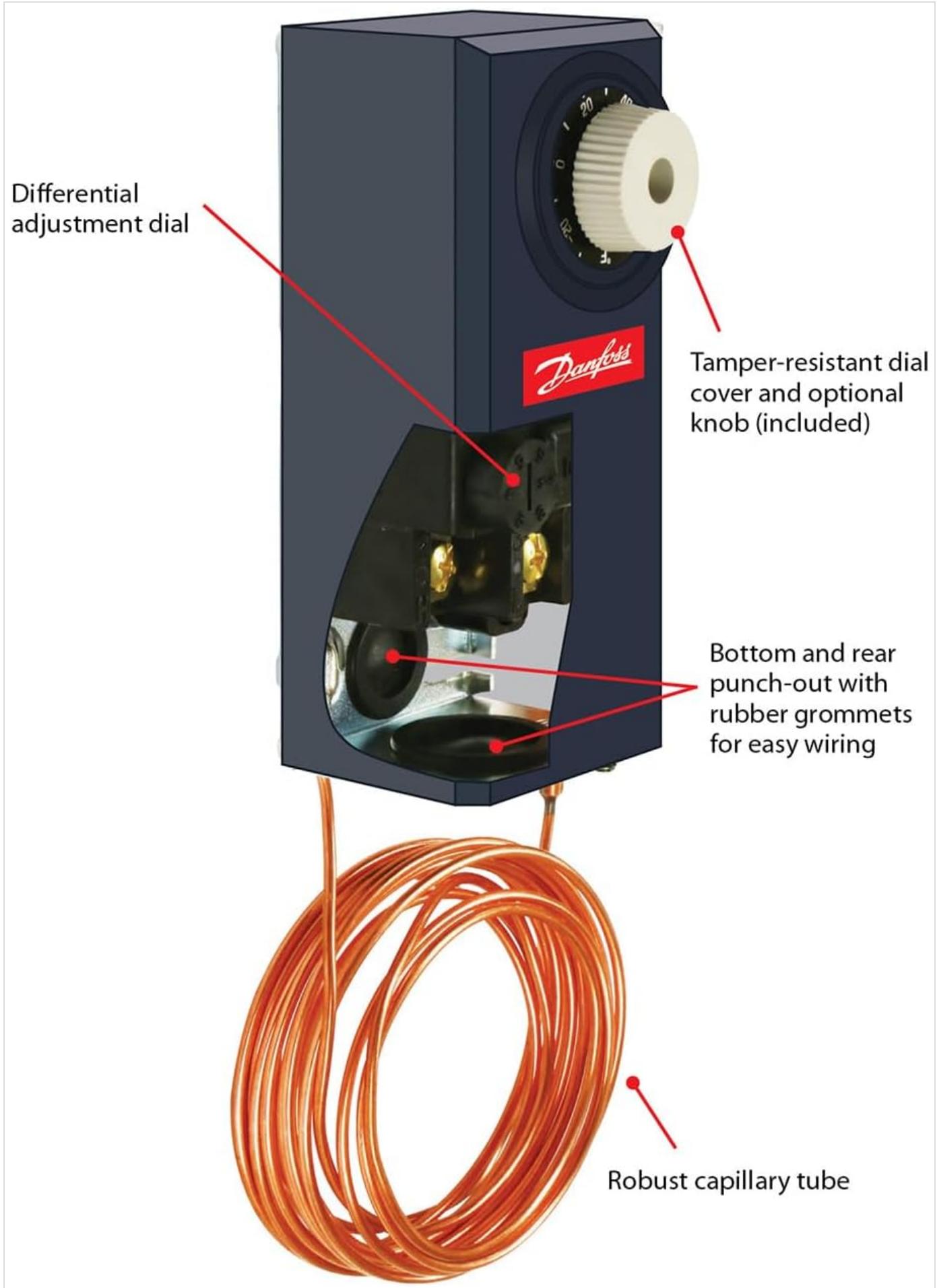


Figure 4.1: Internal view highlighting the differential adjustment dial, tamper-resistant dial cover, bottom and rear punch-out with rubber grommets for wiring, and the robust capillary tube.

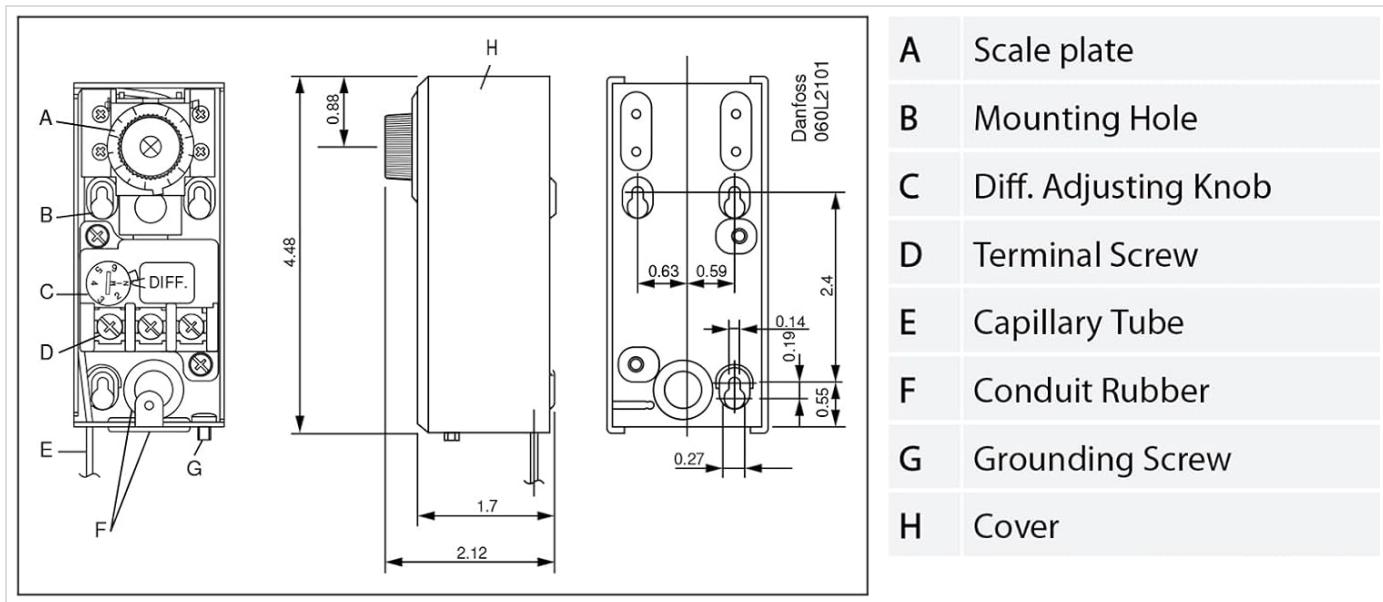


Figure 4.2: Detailed diagram showing component labels (A-H) and critical dimensions for installation. A: Scale plate, B: Mounting Hole, C: Diff. Adjusting Knob, D: Terminal Screw, E: Capillary Tube, F: Conduit Rubber, G: Grounding Screw, H: Cover.

5. OPERATION

The KPU19 thermostat operates as a temperature-activated switch. Once installed and wired, its primary function is to maintain a desired temperature range.

5.1 Setting the Temperature and Differential

- The main temperature setting is adjusted via the primary dial on the front of the unit. Rotate the dial to the desired setpoint.
- The differential adjustment dial allows you to set the temperature difference between the cut-in and cut-out points. A smaller differential means more frequent cycling, while a larger differential means less frequent cycling.
- The tamper-resistant design helps prevent accidental or unauthorized changes to the settings.

5.2 Switch Functionality

The KPU19 functions as a Single-Pole, Double-Throw (SPDT) switch. This means it has one common terminal and two switched terminals (normally open and normally closed). Depending on the temperature relative to the setpoint and differential, the common terminal will connect to either the normally open or normally closed terminal, controlling the connected equipment (e.g., compressor, fan).

6. MAINTENANCE

The Danfoss KPU19 Thermostat is designed for hassle-free maintenance, requiring minimal intervention to ensure long-term performance.

- **Regular Inspection:** Periodically inspect the thermostat and its connections for any signs of wear, damage, or loose wiring. Ensure the housing is intact and free from debris.
- **Cleaning:** If necessary, gently wipe the exterior of the thermostat with a dry, soft cloth. Do not use abrasive cleaners or solvents. Ensure no moisture enters the unit.
- **Sensor Check:** Verify that the remote bulb sensor remains securely in its intended position and is not obstructed.
- **Professional Servicing:** For any internal issues or complex repairs, contact a qualified service technician. Do not attempt to disassemble the unit beyond what is described in this manual.

7. TROUBLESHOOTING

This section provides general guidance for common issues. For more complex problems, consult a qualified technician.

Problem	Possible Cause	Solution
Thermostat not responding	No power; Incorrect wiring; Sensor issue	Check power supply; Verify wiring connections against diagram; Inspect sensor for damage or improper placement.
Inaccurate temperature reading	Sensor misplacement; Sensor damage; External heat source affecting sensor	Relocate sensor to a representative area; Check sensor for physical damage; Shield sensor from direct heat/airflow.
System cycles too frequently/infrequently	Differential setting incorrect	Adjust the differential dial to a suitable setting for your application.
Thermostat not switching	Faulty internal switch; Wiring error	Verify wiring; If wiring is correct, the unit may require professional servicing or replacement.

8. SPECIFICATIONS

Parameter	Value
Model Number	060L2151
Manufacturer	Danfoss
Item Weight	1.2 pounds (0.54 kg)
Gross Weight (Packaging)	0.9920 pounds (0.45 kg)
Product Dimensions (L x W x H)	7 x 9 x 5 inches (17.8 x 22.9 x 12.7 cm)
Ambient Temperature Range	-31 °F to 140 °F (-35 °C to 60 °C)
Max. Sensor Temperature	140 °F (60 °C)
Sensor Size (Ø x L)	3/8 x 4 1/2 inches (9.5 x 114.3 mm)
Cable Entry Accommodation	6 to 14 mm diameter
Batteries Required	No
First Available Date	April 1, 2019

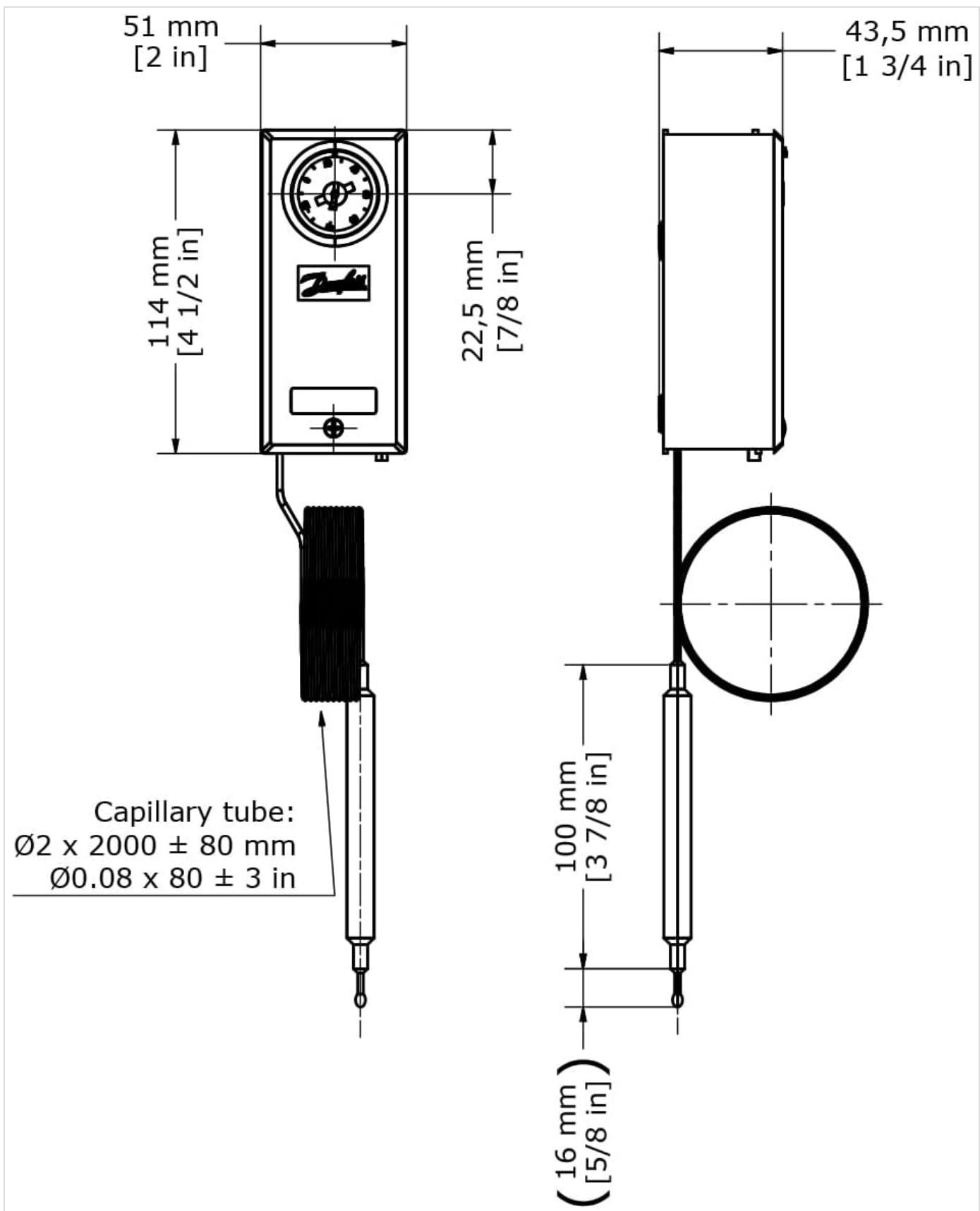


Figure 8.1: Dimensional drawing showing front and side views with key measurements in millimeters and inches.

9. WARRANTY AND SUPPORT

For information regarding product warranty, technical support, or service, please contact Danfoss directly or refer to their official website. Keep your purchase receipt and product model number (060L2151) handy when contacting support.

Danfoss Official Website: www.danfoss.com

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