Danfoss 060-110166

Danfoss KP1 Pressure Switch (Model 060-110166) User Manual

Your Guide to Installation, Operation, and Maintenance

1. Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of your Danfoss KP1 Pressure Switch, model 060-110166. The KP1 pressure switch is designed for use in refrigeration and air conditioning systems to protect against excessively low suction pressure or excessively high discharge pressure. It features a regulation range of -0.20 to 7.50 Bar and a 1/4 inch flare connection.
Please read this manual thoroughly before installing or operating the device to ensure proper function and to prevent potential hazards.

2. Safety Information

WARNING: Improper installation, operation, or maintenance can result in serious injury or equipment damage.

- Always disconnect power before performing any installation, maintenance, or service on the pressure switch.
- Installation and service must be performed by qualified personnel only, in accordance with all local and national electrical and refrigeration codes.
- Ensure the system pressure is relieved before disconnecting the pressure switch from the refrigeration system.
- Wear appropriate personal protective equipment (PPE) during installation and service.
- Do not exceed the maximum rated pressure or electrical load specified for the device.

3. Product Overview

The Danfoss KP1 Pressure Switch is a compact, robust, and reliable control device. It is equipped with a single-pole double-throw (SPDT) contact system, allowing for flexible control applications. The switch is designed for direct mounting on the refrigeration system.

Key Features:

- Wide pressure regulation range: -0.20 to 7.50 Bar.
- Differential pressure adjustment.
- 1/4 inch flare connection for easy installation.
- IP54 enclosure rating for protection against dust and splashing water.
- Automatic operation mode.

Components:

Refer to the image below for a visual representation of the Danfoss KP1 Pressure Switch.

Figure 1: Front view of the Danfoss KP1 Pressure Switch, showing the Danfoss logo and the rating plate.

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4. Installation and Setup

Careful installation is crucial for the correct function and longevity of the pressure switch.

4.1 Mounting

The KP1 pressure switch is designed for panel mounting. Ensure a stable and vibration-free location. The switch

should be mounted vertically with the pressure connection facing downwards to prevent accumulation of oil or moisture in the pressure element.

4.2 Pressure Connection

The pressure switch features a 1/4 inch flare connection. Use appropriate tools and ensure a leak-tight connection to the refrigeration system.

Figure 2: Danfoss KP1 Pressure Switch with its 1/4 inch flare connection components disassembled, showing the nut and adapter.

Figure 3: Bottom view of the Danfoss KP1 Pressure Switch, highlighting the 1/4 inch flare connection point.

1. Ensure the system is depressurized before connecting the switch.
2. Apply a small amount of refrigeration oil to the flare connection threads.
3. Tighten the flare nut securely using a flare nut wrench to prevent leaks. Do not overtighten.
4. Perform a leak test after connection.

4.3 Electrical Wiring

The KP1 pressure switch has SPDT (Single-Pole Double-Throw) contacts. Refer to the wiring diagram provided with the product or on the inside of the cover for specific connections. Ensure all wiring complies with local electrical codes.

- Connect the common terminal (C) to the power source.
- Connect the normally open (NO) terminal for circuits that should close on pressure rise (e.g., high-pressure cut-out).
- Connect the normally closed (NC) terminal for circuits that should open on pressure rise (e.g., low-pressure cut-in).
- Ensure proper grounding.

5. Operating Instructions

The Danfoss KP1 Pressure Switch allows for adjustment of both the cut-in pressure and the differential pressure.

5.1 Setting the Cut-in Pressure

The cut-in pressure (or cut-out pressure, depending on application) is set using the main adjustment screw. This screw typically adjusts the spring tension, which determines the pressure at which the switch changes state.

1. Remove the protective cover of the switch.
2. Locate the main adjustment screw (often labeled 'RANGE' or 'CUT IN').
3. Turn the screw clockwise to increase the set pressure, and counter-clockwise to decrease it.
4. Use a pressure gauge to monitor the system pressure and verify the setting.

5.2 Setting the Differential Pressure

The differential pressure determines the difference between the cut-in and cut-out pressures. This is crucial for preventing rapid cycling of the compressor.

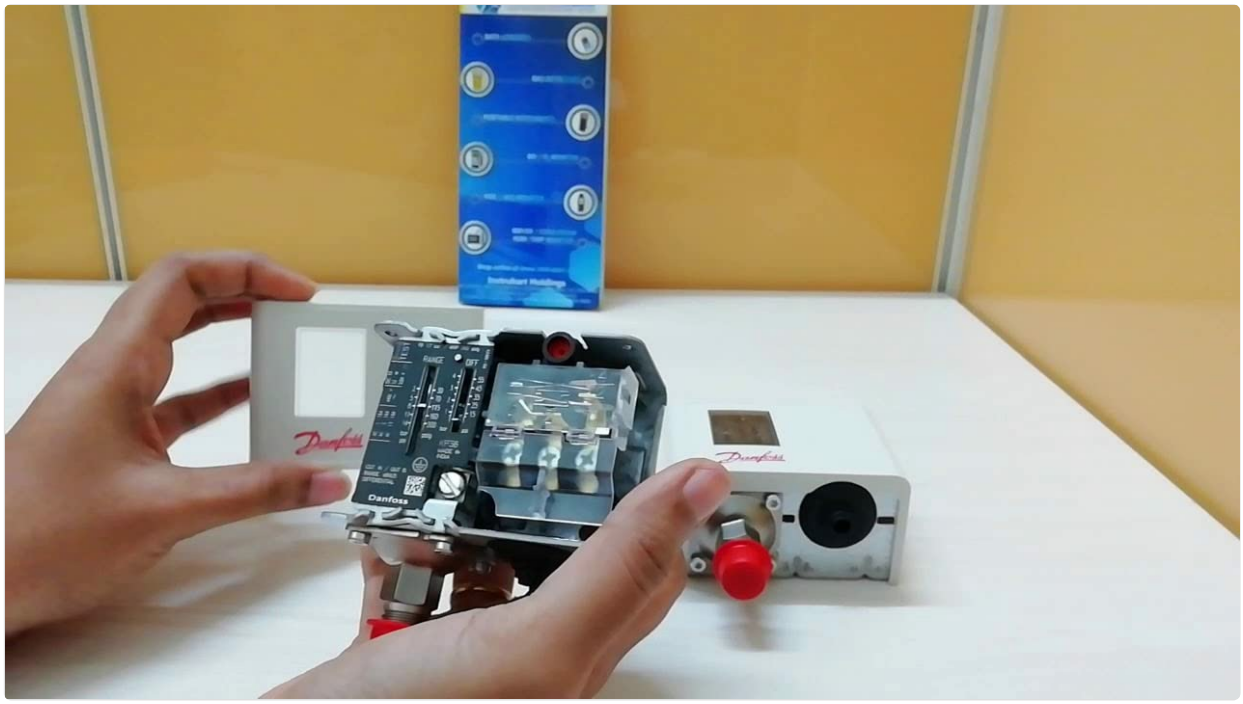

Figure 4: Internal view of the Danfoss KP1 Pressure Switch with the cover removed, showing the adjustment dials for 'CUT IN' (range) and 'DIFF' (differential).

1. Locate the differential adjustment screw (often labeled 'DIFF').
2. Turn the screw clockwise to increase the differential, and counter-clockwise to decrease it.
3. The cut-out pressure will be the cut-in pressure minus the differential (for low-pressure switches) or the cut-in pressure plus the differential (for high-pressure switches).
4. Replace the protective cover after adjustments are complete.

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6. Maintenance

The Danfoss KP1 Pressure Switch is designed for long-term, reliable operation with minimal maintenance. However, periodic checks are recommended.

- **Visual Inspection:** Regularly inspect the switch for any signs of physical damage, corrosion, or loose

connections.

- **Leak Detection:** Periodically check the pressure connection for refrigerant leaks using an appropriate leak detector.
- **Functional Check:** If possible and safe to do so, periodically verify the switch's set points by observing system pressure and switch operation.
- **Cleaning:** Keep the exterior of the switch clean and free from dust and debris. Do not use harsh chemicals.

Note: Internal components are not user-serviceable. Do not attempt to disassemble the sealed unit beyond removing the cover for adjustments.

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7. Troubleshooting

This section provides guidance on common issues you might encounter with the KP1 Pressure Switch.

Problem	Possible Cause	Solution
Switch does not activate at set pressure.	Incorrect setting, faulty wiring, pressure connection leak, internal fault.	Verify settings, check wiring continuity, inspect for leaks, replace switch if faulty.
System cycles too frequently.	Differential setting too low, system issues (e.g., low refrigerant charge).	Increase differential setting, diagnose and rectify system issues.
Switch contacts remain open/closed.	Pressure outside operating range, stuck contacts, internal fault.	Check system pressure, replace switch if contacts are stuck or internal fault is suspected.
Refrigerant leak at connection.	Improperly tightened flare nut, damaged flare, worn gasket.	Retighten connection, inspect flare for damage, replace gasket if present, ensure proper torque.

If troubleshooting steps do not resolve the issue, contact a qualified service technician or Danfoss support.

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8. Specifications

The following table outlines the technical specifications for the Danfoss KP1 Pressure Switch (Model 060-110166):

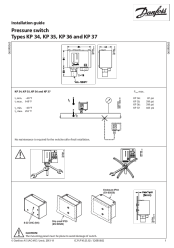
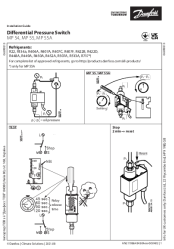
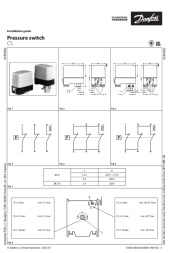
Specification	Value
Model Number	060-110166
Brand	Danfoss
Regulation Range	-0.20 to 7.50 BAR
Connection Type	1/4 Inch Flare
Operation Mode	Automatic
Contact Type	Normally Open (SPDT)
Circuit Type	2-way
Mounting Type	Panel Mount
Contact Material	Copper

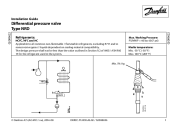
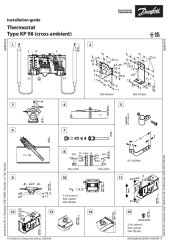
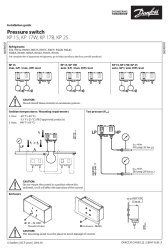
Specification	Value
International Protection Rating	IP54
Package Dimensions	5.11 x 3.54 x 1.58 inches
Item Weight	1.1 Pounds

9. Warranty and Support

Danfoss products are manufactured to high-quality standards. For specific warranty information, please refer to the documentation provided with your purchase or visit the official Danfoss website. For technical support, service, or spare parts, please contact your authorized Danfoss distributor or a qualified service technician.
Protection plans may be available for extended coverage. Please check with your retailer for details on available protection plans.

Related Documents - 060-110166

	Danfoss KP 34, KP 35, KP 36, KP 37 Pressure Switch Installation Guide Comprehensive installation guide for Danfoss KP 34, KP 35, KP 36, and KP 37 pressure switches. Includes technical specifications, wiring diagrams, safety precautions, and UL/FM compliance information.
	Danfoss MP 54, MP 55, MP 55A Differential Pressure Switch Installation Guide Installation guide for Danfoss MP 54, MP 55, and MP 55A differential pressure switches, detailing refrigerant compatibility, technical specifications, and installation procedures.
	Danfoss CS Pressure Switch Installation Guide Comprehensive installation guide for the Danfoss CS pressure switch, covering mounting, electrical connections, settings, and troubleshooting across multiple languages.

	[Danfoss NRD Differential Pressure Valve Installation Guide] Installation guide for the Danfoss NRD differential pressure valve, detailing refrigerant compatibility, working pressure, media temperature, and installation notes. Includes technical specifications and system schematics.
	[Danfoss Thermostat Type KP 98 Installation Guide] Comprehensive installation guide for the Danfoss Thermostat Type KP 98 (cross ambient). Covers technical specifications, mounting, electrical connections, testing, setting adjustments, and locking mechanisms.
	[Danfoss Pressure Switch KP 15, KP 17W, KP 17B, KP 25 Installation Guide] Installation guide for Danfoss pressure switches, including types KP 15, KP 17W, KP 17B, and KP 25. Covers refrigerant compatibility, mounting requirements, wiring, electrical contact load ratings, manual tripping, manual reset, convertible reset, and adjustment procedures for both low pressure (LP) and high pressure (HP) sides.