18D Series Pressure Controller User Manual

The controller uses two types of sensors: diaphragm type and leak-free piston type. The D500/18D diaphragm type sensor can be used for neutral gases such as air, gas, and liquid media such as lubricating oil and light fuel oil. The controller's set value is adjustable, with a range of -0.1 to 1.6 MPa.

The D505/18D leak-free piston type sensor can be used for neutral lubricating media such as hydraulic oil, lubricating oil, and light fuel oil. The controller's set value is adjustable, with a range of 0.5 to 40 MPa.

□ **Main Technical Performance**

- **Operating viscosity:** $<1\times10^{-3}$ m²/s
- **Switching element:** Microswitch
- **Ambient temperature:** (-25 ~ 55)℃
- **Medium temperature:** (-25 ~ 80)℃
- **Enclosure protection class:** IP54 (in accordance with DIN40050, equivalent to IP54 in GB4208)
- **Mounting position:** Pressure connection vertically downward (15° tilt allowed)
- **Vibration resistance:** Max: 100 m/s²
- **Repeatability error:** ≤2.5%
- **Contact capacity:** AC 220V 3A (resistive) 660VA max

Features:

- This control system is designed to be ultra-compact, allowing for high switching frequencies of up to 100 times/minute and excellent vibration resistance.

□ **Specifications · Non-adjustable Switching Differential**

Model	Set Value Range (MPa)	Switching Differential Not Greater Than (MPa)	Max. Allowable Pressure (MPa)	Pressure Sensor Material		Interface	Weight (kg)	Dimension Drawing No.	
			Lower Limit	Upper Limit		Housing	Seal Ring	Piston	Type
D500/18D	-0.1 to 0		0.015	0.02		AL	Nitrile Rubber		I
	-0.1 to 0		0.015	0.02					P
Diaphragm Type	0.02 to 0.2		0.02	0.04		AL	Nitrile Rubber		I
	0.02 to 0.2		0.02	0.04					P
	0.05 to 0.8		0.04	0.13		AL	Nitrile Rubber		I
	0.05 to 0.8		0.04	0.13					P
	0.1 to 1.6		0.06	0.24		AL	Nitrile Rubber		I
	0.1 to 1.6		0.06	0.24					P
D505/18D	0.5 to 7		0.8	2		AL	Nitrile Rubber	Steel	I
	0.5 to 7		0.8	2					P
Piston Type	1 to 16		1.2	3.5		AL	Nitrile Rubber	Steel	I

Model	Set Value Range (MPa)	Switching Differential Not Greater Than (MPa)	Max. Allowable Pressure (MPa)	Pressure Sensor Material	Interface	Weight (kg)	Dimension Drawing No.
	1 to 16		1.2	3.5			P
	2.5 to 25		1.5	4	AL	Nitrile Rubber	Steel I
	2.5 to 25		1.5	4			P
	4 to 40		1.8	4.5	AL	Nitrile Rubber	Steel I
	4 to 40		1.8	4.5			P

Note: * In actual work, even a momentary pressure peak must not exceed this value. ** I - Interface is internal thread; P - Interface is flange.

Operation Process of Single Pole Double Throw Microswitch:

- Terminal 1-3 is connected when pressure rises to the upper switching value.
- Terminal 1-2 is disconnected when pressure rises to the upper switching value.

□ **Adjustment of Set Value**

Adjustment steps for the set value of a controller with non-adjustable switching differential, exemplified as follows:

[Example]: For a controller with order number 0882200, if it is required to output a contact signal when the pressure drops to 8MPa (lower switching value), the operation steps are as follows:

- Screw the product into the threaded port of the hydraulic pressure calibration bench (if the controller is a flange type interface, then connect it to the flange of the pressure calibration bench). After applying pressure to the product for 2 minutes according to the actual working pressure, then proceed with the setting.
- Connect the cable wire to the plug, and connect the other end of the cable to a multimeter.
- Increase the pressure to 8MPa; this value can be read from a standard pressure gauge.

- Loosen the locking screw, use a 5mm hex wrench to turn the set value adjustment hex slot clockwise, increasing the set value from small to large until the switch contact switches at 8MPa.
- Tighten the locking screw, adjust the calibration bench pressure to fluctuate around 8MPa, and check whether the contact's switching value when pressure drops is 8MPa. This value is the desired lower switching value. The corresponding upper switching value should be 8MPa plus the switching differential of approximately 2.3MPa, which is approximately 10.3MPa.

(Diagrams for "Set value adjustment hex cap" and "Locking screw" were present in the original document, but cannot be replicated in text.)

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Outline and Installation Dimensions

Unit: mm

(Diagrams for various dimensions and internal components were present in the original document but cannot be replicated in text. The following are tables of data from the diagrams.)

Table 1: Dimensions for various models (Refer to drawing for 'A' location)

Drawing No.	A (mm)
01	15
02	9
04	6
05	7

Drawing No. 03 (Dimensions not listed in a table, only as part of a diagram.)

Pressure Impulse Damper

- **Interface:** G1/4"
- **Order Catalog No.:** 0574773

Selection and Installation

- When selecting a controller, it is best to ensure that the predetermined set value falls within the middle part of the controller's adjustable range, typically 20% to 80% of the range.

- If the controller is to be installed outdoors, sufficient protection should be provided to prevent severe temperature changes, direct sunlight, corrosive gases, or water ingress.
- For controlled liquid media with pressure peaks and pulsating pressure, a pressure impulse damper can be installed at the controller interface to eliminate adverse effects.
- The switching current must not exceed the rated value.
- Special attention must be paid during installation (or removal) of the controller:
    - For pressure controllers with threaded connections, the pipe joint should not be screwed into the G1/4" threaded hole deeper than 12mm.
    - When installing (or removing) the controller, use a wrench to hold the hexagonal flat on the interface when connecting to the pipeline. The upper square casing and the lower hexagonal component must not be allowed to rotate relative to each other. (As shown in the right figure in the original document)

Accessories

- **Optional accessories catalog numbers:** 0574767, 0574773

Male Thread Adapter

- **Interface:** G1/2"-G1/4"
- **Order Catalog No.:** 0574767