YWK-100 Pressure Controller User Manual

The YWK-100 pressure controller uses a bellows-type sensor and can be used for neutral gases such as air and steam, as well as liquid media like refrigerants and oils. The controller's setpoint is adjustable, with a range of 0…2MPa. The controller housing is made of cast aluminum, providing waterproof protection.

Key Technical Specifications

- **Operating viscosity:** $<1\times10^{-3}$ m²/s
- **Enclosure protection rating:** IP65
- **Ambient temperature:** -25~55℃
- **Medium temperature:** 0~95℃
- **Vibration resistance:** Max 40m/S²
- **Repeatability error:** ≤1.5%
- **Contact capacity:** Vmax=380VAC
    - Imax=6A (Resistive)
    - Pmax=600VA

Wiring Diagrams

Single Pole Double Throw (SPDT) Microswitch Operation Process

- **Terminal 1-3:** Connects when pressure rises to the upper switching value.
- **Terminal 1-2:** Disconnects when pressure rises to the upper switching value.

Double Pole Double Throw (DPDT) Microswitch Operation Process

- **Terminal 1-2:** Connects when pressure rises to the upper switching value.
- **Terminal 3-4:** Disconnects when pressure rises to the upper switching value.

Specifications

- **Fixed Differential (SPDT Microswitch)**

Setpoint Adjustment Range (MPa)	Max Differential (MPa)	Max Allowable Pressure* (MPa)	Switching Cycles (cycles/min)	Pressure Sensing Material (Casing)	Pressure Sensing Material (Bellows)	Interface (Internal Thread)	Outline Drawing No.
0...0.1	0.003	1.2	20			G1/4"	01
0...0.2	0.004	1.2	20			G1/4"	01
0.02...0.4	0.008	1.2	20			G1/4"	01

Setpoint Adjustment Range (MPa)	Max Differential (MPa)	Max Allowable Pressure* (MPa)	Switching Cycles (cycles/min)	Pressure Sensing Material (Casing)	Pressure Sensing Material (Bellows)	Interface (Internal Thread)	Outline Drawing No.
0.02...0.6	0.01	1.2	20	Hpb 59-1 (Brass)	1Cr18 Ni9Ti (Stainless Steel)	G1/4"	01
0.03...0.8	0.012	1.8	20			G1/4"	01
0.03...1.0	0.015	2.0	20			G1/4"	01
0.05...1.6	0.025	2.5	20			G1/4"	01
0.05...2.0	0.03	3.5	20			G1/4"	01

Adjustable Differential (SPDT Microswitch)

Setpoint Adjustment Range (MPa)	Max Differential (MPa)	Max Allowable Pressure* (MPa)	Switching Cycles (cycles/min)	Pressure Sensing Material (Casing)	Pressure Sensing Material (Bellows)	Interface (Internal Thread)	Outline Drawing No.
0...0.1	0.008-0.03	1.2	20			G1/4"	01
0...0.2	0.01-0.08	1.2	20			G1/4"	01
0.02...0.4	0.025-0.12	1.2	20			G1/4"	01
0.02...0.6	0.03-0.15	1.2	20	Hpb 59-1 (Brass)	1Cr18 Ni9Ti (Stainless Steel)	G1/4"	01
0.03...0.8	0.04-0.2	1.8	20			G1/4"	01

Setpoint Adjustment Range (MPa)	Max Differential (MPa)	Max Allowable Pressure* (MPa)	Switching Cycles (cycles/min)	Pressure Sensing Material (Casing)	Pressure Sensing Material (Bellows)	Interface (Internal Thread)	Outline Drawing No.
0.03...1.0	0.05-0.25	2.0	20			G1/4"	01
0.05...1.6	0.08-0.3	2.5	20			G1/4"	01
0.05...2.0	0.12-0.5	3.5	20			G1/4"	01

Adjustable Differential (DPDT Microswitch)

Setpoint Adjustment Range (MPa)	Max Differential (MPa)	Max Allowable Pressure* (MPa)	Switching Cycles (cycles/min)	Pressure Sensing Material (Casing)	Pressure Sensing Material (Bellows)	Interface (Internal Thread)	Outline Drawing No.
0...0.1	0.015-0.03	1.2	20			G1/4"	01
0...0.2	0.018-0.08	1.2	20			G1/4"	01
0.02...0.4	0.035-0.12	1.2	20			G1/4"	01
0.02...0.6	0.04-0.15	1.2	20	Hpb 59-1 (Brass)	1Cr18 Ni9Ti (Stainless Steel)	G1/4"	01
0.03...0.8	0.06-0.2	1.8	20			G1/4"	01
0.03...1.0	0.07-0.25	2.0	20			G1/4"	01
0.05...1.6	0.10-0.3	2.5	20			G1/4"	01
0.05...2.0	0.15-0.5	3.5	20			G1/4"	01

Note: *In actual operation, even short-term pressure peaks should not exceed this value.

Adjustment of Setpoint Adjustment of Setpoint for Controllers with Fixed Differential

[Example]: For a controller with a setpoint adjustment range of 0.03...0.8MPa, if the contact signal is required to be emitted when the pressure rises to 0.6MPa, the operating steps are as follows:

- Open the cover of the setpoint adjustment screw. Screw the product into the threaded port of the pressure calibration stand, ensuring to hold the flat part of the sensor with a wrench.
- Open the front cover and connect the cable to the microswitch terminals. Connect the other end of the cable to a multimeter.

Diagram:

- Cover
- Setpoint Adjustment Screw
- Differential Adjustment Screw

- Apply pressure to 0.6MPa, this value can be read from a standard pressure gauge.
- Rotate the setpoint adjustment screw clockwise until the switch contact cuts over at 0.6MPa.
- Vary the pressure on the calibration stand up and down around 0.6MPa to verify that the contact switching value upon pressure rise is 0.6MPa (this is the desired upper switching value), and the corresponding lower switching value should be 0.6MPa minus the differential 0.012MPa (approx.), which is 0.588MPa (approx.). Finally, replace the cover on the setpoint adjustment screw.

Adjustment of Setpoint for Controllers with Adjustable Differential

[Example]: For a controller with a setpoint adjustment range of 0.03...0.8MPa, if the contact signal is required to be emitted when the pressure rises to 0.6MPa and returned when the pressure drops to 0.5MPa, the operating steps are as follows:

- Open the cover of the setpoint adjustment screw. Screw the product into the threaded port of the pressure calibration stand, ensuring to hold the flat part of the sensor with a wrench.
- Open the front cover and connect the cable to the microswitch terminals. Connect the other end of the cable to a multimeter.
- Apply pressure to 0.5MPa, this value can be read from a standard pressure gauge.
- First, adjust the lower switching value. Rotate the setpoint adjustment screw clockwise until the switch contact cuts over at 0.5MPa.
- Then, rotate the differential adjustment screw counter-clockwise to gradually increase the differential from its minimum value until the contact operates when the pressure rises to 0.6MPa.
- Vary the pressure on the calibration stand up and down in the range of 0.45-0.65MPa to verify that the contact switching value upon pressure rise is 0.6MPa (this is the desired upper switching value), and the contact switching value upon pressure drop is 0.5MPa (this is the desired lower switching value). Finally, replace the cover on the setpoint adjustment screw.

Selection and Installation

- When selecting a controller, it is best to choose one where the predefined setpoint is located in the middle of the controller's adjustable range, typically 20%-80% of the adjustment range.
- If the controller is to be installed outdoors, sufficient protection should be provided to prevent drastic changes in ambient temperature, direct sunlight exposure, and corrosion from gases or water ingress.

- For controlled liquid media with pressure peaks and pulsating pressures, a pressure surge damper can be installed at the controller interface to eliminate adverse effects.
- The switching current must not exceed the rated value.
- Open the front cover and mount the controller vertically on the instrument panel. Do not use hands to push or tools to hit the components inside the controller to prevent performance changes.
- The depth of the pipe joint screwed into the sensor should not exceed 12mm.

Dimensions in mm

Outline and Installation Dimensions

Diagram with dimensions

- 68, 66, 88, 60, 150 (dimensions)
- G1/4" (thread type)
- 2-ϕ6.5 (hole count and diameter)
- Counterbore ϕ10.5 depth 30 (counterbore dimensions)
