

ML8824-BV Series

Electric Actuator for PICVs

Honeywell ML8824-BV series PICV electric actuators are designed for use with pressure independent control valves (PICV) and provide a wide range of features.

The ML8824-BV series actuator is available in standard (ML8824A-BV) and NFC (ML8824B-BV) versions. Models with the same close-off force have the same technical specifications. An Android app is available for the NFC version, which can be used to configure and view dead zones, sensitivity and maximum opening settings. You can also configure the maximum flow rate and view the current flow rate of the corresponding PICV (VPIC Series DN25–DN150, readings are based on laboratory test results).

Features

- Self-adaption mode
- Low power consumption
- Quick and easy installation
- Manual operation with override functions
- DIP switch for configuring multiple parameters and functions (e.g. run time, run direction, input signal and feedback signal, etc.)
- NFC function (NFC versions only) allows you to configure the PICV's maximum flow rate and view the current flow rate via mobile APP



600N



1800N

Technical parameters

SKU (Standard)	ML8824A0620-BV	ML8824A1840-BV
SKU (NFC)	ML8824B0620-BV	ML8824B1840-BV
SKU (Set Max Open)	ML8824H0620-BV	ML8824H1840-BV
Rated Force	≥600N	≥1800N
Rated Stroke	26 mm	46 mm
Supply voltage	24 Vac ± 15%, 50/60Hz; 24 Vdc +15%, -10%;	
Power consumption	7 VA	14.5 VA
Input signal	0(2)–10 Vdc, 0(4)–20 mA Voltage input impedance: >100KΩ Current input impedance: <0.125KΩ	
Feedback signal	0(2)–10 Vdc, 0(4)–20 mA	
Operating speed	60s or 80s	80s or 120s
IP rating	IP54 (EN60730)	
Electrical protection class	III (EN60730-1)	
Certification	CE (EN60730)	
Operating conditions	-10°C to +55°C, 5–95% RH	
Storage conditions	-40°C to +65°C, 5–95% RH	
Operating medium temperature	Max 130°C	
Material	Upper cover: Polycarbonate plastic Case: Plastic Bracket: Cast aluminum	Upper cover: Polycarbonate plastic Case: Cast aluminum Bracket: Cast aluminum
Weight	1.3 kg	2.4 kg

Actuator and PICV parameters

Actuator close-off force			600 N	1800 N
Actuator stroke			20 mm	40 mm
PN16 PICV	PN25 PICV	DN	Close-off differential pressure (kPa)	
VPIC16R-025(P)	VPIC25R-025(P)	25	400	—
VPIC16R-032(P)	VPIC25R-032(P)	32	400	—
VPIC16R-040(P)	VPIC25R-040(P)	40	400	—
VPIC16R-050(P)	VPIC25R-050(P)	50	400	—
VPIC16F-050P	VPIC25F-050P	50	600	—
VPIC16F-065P	VPIC25F-065P	65	600	—
VPIC16F-080P	VPIC25F-080P	80	—	600
VPIC16F-100P	VPIC25F-100P	100	—	600
VPIC16F-125P	VPIC25F-125P	125	—	600
VPIC16F-150P	VPIC25F-150P	150	—	600

Setup and commissioning

Overview

The ML8824-BV series actuator is driven by a DC brushless motor. A spring clip is used to connect to actuator to the valve rod, thus allowing the valve disk to move up and down for flow control.

Manual operations

The ML8824-BV series actuator can be operated manually using the supplied hexagon wrench and features a manual override function. For safety reasons, the actuator automatically cuts off the power supply to the motor when manual operations are performed.

Note: The self-adaption process must be repeated after completing manual operations when the actuator is switched off!

Rotate the hexagon wrench clockwise to shift the actuator connector downwards; rotate anticlockwise to shift the actuator connector upwards.

Enabling floating control

The ML8824-BV series actuator features a floating control function (see wiring diagram, page 5). When the S2-8 DIP switch on the PCB is set to ON (see Table of DIP Switch Settings, page 6), this indicates that floating control is enabled and the actuator will travel to the fully open or fully closed position without being controlled by the input signal (0/2–10VDC, 0/4–20mA). This ensures that manual operations can be completed safely.

Input/feedback signal

The analog input/feedback signal can be selected using the DIP switch (see Table of DIP Switch Settings, page 6). The default input/feedback signal is 0...10 Vdc. You can select 2–10VDC, 0–20mA and 4–20mA input/output signals using the DIP switches on the PCB.

Wiring description

The actuator comes with a pre-assembled PG13.5 cable gland, with spaces reserved for PG13.5 and PG9 connectors.

Note: To prevent the actuator from malfunctioning, connect it to a 24 V/AC power supply with a ground connection (see wiring diagram, page 5).

Setting the direction of travel

The direction of travel can be configured using the S2-5 DIP switch (see Table of DIP Switch Settings, page 6).

When the DIP switch is set to ON and the input signal is set to 0(2) VDC or 0(4) mA, the actuator will travel to the highest position.

When the DIP switch is set to OFF and the input signal is set to 0(2) VDC or 0(4) mA, the actuator will travel to the lowest position (factory default).

Self-adaption mode

Assemble the actuator and the valve and power the actuator with a 24 VAC/DC power supply.

Automatic self-adaption: The actuator will automatically enter self-adaption mode when it is supplied with power. The yellow indicator light on the PCB will blink (1Hz) and the actuator will fully close (travel to the lowest position) and then fully open (travel to the highest position). The indicator light will stop blinking when the self-adaption process is complete. The actuator will then travel to the position designated by the control signal.

Manual self-adaption: To enable self-adaption mode, press and hold the S1 button on the PCB for at least 5 seconds (see PCB Layout Diagram) until the indicator starts blinking (1Hz). The actuator will fully close (travel to the lowest position) and then fully open (travel to the highest position). The indicator light will stop blinking when the self-adaption process is complete. The actuator will then travel to the position designated by the control signal.

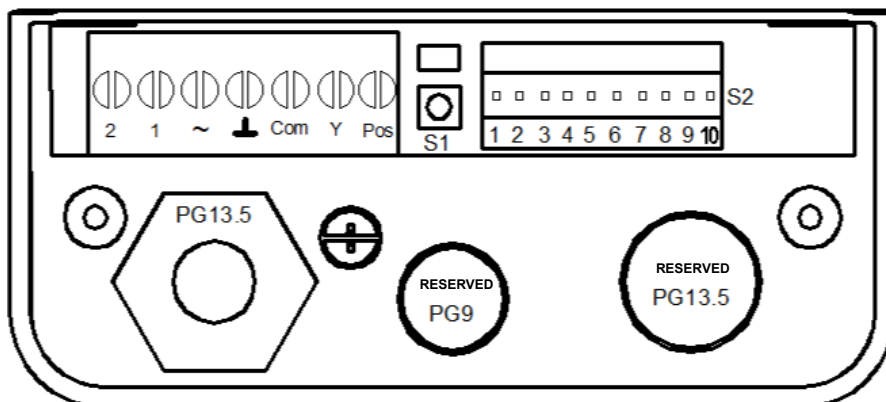
Note: Travel calibration takes approximately 3 minutes for the 600 N actuator and approximately 4 minutes for the 1800 N actuator (when the default settings are enabled).

Signal interruption mode

Signal interruption mode can be enabled/disabled using the S2-6 DIP switch (see Table of DIP Switch Settings, page 6).

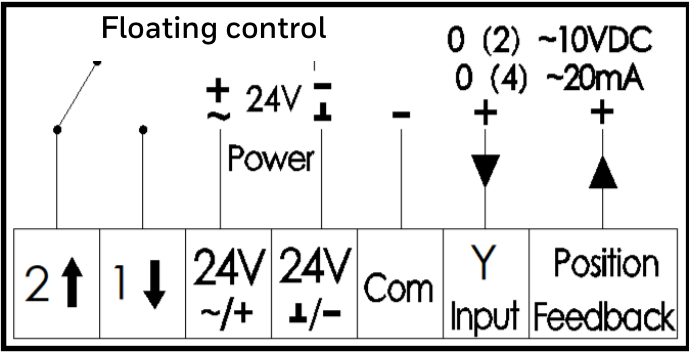
When the DIP switch is set to ON and the input signal is a voltage signal, the actuator will automatically generate a 0(2) V/DC input signal (factory default) if the signal cable is cut. When the input signal is a current signal, the actuator will automatically generate a 0(4) mA input signal (factory default) if the signal cable is cut.

When the DIP switch is set to OFF and the control signal is a voltage signal, the actuator will automatically generate a 10 V/DC input signal if the signal cable is cut. When the input signal is a current signal, the actuator will automatically generate a 0(4) mA input signal if the signal cable is cut.



PCB Layout

Wiring diagram



Description:

Position Feedback: Feedback signal

Y Input: Input signal

Floating type*:

*In floating control mode, S2-8 DIP switch is set to ON. the input signal (Y) will be invalid.

Terminal #	Actuator action
1 ↓	Move downwards
2 ↑	Move upwards

Dimensions (mm)

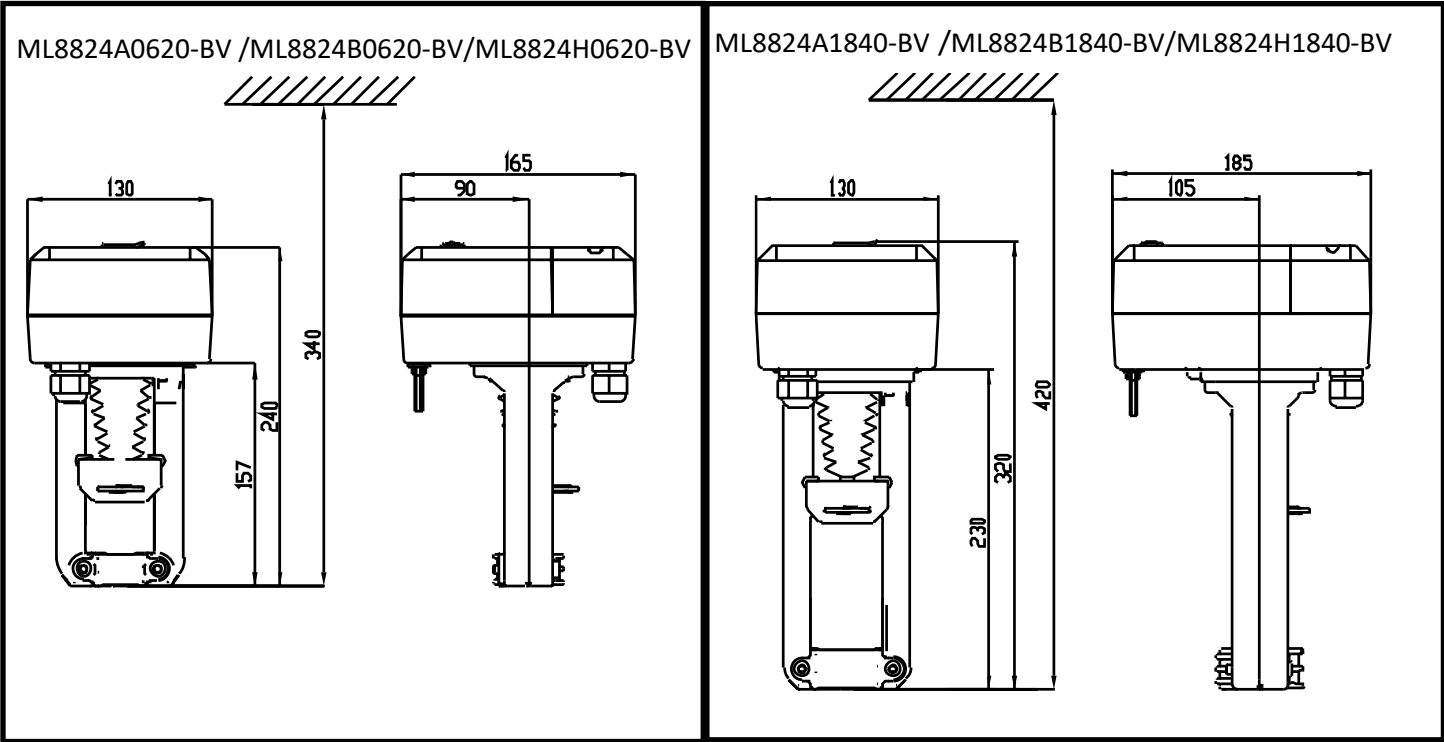


Table of DIP Switch Settings

DIP	Function	Functional description of set value	
S2-1	Set starting point of control/	ON	4–20 mA or 2–10 V/DC control/feedback signal
		OFF	0–20 mA or 0–10 V/DC control/feedback signal (factory default)
S2-2	Set control signal type	ON	II: Current control
		OFF	UI: Voltage control (factory default)
S2-3	Setting input impedance matching	ON	UI: The control signal is a voltage signal (factory
		OFF	II: The control signal is a current signal
S2-4	Set the valve position feedback	ON	IO: Feedback current signal
		OFF	UO: Feedback voltage signal (factory default)
S2-5	Set the operating mode	ON	DA: When the control signal increases, the actuator moves downwards. When the control signal decreases, the actuator moves upwards.
		OFF	RA: When the control signal increases, the actuator moves upwards. When the control signal decreases, the actuator moves downwards. (Factory default)
S2-6	Configure input signal interruption mode	ON	DW: When the control signal is a voltage or current signal, the actuator will automatically generate a minimum control signal if the input signal cable is cut (factory default).
		OFF	UP : 1) When the control signal is a voltage signal, the actuator will automatically generate a maximum control signal if the input signal cable is cut. 2) When the control signal is a current signal, the actuator will automatically generate a minimum control signal if the input signal cable is cut.
S2-7	Set self-adaption mode	ON	DF: Power-on self-adaption mode (factory default).
		OFF	RF: Manual self-adaption mode
S2-8	Set control mode	ON	Floating control
		OFF	Modulating control (factory default)
S2-9	Reserved		
S2-10	Speed setting	ON	High speed: 600 N (3 s/mm), 1800 N (2 s/mm)
		OFF	Low speed: 600 N (4 s/mm), 1800 N (3 s/mm) (factory default)

NFC and Parameter Settings

Using mobile APP available and via NFC function, parameters can be set up. In the Setting, maximum flow rate can be configured. In the Advanced Setting, the maximum opening, dead band and sensitivity can be configured. Upon completion of the parameter settings, move the mobile device close to the top of the actuator, the set parameters will be written into it with “Write success” prompt upon finished.

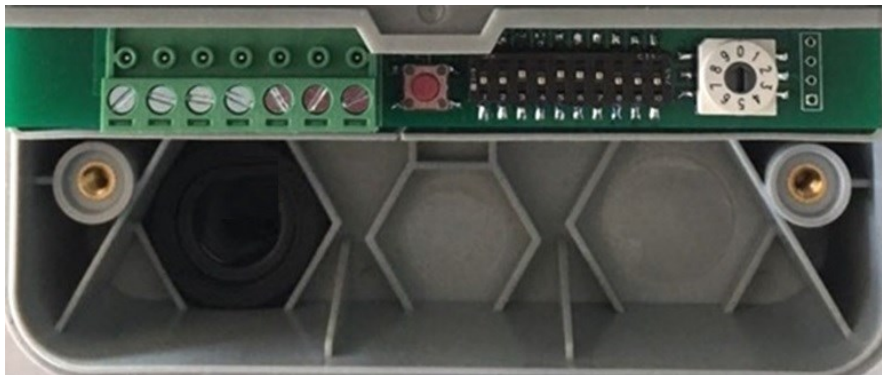
Return to the parameter settings interface and move your device close to the actuator, we can read the configured parameters.

Note: As you need to configure a maximum flow rate for the PICV, we do not recommend configuring a maximum opening. If you have configured a maximum opening, this will override the maximum flow rate.

Parameter	Set range or options
Languages	Chinese, English, Auto
Valve models	VPIC series PICV, DN25–DN150
Maximum flow rate	30%–100% of the PICV's maximum flow rate
Dead band	1.0–10.0
Sensitivity	0.5–10.0
Maximum opening	30%–100%

Set Max Open (only ML8824Hxxxx-BV)

Open the wiring cover, and the knob (as shown below) beside the DIP switch can be rotated with a screwdriver to set the maximum stroke of the actuator, thus controlling the maximum opening of the valve.



Calibration and opening comparison table										
Calibration	0 (default)	9	8	7	6	5	4	3	2	1
Max Open	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%