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 10/21/23

PAM24-100-(FS) Series

IOM Manual

Safety Instructions - Definition of Terms
Read, Follow and Save these instructions

WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE
Used without the safety alert symbol indicates a potential situation which, if not avoided, may result in an undesirable result or state, including property damage.

Table of Contents

PAM24-100-(FS) Series - Installation, Operation and Maintenance Manual

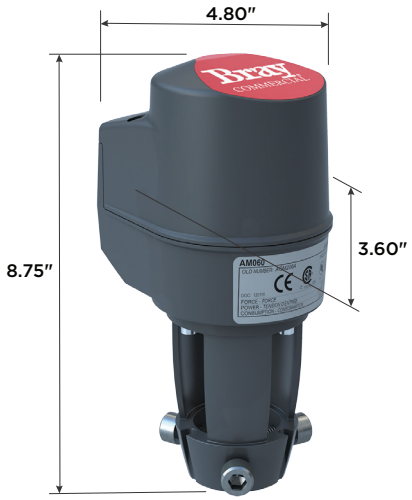
FOR MORE INFORMATION ON THIS PRODUCT AND OTHER BRAY PRODUCTS
PLEASE VISIT OUR WEBSITE – www.braycommercialdivision.com

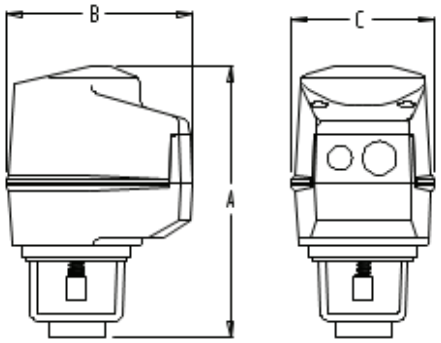
PA Series Actuators - Specifications

Technical Specifications - PAM24-100 & PAM24-100-FS Actuator			
Electrical	Actuator Model	**PAM24-100-(FS)**	**For Simple Set PIC Valve sizes 1-1/2" to 2"**
	Type	On/Off, Floating and Modulating	
	Force	100 lb-force	
	Operating Voltage	22 to 26 VAC / 28 to 32 VDC	
	Power Consumption	6 VA, 20VA Start Up	
	Input Signal	2 Position On/Off (Digital-Pulse Width Modulation), 3 Point Floating, Modulating (Analog), 2-10VDC; 4-20mA	
	Feedback Signal	4 to 20 mA or 2 to 10 VDC adjustable (factory set 2-10 VDC)	
	Input Impedance	100 K	
	Electrical Connection	4-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long) Terminal Connection. Use 18AWG [0.8mm2] minimum	
Operation	Fail Safe	PAM24-100-FS **ONLY**	
	Fail Safe Function	Electronic - Enerdrive[1] (PAM24-100-FS **ONLY**)	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	90 Seconds	
	Direction	Reversible. Default - Up to Open	
	Auto Stroke	Yes	
	Cycle Life	60,000	
Enviromental	Enclosure Rating	NEMA Type 2 - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 0°F to 122°F (-18°C to 50°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.80"x (W) 3.60"x (H) 6.93"	
	Weight	2.0 lb. (0.9 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

Note[1]: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

PA Series Actuators - Dimensions





DIMENSIONS					
A		B		C	
in.	mm	in.	mm	in.	mm
8.75	222	4.80	122	3.60	91

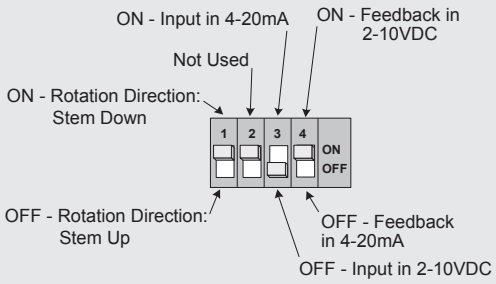
PA Series Actuators - Model Number Matrix

PAM24-100	24V On/Off & Floating - Non-Fail Safe
PAM24-100-FS	24V On/Off & Floating - Fail Safe

PA Series Actuators - Wiring/DIP Switches

PAM24-100

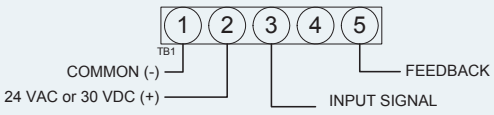
DIP SWITCHES - DIGITAL SIGNAL



WIRING - (TERMINAL)

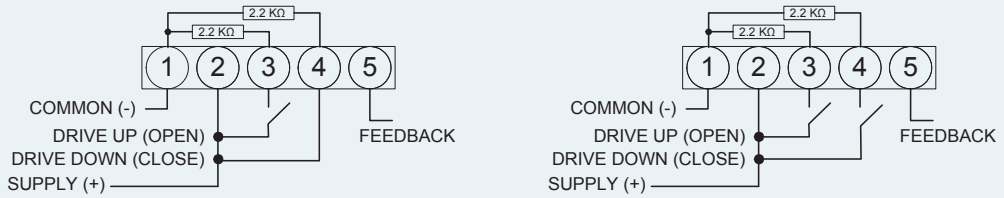
PAM24-100 (100 lb force)

ON/OFF, FLOATING & MODULATING (ANALOG), NON-FAILSAFE



DIGITAL SIGNAL

3 WIRE / 2 POSITION ON/OFF	4 WIRE / 3 POINT FLOATING



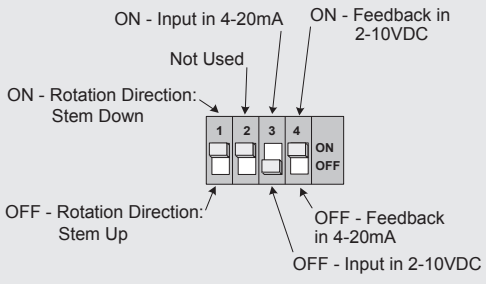
Special Consideration for Digital Control

In this mode, the actuator is sensitive to induced electrical voltages **from external sources**. To prevent such interference, if the signal on pins 4 and 3 on TB1 are from an **external 24VAC source**, install a resistor 2.2kohm, 0.5W between pins 4 and 1 and another of 2.2k ohms, 0.5W between pins 3 and 1 of TB1. These resistors are included.

NOTE: For additional operating information consult PAM24-100 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

PAM24-100-FS

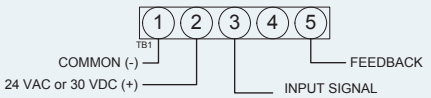
DIP SWITCHES - DIGITAL SIGNAL



WIRING - (TERMINAL)

PAM24-100-FS (100 lb force)

ON/OFF, FLOATING & MODULATING (ANALOG), FAILSAFE



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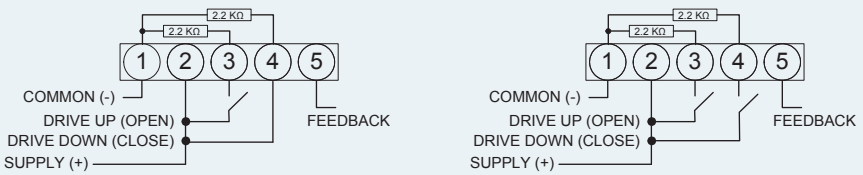

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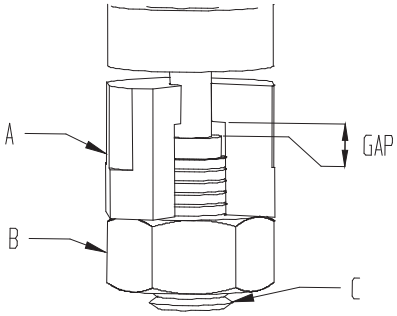
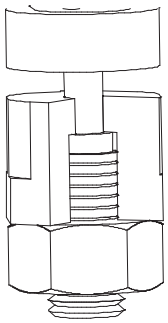
PA Series Actuators - Mounting the Actuator on the Valve

CORRECT MOUNTING



INCORRECT MOUNTING

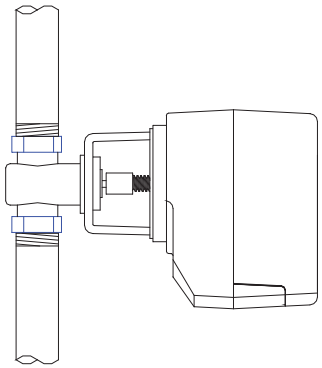


1. Screw completely the valve shaft (C) unto the coupling of the actuator (A).
2. Unscrew the coupling (A) for ½ of turn in order to leave a functional play.
3. Screw the counter nut (B).

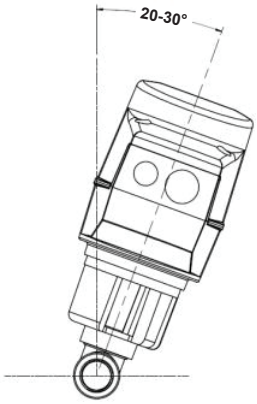
WARNING
Do not over tight coupling of the actuator on the shaft of the valve.

PA Series Actuators - Mounting Orientations

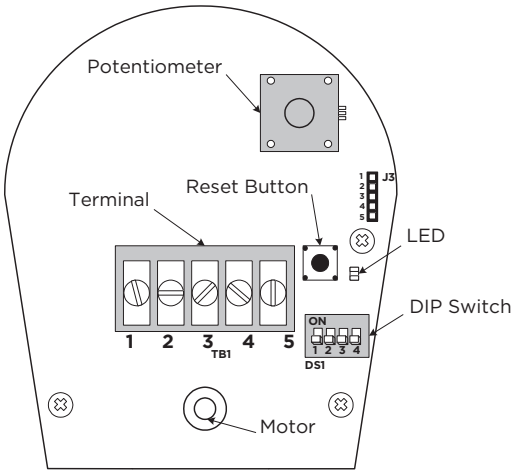
VERTICAL MOUNTING



HORIZONTAL MOUNTING



1. Pay attention to system particularity; be sure that the expansions, contractions of the system and its medium as well as operating pressures are within the tolerances.
2. When plumbing, the motorized valve should be situated in an easily accessible place and sufficient space should be allowed for the removal of the actuator.
3. To prevent moisture from collecting in the motor casing, install the motorized valve such that the actuator is superior to the valve, at 20-30o / at vertical. Avoid mounting the valve so that the valve stem is below horizontal.



Stroke Adjustment - No Control Signal Change

1. Apply power and, **WAIT FOR LED TO BE OFF (around 10 seconds).**

2. Press and release the reset button to start the auto-stroke process. The LED should be illuminated.

- **First option:**
The actuator will then travel in both directions to find its limit and position itself according to the demand.
The LED will extinguish, the process is complete.
- **Second option:**
When the desired end position is reached, press and release the reset button. The actuator will now go the start position.
(you can also press and release the reset button when It's reaches the start position)
The LED will extinguish, the process is complete.

Programming - Change of Control Signal

1. Remove power and put all dip switches "OFF" (Default).
2. Apply power and, **within 10 seconds**, press and release the reset button. The LED should be blinking.
3. Select the control signal with dip switches:

	Digital or Analog Modes	**PWM Mode** *refer to PWM Mode section below to program in this mode.*
Move switch **No1** "ON" and then "OFF".	**Digital** (On/Off or 3 point floating)	Set 5s pulse (Default)
Move switch **No2** "ON" and then "OFF".	**Analog** (Default)	Set 25s pulse

Stroke Adjustment - see the stroke adjustment section above.

PWM Mode & Speed Selection

To enable or disable the PWM mode on the actuator, do as follow:

1. Remove power from the actuator
2. Jump pin 3 & 4 of J3 (instead of 4 & 5)
3. Select the desired action using the DIP switches(DS1):

DS1-1	**DS1-.2**	
OFF	OFF	90 sec. ½"
OFF	ON	Enable PWM Mode
ON	OFF	Disable PWM Mode
ON	ON	90 sec. 1"

4. Power on the actuator
5. Wait 5 seconds
6. Remove power from the actuator
7. Change jumper position from J3 3 & 4 to 4 & 5.
8. Re-apply power supply to actuator PWM is factory preset at 5 sec. pulse, refer to Programming section above to change pulse setting.

Zero and Span Calibration - This feature is applicable to analog control signal only.

1. Remove power and put all dip switches "OFF". (factory preset).
2. Apply power and, within 10 seconds press and hold the reset button until the LED blinks once. The Zero and span calibration process then start.
3. Release the reset button. The LED is now constantly illuminated
4. Apply new minimum voltage.
   It can be any value between 0 to 7 VDC, with an external 0 to 10 volt supply (ex : MEP).
5. Press and release the reset button to memorize the new minimum voltage. The LED blinks.
6. Apply new maximum voltage.
   It can be any value between 3 to 10 VDC, this value should be greater than the new minimum value.
7. Press and release the reset button to memorize the new maximum voltage. The LED blinks.
   The Zero and span calibration process is complete.

Note: To reset zero and span to 2 to 10 VDC (factory value).
You just have to re-select the analog control signal mode, see Programming.

Input Signal & Feedback Setup

	Input Signal	**Feedback**
Analog Mode	Input Signal is set with Dip Switch # 3 DS1-3 at OFF = 2 – 10VDC (default setting) DS1-3 at ON = 4 – 20mA	Feedback is set with Dip Switch #4 DS1-4 at OFF = 4 – 20mA DS1-4 at ON = 2 – 10VDC (default setting)
Digital & PWM Mode	No Input Signal Setting ⚠ *DS1-3 MUST be at OFF*	