NIPPON VALVE CONTROLS,INC. SP-1379

PBX type Electric Actuator Specifications

FEATURE

It built in a high reliability brushless DC motor and a non-contact potentiometer.
Actuator has a long life built-in battery, It opens or closes when a power failure occurs.
The battery can be expected a service life over 8 to 9 years at 25 °C.

SPECIFICATION

Actuator type (☐:Voltage code)	PBX-300-☐	PBX-700-☐	PBX-02K-☐	PBX-06K-☐
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2) 24 V AC ±10 % 50/60 Hz (Code: 3) 24 V DC (Code: 0) Cannot use a half or full-wave DC power supply.			
Rated torque [N·m]	21	50	140	400
Operation time [s]	AC: 1.2 to 2.5 DC: 2 to 2.5 (Max 8)	AC: 3.5 to 7 DC: 4.5 to 7 (Max 22)	AC: 11 to 23 DC: 15 to 23 (Max 78)	AC: 35 to 70 DC: 45 to 70 (Max 230)
	The operation time is the time when it is operated by the override switch. Operation time with the override switch cannot be adjusted with S.C. trimmer. At factory shipment, the S.C trimmer is set to the fastest position.			
Power consumption (Max) [VA]	120			
Motor	Brushless DC motor (PWM Control)			
Overload protection	Current limiter			
Method of operation	Proportional control			
Input signal	4 to 20 mA / 1 to 5 V (Input resistance: 250 Ω)			
Operation *1	[Mode A] SHUT by decreased signal ↔ OPEN by increased signal (Standard) [Mode B] SHUT by increased signal ↔ OPEN by decreased signal (Option: J) [Forced open / shut] It takes priority over the input signal. C-S is ON → SHUT C-O is ON → OPEN Common in mode A / B			
Power failure *2	SHUT at power failure (Standard) OPEN at power failure (Option: P)			
Backup time	About 4 minutes			
Battery	Compact seal lead acid battery: 12 V 2.5 Ah * It is recommend to exchange a battery for every 5 years (at 25 °C).			
Charge system	Constant voltage charge current			
Indication signal	0 mA : SHUT ↔ 1 mA : OPEN (External load resistance: less than 3 kΩ) Common in mode A / B			
Override switch	It takes priority over the input signal. Common in mode A / B Dry contact / Transistor, Open collector. (Input signal current: 6 mA 15V DC)			
Operating range	SHUT: 0 to 40 % OPEN: 50 to 100 %			
Resolution	Less than 0.2 %			
Duty cycle	100 %			
Ambient temperature	-20 to 50 °C			
Space heater	Built in to the control board			
Manual operation	Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.)			
Enclosure	Equivalent to IP65 (IEC 60529)			
Housing material	AC4C Aluminum alloy die cast (acrylic resin baking finish)			
Wire connection	Terminal Block: M3, Ground terminal: M3			
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.			

3 way valve: SHUT / Position①, OPEN / Position②

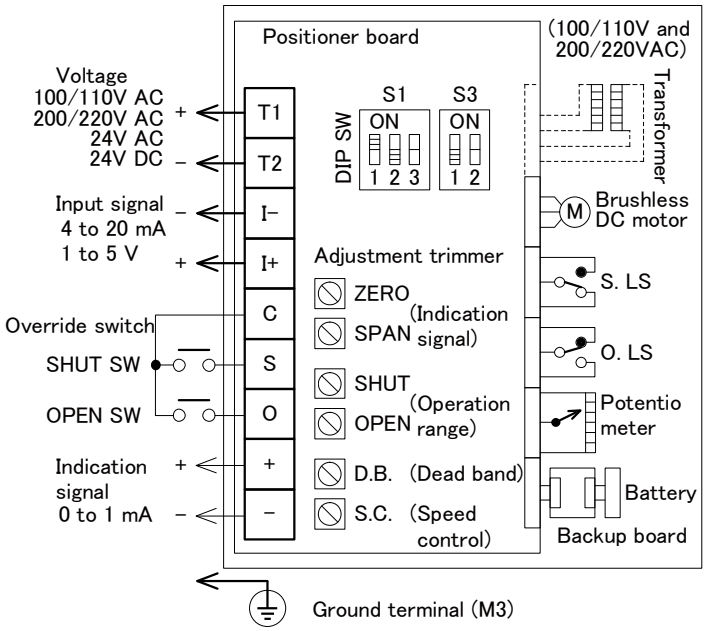
*1 Change by DIP switch. (Standard → Mode B)

*2 Change by DIP switch. (Standard → OPEN at power failure)

OPERATION MODE / POWER FAILURE

	Power failure	Option code
Mode A	SHUT	Standard (Nil)
	OPEN	Option: P
Mode B	SHUT	Option: J
	OPEN	Option: J-P

WIRING

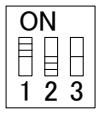


SW : Switch
S. LS : SHUT Limit switch
O. LS : OPEN Limit switch
M : Motor

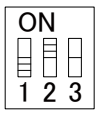
Setting with DIP SW

• Mode setup (S1)

Mode A

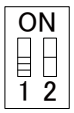


Mode B

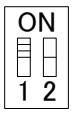


• Power failure (S3)

SHUT



OPEN

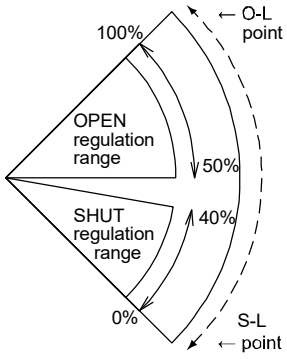


Note) Input signal circuit is non-isolated. Do not connect DC (minus) wire to other DC (minus) common.

Adjustment of the control range

- For better control, it is necessary to select the valve size and adjust the control range of the valve for the input signal.
- When setting the maximum flow rate, open side opening can be adjusted with OPEN trimmer.
  When setting the minimum flow rate, the opening degree of the closing side can be adjusted with the SHUT trimmer.

Valve control adjustment range



Operate of the Forced SHUT / OPEN SW

- If forced open point and a close point of contact are turned on, priority will be given over an input signal and a valve is going to be carried out full open and close.
- When the override OPEN/SHUT switch is ON at the same time, the valve holds the current opening.