neptronic®

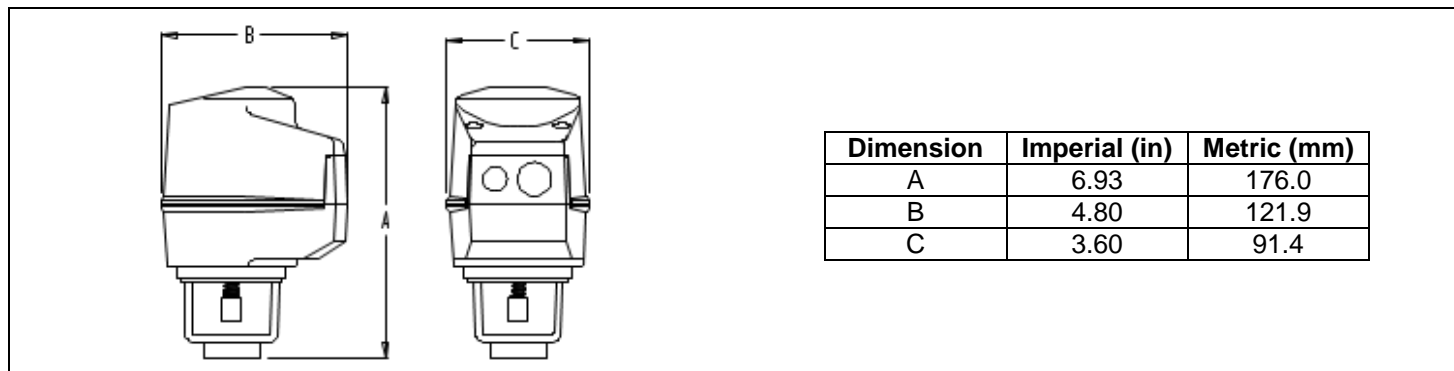### Features:

- Retrofit assembly available for the majority of the manufacturers of valves (with option –XX-Y) (see Retrofit option).
- Manuel override
- Maintenance free.
- Control signal fully programmable.
- Fail safe by *Enerdrive System[1]* (on model 060).

AM000
AM060

Technical Data	AM000	AM060
Fail safe - *Enerdrive*	No	Yes
Power consumption	6 VA	20VA Peak, 6VA
Running time	90 sec force dependant (90 sec for ½" or 90 sec for 1")	
Force	100 lb. [450 N] at rated voltage	
Feedback	4 to 20 mA or 2 to 10 Vdc adjustable (factory set 4 to 20 mA)	
Power supply	22 to 26 Vac or 28 to 32 Vdc	
Electrical connection	18 AWG [0.8 mm^2] minimum	
Inlet bushing	2 inlet bushing of 5/8 in [15.9 mm] & 7/8 in [22.2 mm]	
Control signal	Analog, Digital or Pulse with modulation (PWM) programmable (factory set with Analog control signal)	
Maximum stroke	1 in [25.4 mm], electronically adjustable	
Direction	Reversible, normally up position (open) or normally down position (close) (factory set normally down)	
Ambient temperature	0ºF to 122ºF [-18ºC to 50ºC]	
Storage temperature	-22ºF to 122ºF [-30ºC to 50ºC]	
Relative Humidity	5 to 95 % non condensing.	
Weight	2 lbs. [0.9 kg]	
Warning: Do not use automatic screw driver on manual override		

Dimensions

Dimension	Imperial (in)	Metric (mm)
A	6.93	176.0
B	4.80	121.9
C	3.60	91.4

Caution

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[1] *Enerdrive Fail-Safe System:* US Patent #5,278,454 | European Patent #0647366

CE CSA® C US UL LISTED TEMPERATURE REGULATING EQUIPMENT 41 X 9 CLASS 2 CIRCUIT
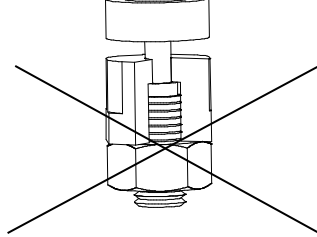
Mechanical installation

Mounting of the actuator on valve
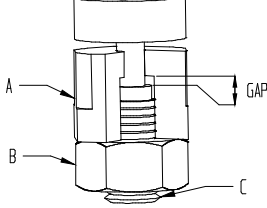
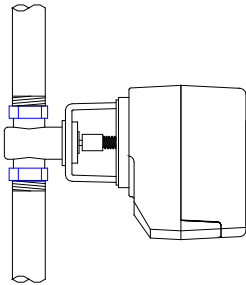| Correct mounting	Non Correct mounting

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.
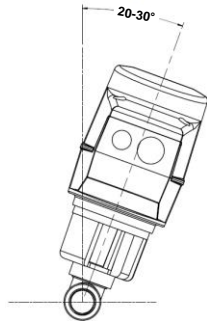3. Screw the counter nut (B).

Warning:

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

Mounting of the actuated valve on system

| Vertical mounting	Horizontal mounting

20-30°

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.
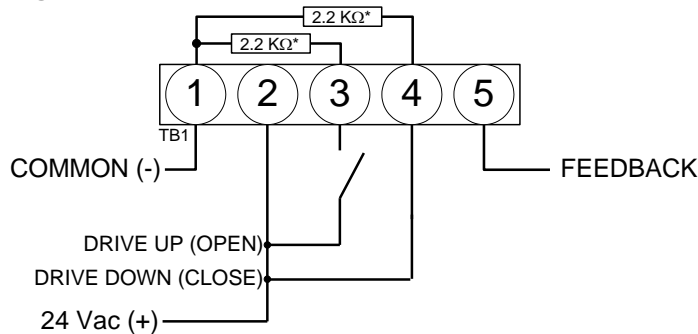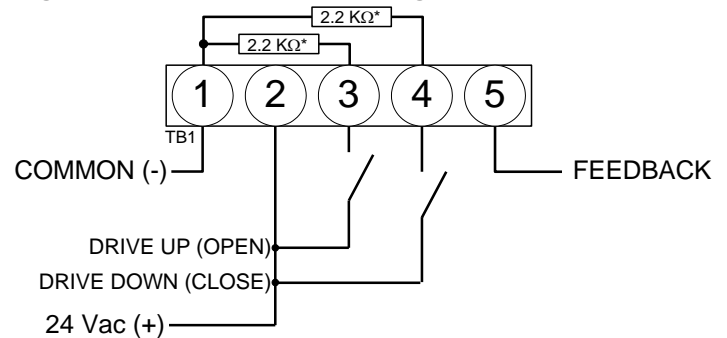
Wiring Diagrams

Analog or PWM

COMMON (-)

24 Vac or 30 Vdc (+)

INPUT SIGNAL

FEEDBACK
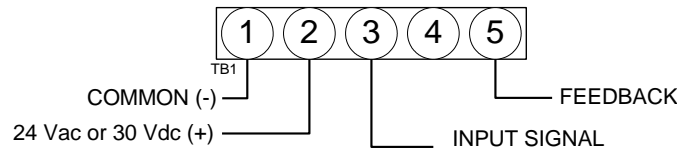
Digital signal

Digital – 3 wire / 2 position	Digital – 4 wire / 3 point floating

2.2 KΩ*

2.2 KΩ*

COMMON (-)

FEEDBACK

DRIVE UP (OPEN)

DRIVE DOWN (CLOSE)

24 Vac (+)

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 24 Vac source**, install a resistor 2.2kohm, 0.5W between pins 4 and 1 and another of 2.2kohms, 0.5W between pins 3 and 1 of TB1. These resistors are included.

Input Signal and Feedback setup

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

PC Board
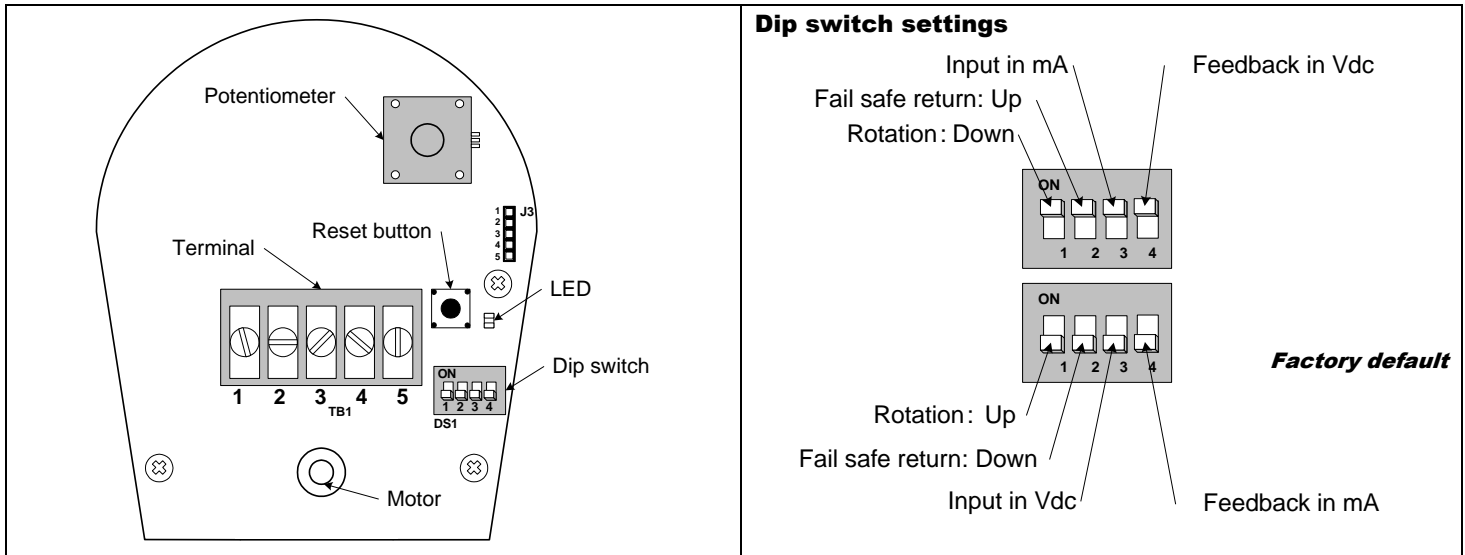
Stroke adjustment – No control signal change

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 dipswitches (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.

Retrofit option

A _ _ _ _ - _ _ -

Actuator designation	**Manufacturer of valve**		**Particularity**
AM000	05	Invensys	S Neptronic standard.
AM060	10	Siebe	
AM000-30	1_	Johnson	
AM060-30	2_	Honeywell	
	2R	Regin	
	3_	Landis & Gyr	
	4_	Tour Andersson	
	5_	Cazzaniga	P With position indicator.
	6_	Controlli	
	8_	Barber-Colman	
	9_	Robertshaw	
	10_	Danfoss	
	11_	Lo Beer	
	12_	Geamatic	