neptronic®

Actuator
## Specification & Installation Instructions

Features:

- Up to 4000 in.lb [450Nm].
- Clutch for manual adjustments.
- Maintenance free.
- Control signal fully programmable.
- Fail safe (battery backup) (on model 210 & 230).
- Auxiliary switches (on model 220 & 230).
- IP56 enclosure.

UM200
UM220
UM210
UM230
WM200
WM220
WM210
WM230

Technical Data	UM200	UM220	UM210	UM230	WM200	WM220	WM210	WM230
Auxiliary switches	No	Yes (2)	No	Yes (2)	No	Yes (2)	No	Yes (2)
Fail safe	No		Yes		No		Yes	
Torque	2500 in.lb. [280 Nm] at rated voltage				4000 in.lb. [450 Nm] at rated voltage			
Running time through 90º	4 min.				8 min.			
Feedback	4 to 20 mA or 2 to 10 VDC adjustable							
Power consumption	40 VA							
Power supply	28 to 32 VDC or 22 to 26 VAC, 220 to 250 VAC 50/60Hz							
Electrical connection	18 AWG [0.8 mm^2] minimum							
Inlet bushing	3 inlet bushing of 7/8 in [22.2 mm]							
Control signal	Analog or Digital or PWM programmable (factory set with Analog control signal)							
Angle of rotation	0 to 110 degrees, electronically adjustable (factory set with 110º stroke)							
Direction of rotation	Reversible, Clockwise (CW) or Counterclockwise (CCW) (factory set with CW direction)							
Ambient temperature	0ºF to +122ºF [-18º C to +50º C]							
Storage temperature	-22ºF to +122ºF [-30º C to +50º C]							
Relative Humidity	5 to 95 % non condensing.							
Weight	29 lbs. [13 kg]							
Warning: Do not press the clutch when actuator is powered								

Dimensions
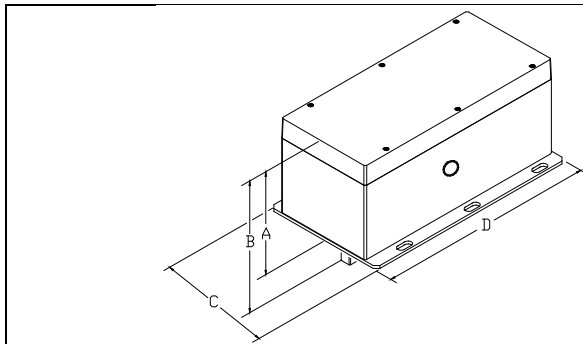
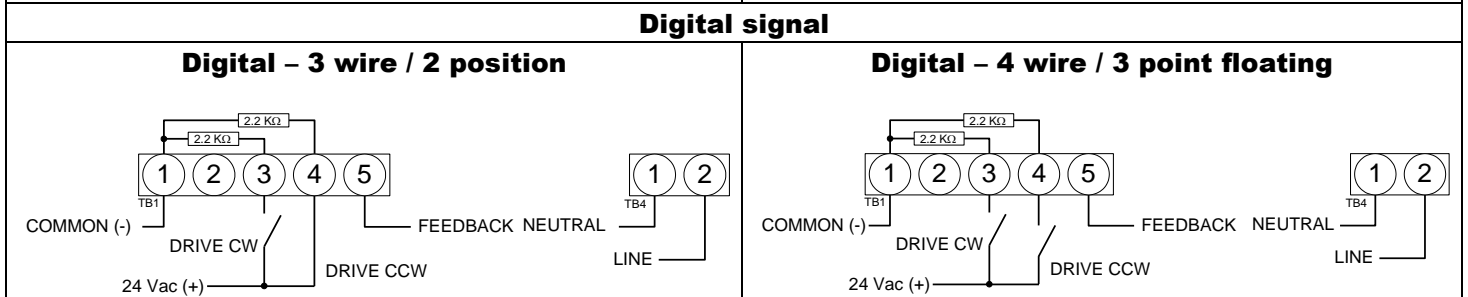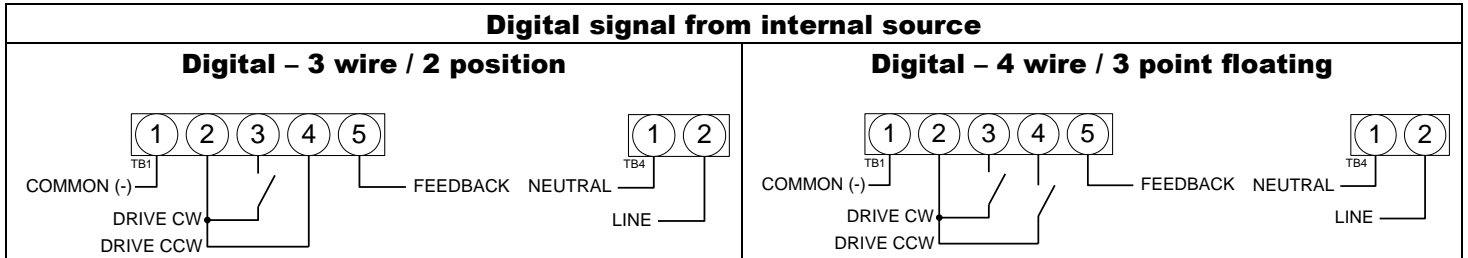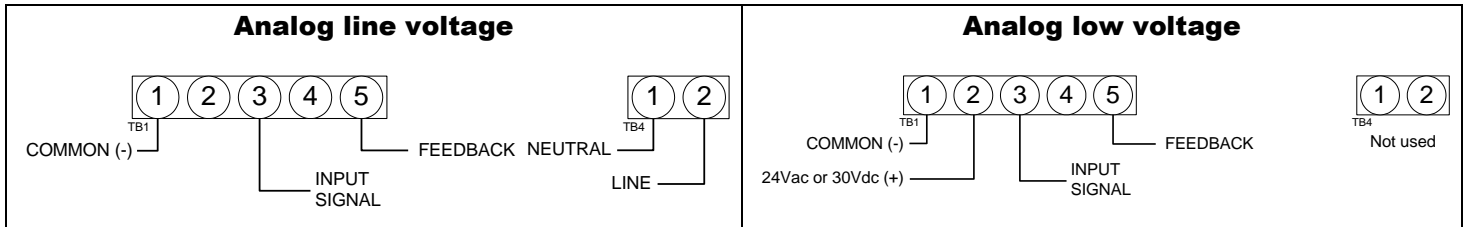| Dimension	Inches	Metric (mm)
A	6.75	169.4
B	7.95	201.9
C	7.85	199.4
D	14.45	367.0

Caution

We strongly recommend that all neptronic® products be wired to a separate transformer and that transformer shall service only neptronic® products. This precaution will prevent interference with, and/or possible damage to incompatible equipment. When multiple actuators are wired on a single transformer, polarity must be observed. Long wiring runs create voltage drop which may affect the actuator performance.

CE UL

Exploded view

Wiring Diagrams

Analog line voltage

COMMON (-)   INPUT SIGNAL   FEEDBACK   NEUTRAL   LINE   TB1   TB4

Analog low voltage

COMMON (-)   24Vac or 30Vdc (+)   INPUT SIGNAL   FEEDBACK   Not used   TB1   TB4

Digital signal from internal source

Digital – 3 wire / 2 position

COMMON (-)   DRIVE CW   DRIVE CCW   FEEDBACK   NEUTRAL   LINE   TB1   TB4

Digital – 4 wire / 3 point floating

COMMON (-)   DRIVE CW   DRIVE CCW   FEEDBACK   NEUTRAL   LINE   TB1   TB4

Digital signal

Digital – 3 wire / 2 position

2.2 KΩ   2.2 KΩ   COMMON (-)   DRIVE CW   DRIVE CCW   24 Vac (+)   FEEDBACK   NEUTRAL   LINE   TB1   TB4

Digital – 4 wire / 3 point floating

2.2 KΩ   2.2 KΩ   COMMON (-)   DRIVE CW   DRIVE CCW   24 Vac (+)   FEEDBACK   NEUTRAL   LINE   TB1   TB4
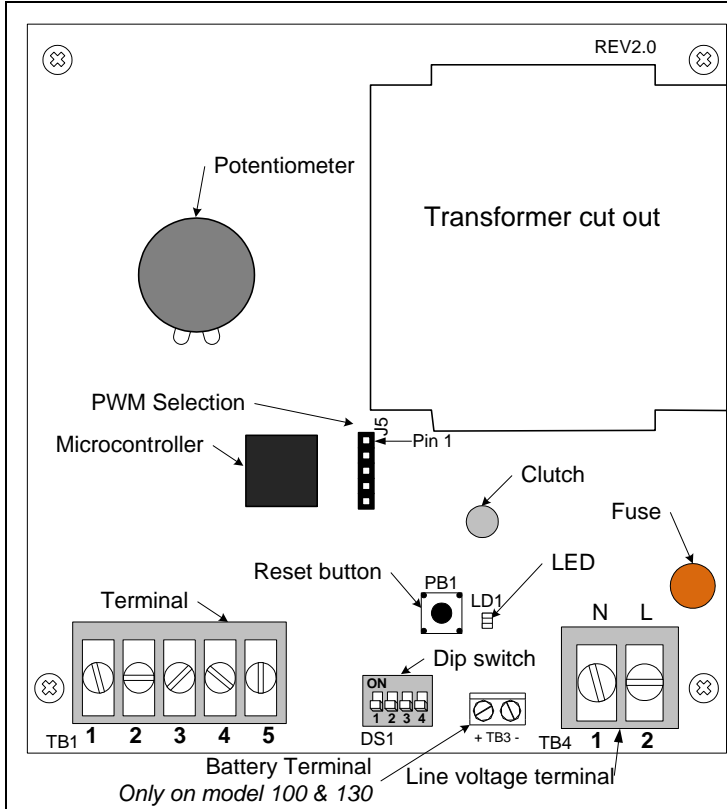
Special consideration for Digital control
In this mode, the actuator is sensitive to induced electrical voltages **from external sources**. To prevent such interference, if the signal on pins 4 and 3 on TB1 are from an **external 24 Vac source**, install a resistor 2.2kOhm, 0.5W between pins 4 and 1 and another 2.2kOhms, 0.5W between pins 3 and 1 of TB1. These resistors are included.
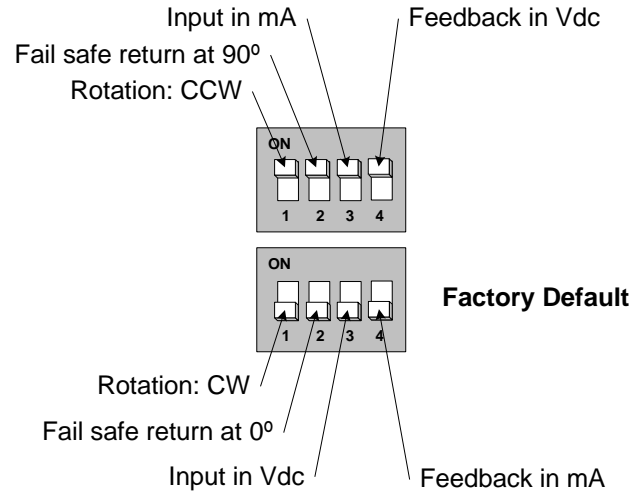
Input Signal and Feedback setup

	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 Mode	No Input Signal Setting ⚠ *DS1-3 MUST be at OFF*	

PC Board

Dip switch settings

Input in mA   Feedback in Vdc
Fail safe return at 90º
Rotation: CCW

Factory Default

Rotation: CW
Fail safe return at 0º
Input in Vdc   Feedback in mA

Default Setting = All dipswitches at OFF

Potentiometer
Transformer cut out
REV2.0
PWM Selection
Microcontroller
Pin 1
Clutch
Fuse
Reset button
LED
PB1
LD1
Terminal
N   L
TB1   1   2   3   4   5
DS1   + TB3 -   TB4   1   2
Battery Terminal
Line voltage terminal
Only on model 100 & 130

Stroke adjustment – No control signal change

1. Apply power and, **wait for at least 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 return back to its original position. (you can also press and release the reset button when It's reaches the original position)
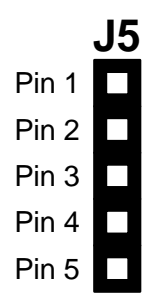   The LED will extinguish, the process is complete.

Programming – Change of control signal & PWM pulse setting

1. Remove power and put all dip switches "OFF". (factory preset).
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**
Move switch **No1** "ON" and then "OFF".	**Digital** (On/Off or 3 point floating)	5 sec. pulse (factory preset)
Move switch **No2** "ON" and then "OFF".	**Analog** (Default)	25 sec. pulse

1. **Stroke adjustment**
   see the stroke adjustment section above.

Enabling or disabling PWM mode

1. Remove power supply to actuator
2. Install jumper between pin 3 & 4 of J5
3. Select the desired action using the dipswitches (DS1):

DS1-1	DS1-2	Action
OFF	ON	Enable PWM Mode
ON	OFF	Disable PWM Mode

4. Re-apply power supply to actuator
5. **Wait 5 seconds**
6. Remove power supply to actuator
7. Remove jumper between pin 3 & 4 of J5, re-install it between pin 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.

J5

Pin 1
Pin 2
Pin 3
Pin 4
Pin 5

When not used for programming,
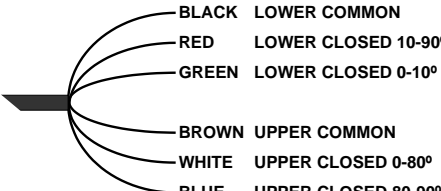*jumper is placed between pin 4 & 5*

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.
   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.

Wiring Diagrams for auxiliary switches (on model 220 & 230)

BLACK   LOWER COMMON
RED   LOWER CLOSED 10-90º
GREEN LOWER CLOSED 0-10º

BROWN UPPER COMMON
WHITE   UPPER CLOSED 0-80º
BLUE   UPPER CLOSED 80-90º

Auxiliary switch rating:
5 Amp resistive, 250 Vac