PROMATION ENGINEERING

Precision Actuation for Industry

Timer Options

Modify the run time for Electric Actuators

Timer Option installed in a P3-120VAC series actuator

Allows an actuator to open or close more slowly

Can alternately allow an actuator to operate on a timed schedule without an outside controller

For On/Off/Jog P1 through P13 series quarter-turn actuators 120V, 230V installations and select 24V installations.

Reduced Run Time Based Control - The easily programmable timer allows independent on time and off time in increments from 0.1 seconds to 100 hours. This allows the user to specify how much to modify the actuator run time for your unique application.

Time Cycled Operation - The programmable timer can act as a controller for an actuator operating on a specific schedule, valve open for 10 minutes and then closed for 3 hours for instance. Open time and Closed time can be independently set for up to 100 hours each.

Securely Mounted - Mounted on a bracket and securely attached to the geartrain motor plate in P2-13 series actuators (shown above). Mounted in a separate enclosure for P1 series actuators (see page 2).

Timer Options

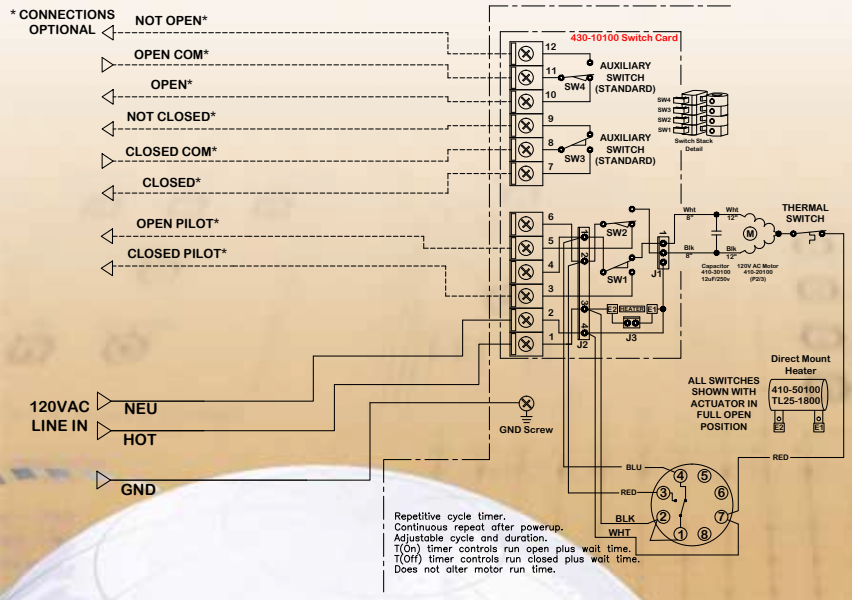
Features:

- Timer provides relay controlled variable timing for On/Off/Jog actuators
- On time and Off time are adjustable
- Coarse and fine timing adjustments are standard.
- Available for 24vac, 24vdc, 120vac and 230vac models

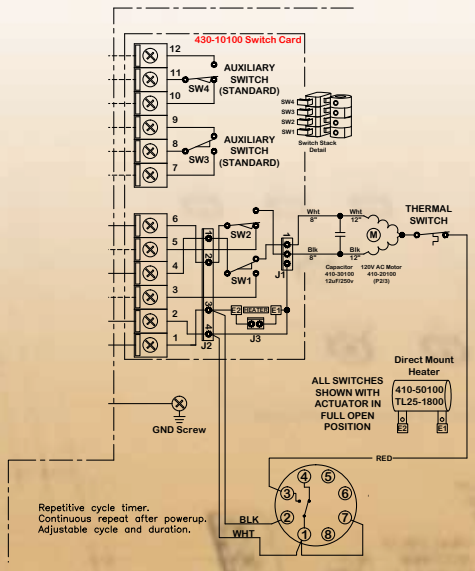
Timer Option installed in an external housing for a P1-120VAC series actuator

SAMPLE DIAGRAMS

Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promation.com.



Wiring diagram for *time cycled operation* for P2 actuators.



Wiring diagram for *delayed run time* for P2 actuators.

For Product Family	Position Feedback for:	Actuator Voltage	Order Information
P1 24-AC	On/Off/Jog	24vac	OPT-Timer-Li-P1
P1 120/230	On/Off/Jog	120vac, 230vac	OPT-Timer-Li-P1
P2-8 24-AC	On/Off/Jog	24vac	OPT-Timer-Li-P28
P2-13 120/230	On/Off/Jog	120vac	OPT-Timer-Li-120-P213

Timer Options cannot be used with Proportional control units.

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16138 Flight Path Drive
Brooksville, FL 34604
Phone (352) 544-8436 Fax (352) 544-8439
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PROMATION ENGINEERING

Precision Actuation for Industry

Extended Duty Motors

75%/50% Duty Cycle Motors

Extended duty cycle DC motors increase performance and reliability through longer run times

For On/Off/Jog P2 through P13 series quarter-turn actuators 120vac or 230vac installations.

P456 120N4-ED
75% Duty Cycle for the torque range 3,500-5,750 in lbs (400-650Nm).

DC Motors - Cool running DC motors provide 75% duty cycle for P Series P2~8 actuators and 50% duty cycle for P9~13. Standard P2~13 actuators have a rated 25% duty cycle at ambient temperatures.

-ED Controller - ProMation Engineering -ED control board is the interface between incoming 120/230vac and the dc motor.

Standard P Series Chassis - The -ED option uses standard P Series enclosures and geartrains for Rugged ProMation performance.

Factory Installed - Must be installed at the time of initial order, -ED products cannot be field installed.

Extended Duty Options

Features:

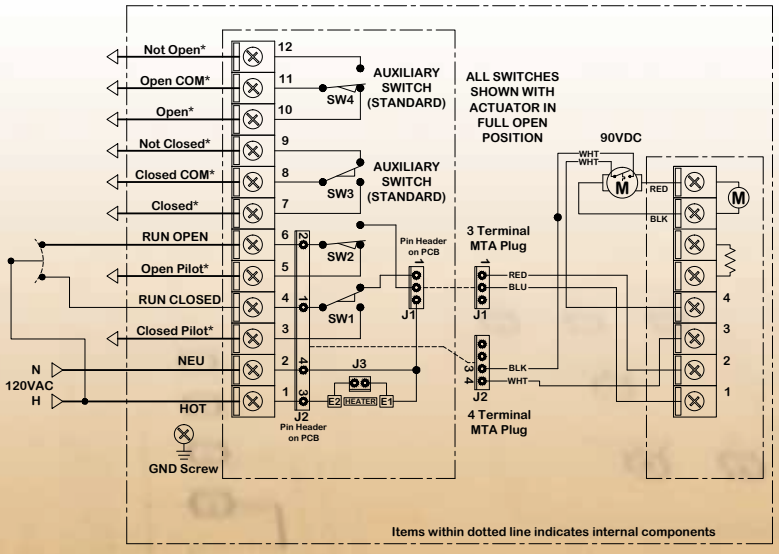
- Available for 120vac and 230vac models
- Replaces standard on/off motor and control board.
- DC motor adds less heat to the interior of the enclosure.
- Compatible with most options including torque switches, cold weather kits, and timers.

SAMPLE DIAGRAM

Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promationei.com.

Not all options are available for all models or in conjunction with other options. Call ProMation for more information.

Extended Duty Control Board supplies power and control to the 90vdc motor.



Wiring diagram for P2 actuator with Extended Duty Motor.

For Product Family	Control Type:	Actuator Voltage	Duty Cycle	Order Information
P2/3 120/230	On/Off/Jog	120vac, 230vac	75%	P2~3 120/230N4-**ED**
P4/5/6 120/230	On/Off/Jog	120vac, 230vac	75%	P4~6 120/230N4-**ED**
P7/8 120/230	On/Off/Jog	120vac, 230vac	75%	P7~8 120/230N4-**ED**
P9-12 120/230	On/Off/Jog	120vac, 230vac	**50%**	P9~12 120/230N4-**ED**
P13 120/230	On/Off/Jog	120vac, 230vac	**50%**	P13 120/230N4-**ED**

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PROMATION ENGINEERING

Precision Actuation for Industry

Cold Weather Kits

Keep your actuator operational in cold weather applications

85W Heater bank installed in P2 series actuator

Automatically compensate internal temperatures in response to severe external conditions

For P1 through P13 series quarter-turn actuators, in 12V through 230V installations, for temperatures down to -50°F (-45°C).

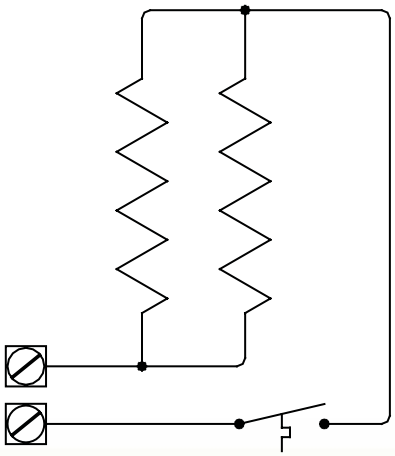
Automatic Temperature Control - Mounted onto the geartrain motor plate, the two position bi-metalic strip thermostat senses the temperature of the mechanical components and cycles the large resistance heater(s) to maintain a minimum temperature of 32°F (0°C).

Protection against wind chill - The sizing of the internal heater bank can be done with or without potential wind chill adjustments in the resistance tables. The calculations are set to compensate for up to a 45 MPH (72 kph) wind chill in -50°F (-45°C) conditions. See table on page 2.

Cold Weather Kits

Features:

- Vitreous Enamel Wirewound Power Resistors
- Fixed snap acting thermostat (ON @ 32°F, OFF @ 50°F)
  (ON @ 0°C, OFF @ 10°C)
- Works independently of standard anti-condensation heater to prevent moisture buildup when above 50°F (10°C)
- Compatible with AC or DC Motors



Resistance Heating with contact plate thermostat

Product Series	Calculated heat losses for -50°F/-45°C Wind Chill*	Voltage	Supplied Wattage	Heater Configuration	Current Draw (ON)
P1	29W	12V	29W	Single	2.40A
		24V	23W	Single	0.96A
		120V	29W	Single	0.24A
		230V	26W	Single	0.12A
P2~3	85W	12V	84W	Dual	7.00A
		24V	80W	Dual	3.36A
		120V	86W	Dual	0.72A
		230V	88W	Dual	0.38A
P4~6	115W	12V	120W	Dual	10.0A
		24V	115W	Dual	4.80A
		120V	115W	Dual	0.96A
		230V	123W	Dual	0.54A
P7~8	160W	12V	144W	Dual	12.0A
		24V	172W	Dual	7.2A
		120V	154W	Dual	1.28A
		230V	159W	Dual	0.69A
P9~13	286W	12V	216W	Triple	18.0A
		24V	288W	Triple	12.0A
		120V	297W	Triple	2.48A
		230V	282W	Triple	1.23A

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PROMATION ENGINEERING

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4-20 Feedback Kits

Provide 4-20mA feedback from On/Off/Jog Actuators

4-20mA feedback generator installed in a P2-24VDC series actuator

Provide your control system or PLC with 4-20mA position feedback for improved system control

For On/Off/Jog P1 through P13 series quarter-turn actuators, and PA~PD spring return actuators in 120V installations and select 24V installations.

Potentiometer Based Actuator Position - Mounted on a bracket and securely attached to the geartrain motor plate, the potentiometer accurately translates actuator position into a discrete analog signal for use in most control systems.

Ruggedboard interface card - The circuit board provides user friendly LED indicators and tuning for both the 4mA and 20mA outgoing signals. The board increases the reliability of the product by eliminating extraneous wiring and reducing lugged connections.

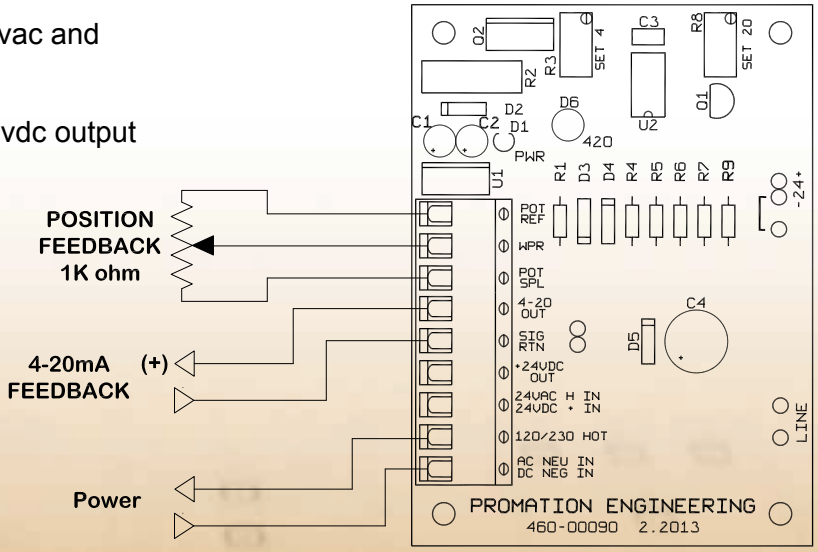
4-20 Feedback Kits

Features:

- Potentiometer provides position information for On/Off/Jog actuators
- Zero and Span adjustments on board for independent 4mA and 20mA signal tuning
- On board LED status indicators
- Available for 24vac, 24vdc, 120vac and 230vac models
- Can also be configured for 2-10vdc output

SAMPLE DIAGRAM

Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promation.com.



Wiring diagram for Position Feedback.

For Product Family	Position Feedback for:	Actuator Voltage	Order Information
P1 24-AC	On/Off/Jog	24vac	Kit-420FB-24A-P1
P1 24-DC	On/Off/Jog	24vdc	Kit-420FB-24D-P1
P1 120/230	On/Off/Jog	120vac, 230vac	Kit-420FB-120-P1
P2-8 24-AC	On/Off/Jog	24vac	Kit-420FB-24A-P28
P2-8 24-DC	On/Off/Jog	24vdc	Kit-420FB-24D-P28
P2-13 120/230	On/Off/Jog	120vac	Kit-420FB-120-P213
PA-PD 24-AC	On/Off	24vac	Kit-420FB-24A-PA
PA-PD 24-DC	On/Off	24vdc	Kit-420FB-24D-PA
PA-PD 120/230	On/Off	120vac, 230vac	Kit-420FB-120-PA

Feedback generators cannot be used with Proportional control units.

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Auxiliary Switches

Two additional switches for indication or control

Auxiliary Switch Kit installed on P7 Series Actuator

Two extra actuator position controlled switches to any system add flexibility and increase performance

For On/Off/Jog P1 through P13 series quarter-turn actuators 120V, 230V installations and select 24V installations.

Cam Controlled - Two additional cams installed above the auxiliary cams. Cams may be set to any position in the 90 degree travel of the actuator. This gives additional options for control programming or for control of external devices.

Precision SPDT Switches - Dry contact switches rated at 10A @ 250vac maximum greatly simplify remote sensing as most common voltage indicators are supported.

Three Phase Control - ProMation Engineering three phase products with Motor Control Centers (MCC) require the additional auxiliary switches for indicator lamps in the MCC.

Factory Installed - Soldered, not crimped, directly on a ProMation Ruggedboard switch card, mounted on a steel bracket, and securely attached to the geartrain motor plate. Must be installed at the time of initial order, they cannot be field installed.

Switch Details

Features:

- Provides additional integrated indication solution
- Provides for external control
- Can be set for any point in the 90 degree arc of travel

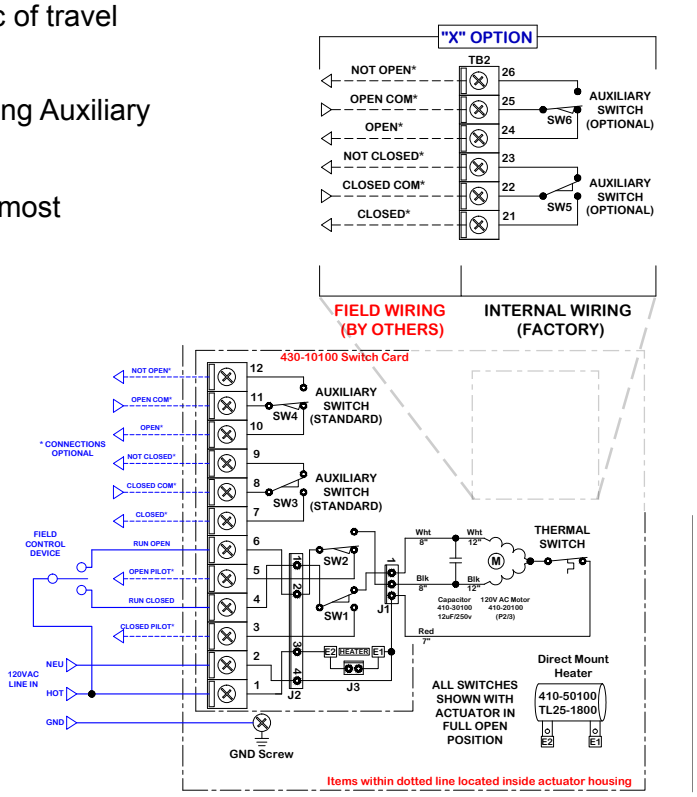
OR

- Can be set to the same position as the existing Auxiliary Cams
- Rated 10A @ 250VAC maximum to support most commonly used controls or indicators

Additional Auxiliary Switches on Ruggedboard switch card

SAMPLE DIAGRAM

Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promation.com.



Wiring diagram for P2 actuator with 2 extra auxiliary switches.

For Product Family	Available for:	Actuator Voltage	Order Information
P2-8 24-AC	On/Off/Jog, PN4, VN4	24vac	OPT-X-P28
P2-8 24-DC	On/Off/Jog	120vac, 230vac	OPT-X-P28
P2-13 120/230	On/Off/Jog	120vac, 230vac	OPT-X-P213
P2-13 3 Phase	On/Off/Jog	120vac	OPT-X-P213

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125VDC Motors

75% Duty Cycle Actuators

High Voltage DC motors increase performance and reliability through longer run times

For On/Off/Jog P2 through P6 series quarter-turn actuators for 125vdc installations.

P456 125N4-DC
75% Duty Cycle for the torque range 3,500-5,750 in lbs (400-650Nm).

DC Motors - Cool running DC motors provide 75% duty cycle for P Series P2~6 actuators, while standard P2~6 actuators have a rated 25% duty cycle at ambient temperatures.

Controller - ProMation Engineering high voltage DC controller features solid state switching.

Factory Installed - 125vdc motors and control boards must be specified and installed at the time of initial order, they cannot be field retrofitted.

125N4-DC Options

Features:

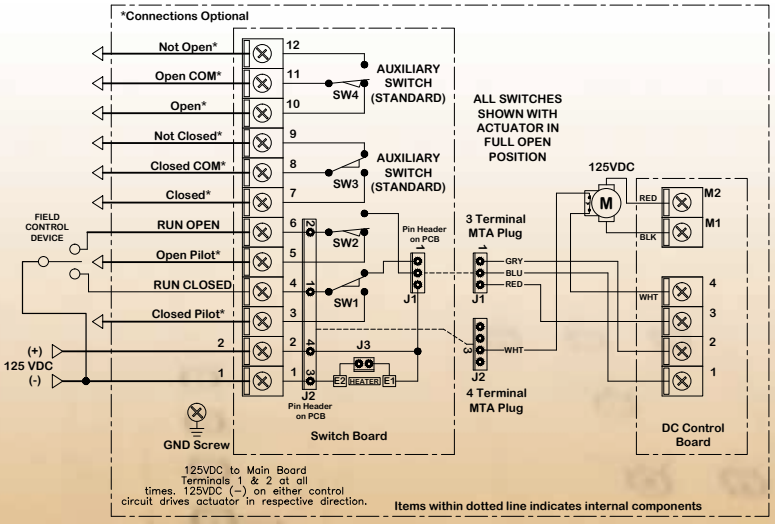
- 75% duty cycle for 125vdc models P2~6.
- DC motor adds less heat to the interior of the enclosure.
- Compatible with cold weather kits and thermostat kits.
- Available with or without PCB conformal coating.
- Enclosures options include nylon or epoxy coated, stainless steel, and IP68.

SAMPLE DIAGRAM

Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promationei.com.

Not all options are available for all models or in conjunction with other options. Call ProMation for more information.

Control Board supplies power and control to the 125vdc motor.



Wiring diagram for P4-125N4-DC actuator.

125VDC On/Off/Jog Actuators

For Product Family	Max Torque NM	Max Torque In Lbs	Duty Cycle	Speed 90°	Motor Power	Run Amps	Start Amps	Lock Amps
P2-125N4-DC	90	800	75%	17s	40W	0.4A	6A	4.5A
P3-125N4-DC	150	1,335	75%	27s	40W	0.4A	6A	4.5A
P4-125N4-DC	400	3,500	75%	25s	80W	1A	7.5A	6.2A
P5-125N4-DC	500	4,400	75%	35s	80W	1A	7.5A	6.2A
P6-125N4-DC	650	5,750	75%	52s	80W	1.1A	7.5A	6.2A

Speed and Current Draws tested under full load

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Resistance Feedback Kits

Provide 1k, 5k, or 10k ohm resistance feedback from On/Off/Jog Actuators

1K feedback potentiometer installed in a P2-24VDC series actuator

Provide your control system or PLC with resistance position feedback for improved system control

For On/Off/Jog P1 through P13 series quarter-turn actuators in 24V, 120V, and 230V installations.

Resistance Based Actuator Position - Mounted on a bracket and securely attached to the geartrain motor plate, the potentiometer accurately reports actuator position to most control systems.

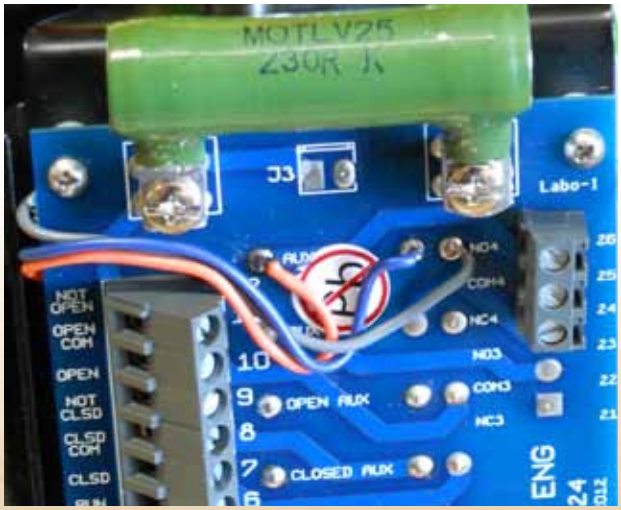
Ruggedboard interface card - Terminal strip connections on the switch card circuit board provides solid screw type connections for outgoing signals.

Resistance Options - Outgoing resistance signals are provided by 1k ohm, 5k ohm, or 10k ohm potentiometers.

Resistance Feedback Kits

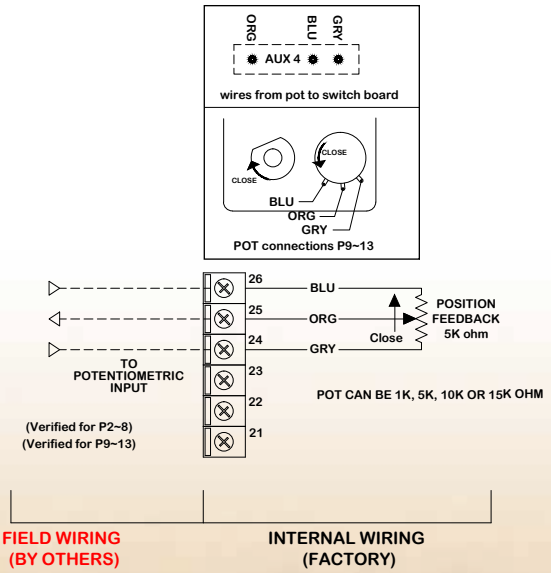
Features:

- Potentiometer provides position information for On/Off/Jog actuators
- Available in 1k ohm, 5k ohm, and 10k ohm.
- Available for 24vac, 24vdc, 120vac and 230vac models



SAMPLE DIAGRAM

Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promation.com.



Wiring diagram for Position Feedback.

Notes:

- Potentiometer is rated for 1 watt, 300vac maximum
- Be aware of voltage drops over long wire runs

For Product Family	Position Feedback for:	Actuator Voltage	Order Information
P1 24VAC	On/Off/Jog	24vac	Kit-Opt-P1-1K(5K,10K)
P1 24VDC	On/Off/Jog	24vdc	Kit-Opt-P1-1K(5K,10K)
P1 120/230	On/Off/Jog	120vac, 230vac	Kit-Opt-P1-1K(5K,10K)
P1.A 24VAC	On/Off/Jog	24vac	Kit-Opt-P1.A-1K(5K,10K)
P1.A 24VDC	On/Off/Jog	24vdc	Kit-Opt-P1.A-1K(5K,10K)
P1.A 120/230	On/Off/Jog	120vac, 230vac	Kit-Opt-P1.A-1K(5K,10K)
P2-8 24VAC	On/Off/Jog	24vac	Kit-Opt-P28-1K(5K,10K)
P2-8 24VDC	On/Off/Jog	24vdc	Kit-Opt-P28-1K(5K,10K)
P2-13 120/230	On/Off/Jog	120vac, 230vac	Kit-Opt-P213-1K(5K,10K)

Feedback generators cannot be used with Proportional control units.

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