



PBU Series Battery Backup System

- Provides Fail-Safe Operation for ProMation P Series Industrial Electric actuators size P2 through P13
- Field Selectable Fail Direction
- Readily available sealed Battery packs
- Provides 500% of Power requirements for a full load cycle
- Lockable Fiberglass NEMA 4X enclosure



Application:

Typically, applications requiring fail-safe operation of actuated devices have had to rely on either the limited power of mechanical spring return actuators, or use costly high pressure pneumatic devices to provide fail-safe positioning. Model PBU series computer-grade UPS back-up systems designed for use with ProMation Engineering P Series electric industrial quarter-turn actuators provides the power necessary to drive these actuators to a field selectable fail-safe position. The system consists of a NEMA 4X lockable hinged door controls cabinet which houses the logic switching, all field wiring terminal points and a computer-grade back-up system. The back-up system is a component-level device which utilizes a replaceable spill-proof battery pack that can be readily purchased at most office-supply centers.

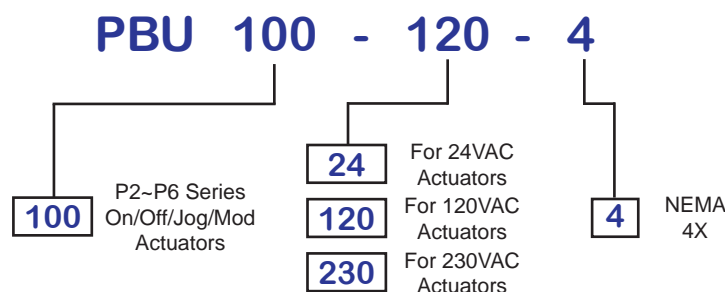
Safety in Numbers:

The system is designed to provide at a minimum up to 500% of the power required to drive the various actuators through their full 90 degree rotation at full running amperage draws. However, when the actuators have reached their field-selectable end-of-travel positions, current draw drops to zero and the back-up system sits idle until either the time-out function integral to the battery is reached or the mains power returns, whichever occurs first.

Simple User Interface:

Indicator lights visible through the front of the control cabinet give status indication of mains power, back-up system charging and fail-safe operation. The PBU series is powered from building power, and all power and logic interface wiring passes through the control cabinet. Units are selected based on the size and number of P Series actuators being connected to the PBU system. Each model can be utilized for multiple control schemes...On/Off, Jog or Proportional control... to provide the most cost-effective and efficient means of providing fail-safe operation for these actuators.

SD08:PBU Version A.05.20.2008



(See Complete Sizing and Performance Chart on next page)

Environmental:

- Operating Relative Humidity 0 - 95%
- Operating Elevation 0-10000 feet (0-3000 m)
- Storage Temperature -15 - 45 °C (5 - 113°F)
- Storage Relative Humidity 0 - 95%
- Storage Elevation 0-50000 feet (0-15000 m)
- Audible noise at 1 meter from surface of unit 45 dBA
- Online thermal dissipation 24 BTU/hr

Conformance - APC Back UP Module:

Approvals FCC Part 15 Class B, Industry Canada, UL 1778, cUL Listed

Approvals CSA, FCC B, UL 1778



The hinged access door provides easy access to all control wiring, battery connections, status indicators and fail selectors.



The clear lucite front window provides indication of system status without disrupting the NEMA 4X seal in all weather conditions.



A continuous stainless steel hinge provides trouble-free of the front access door, and rear-mounted stainless mounting lugs allow for quick field mounting of the fiberglass cabinet.



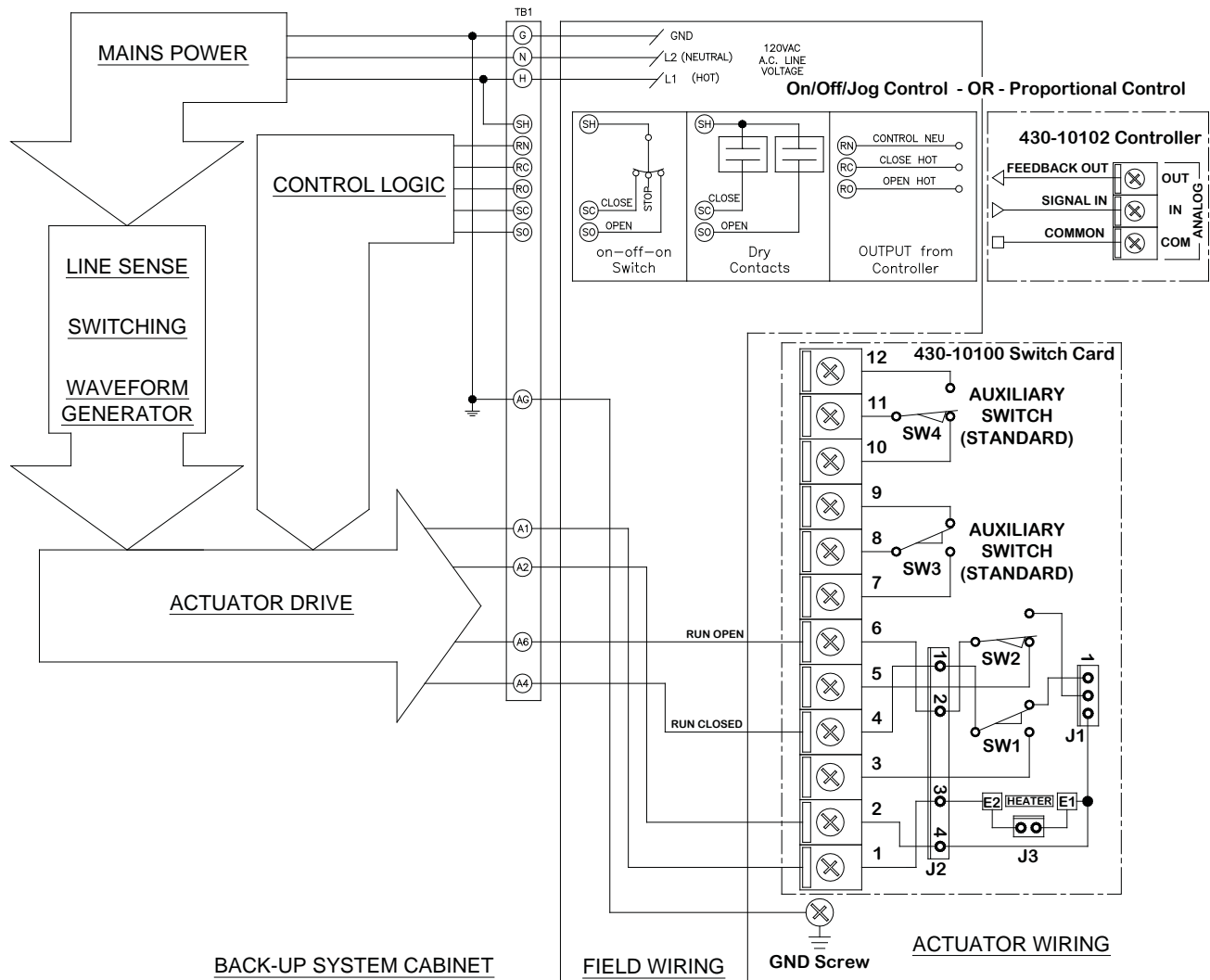
Stainless steel spring latches are utilized to completely seal the front access door and provide a means to secure the access to the inside of the enclosure using padlock type devices.

SIZING AND PERFORMANCE CHART

MODEL	TORQUE OUTPUT	RUNTIME SECONDS	DRAW (AMPS)	2 POS/JOG/MOD	% CAPACITY USED @ FULL RUNTIME	REPLACEMENT BATTERY
P1-120N4, P1.A-120N4*	300	12	0.5	PBU100-120-X	0.5%	RBC-35
P2-120(P)N4	800	15	1.0	PBU100-120-X	1.5%	RBC-35
P3-120(P)N4	1335	22	1.0	PBU100-120-X	2.3%	RBC-35
P4-120(P)N4	3560	16	1.3	PBU102-120-X	2.0%	RBC-110
P5-120(P)N4	4450	22	1.5	PBU102-120-X	2.9%	RBC-110
P6-120(P)N4	5785	28	1.8	PBU102-120-X	10.0%	RBC-110
P7-120(P)N4	8900	46	3.2	PBU104-120-X	11.0%	RBC-17
P8-120(P)N4	13350	46	4.0	PBU104-120-X	11.3%	RBC-17
P9-120(P)N4	17800	58	3.2	PBU104-120-X	13.8%	RBC-17
P10-120(P)N4	22250	58	4.0	PBU104-120-X	14.2%	RBC-17
P11-120(P)N4	26700	58	3.0	PBU104-120-X	13.7%	RBC-17
P12-120(P)N4	31150	58	4.0	PBU104-120-X	14.2%	RBC-17
P13-120(P)N4	40500	80	3.5	PBU104-120-X	19.3%	RBC-17
P1-24N4, P1.A-24N4*	300	12	0.5	PBU300-24-X	1.3%	RBC-35
P2-24(P)N4	800	15	1.0	PBU300-24-X	1.3%	RBC-35
P3-24(P)N4	1335	22	1.0	PBU302-24-X	1.9%	RBC-35
P4-24(P)N4	3560	16	1.3	PBU302-24-X	1.4%	RBC-110
P5-24(P)N4	4450	22	1.5	PBU302-24-X	1.9%	RBC-110
P6-24(P)N4	5785	28	1.8	PBU302-24-X	7.8%	RBC-110
P1-230N4, P1.A-230N4*	300	12	0.5	PBU200-230-X	0.5%	RBC-35
P2-230(P)N4	800	15	1.0	PBU200-230-X	1.5%	RBC-35
P3-230(P)N4	1335	22	1.0	PBU200-230-X	2.2%	RBC-35
P4-230(P)N4	3560	16	1.3	PBU202-230-X	1.8%	RBC-110
P5-230(P)N4	4450	22	1.5	PBU202-230-X	2.7%	RBC-110
P6-230(P)N4	5785	28	1.8	PBU202-230-X	3.8%	RBC-110
P7-230(P)N4	8900	46	3.2	PBU204-230-X	8.9%	RBC-17
P8-230(P)N4	13350	46	4.0	PBU204-230-X	9.7%	RBC-17
P9-230(P)N4	17800	58	3.2	PBU204-230-X	13.7%	RBC-17
P10-230(P)N4	22250	58	4.0	PBU204-230-X	14.1%	RBC-17
P11-230(P)N4	26700	58	3.0	PBU204-230-X	13.7%	RBC-17
P12-230(P)N4	31150	58	4.0	PBU204-230-X	14.3%	RBC-17
P13-230(P)N4	40500	80	3.5	PBU204-230-X	19.2%	RBC-17

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* P1 & P1.A proportional control models cannot utilize the PBU backup system.

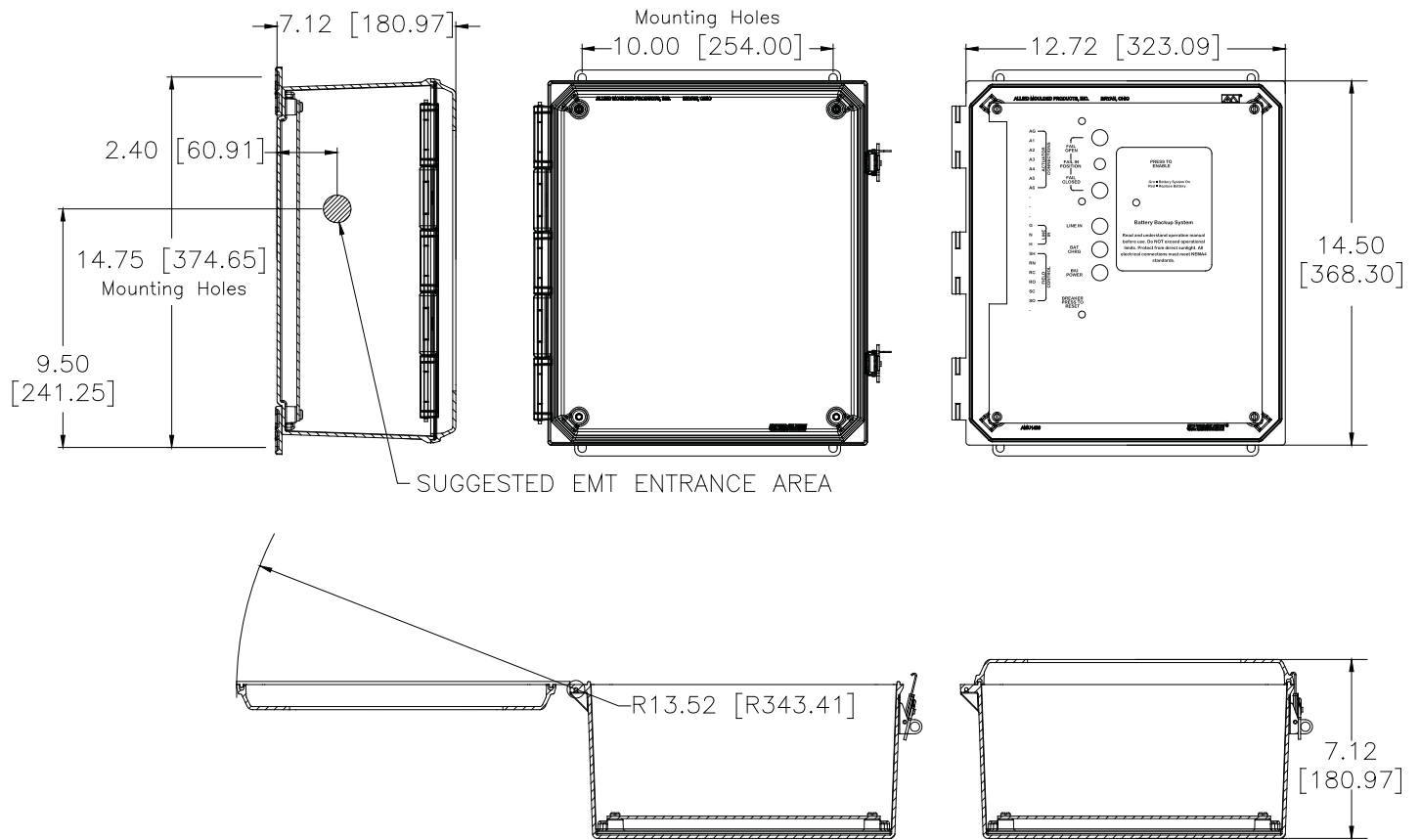


Sequence of Operation -

The back up system is wired in series between the mains power and the actuator. Under normal operation, power supplied to TB1 H & N terminals will illuminate the green "**LINE IN**" indicator light, and provide charging voltage to the battery system. While Mains power is present, the four modes of control (three for On/Off/Jog control, one for proportional control) are enabled to allow the positioning of the actuator through remote control devices. The end user can install a center-off switch for 3 point floating control, or dry contacts from a remote controller or line voltage outputs may also be utilized to provide control for On/Off/Jog type actuators. Additionally, an analog control signal compliant with ProMation Engineering P Series actuators (2-10vdc, 1-5vdc, 4-20mA) may be utilized for proportional control actuators. Any method of operation will not effect the back up unit's operation. While under mains power the blue "**BAT CHARGING**" indicator light will illuminate and the yellow "**B/U POWER**" indicator light will be off. While under mains power, the position of the "**FAIL POSITION SELECT**" switch is irrelevant. Power is supplied through the interface cabinet and the actuator heater is enabled. No current is being drawn from the battery system during this mode of operation.

When the mains power is lost, charging power is no longer supplied to the battery system. The green "LINE IN" indicator light is turned off, and the battery system automatically generates modified-sine wave line voltage to provide power for the actuator. The blue "BAT CHARGING" indicator light is turned off, and the yellow "B/U POWER" indicator light is turned on. The "FAIL POSITION SELECT" switch becomes active, and depending on its position, drives the actuator either fully open or fully closed. During this mode of operation, the position of any field interface switching is irrelevant. The battery system will provide ample power to drive the actuator more than 5 full torque cycles. However, once the actuator reaches its end-of-travel limit switch, power drain from the back-up system is reduced to the requirements of the yellow "B/U POWER" indicator light. After 15 minutes, the battery system turns itself off and waits for the mains power to return. The design of the ProMation P Series actuators provides automatic locking of the actuator position after the battery system shuts down. Normal operation is resumed when mains power returns.



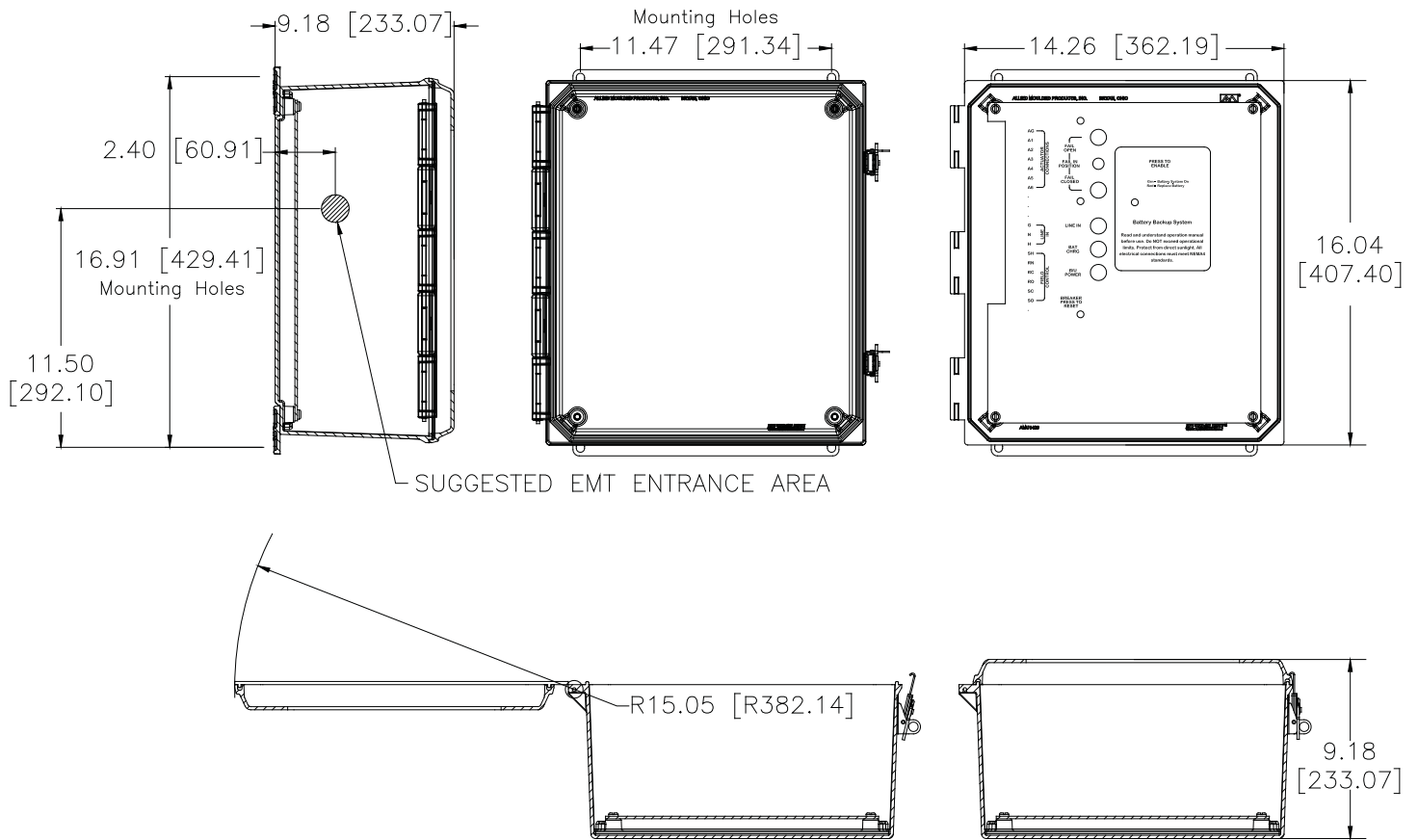


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Physical Dimensions PBU Series Back Up Systems

PBU-100, 200, 300

Maximum height dimensions	15.25
Maximum width dimensions	13.25
Maximum depth dimensions	7.50
Net weight	35#
Shipping Weight	38#



Physical Dimensions PBU Series Back Up Systems

PBU-102, 104, 202, 204, 302

Maximum height dimensions	15.75
Maximum width dimensions	13.85
Maximum depth dimensions	8.30
Net weight	45#
Shipping Weight	48#

Technical Specifications:

PBU		100	200	300
<u>Input:</u>	Nominal input voltage: Mains Input Voltage range:	120vac 88-139vac	230vac 186-268vac	120vac 88-139vac
	Input Frequency:	50/60Hz +/- 1 Hz (auto sensing)		
<u>Output:</u>	Nominal Output voltage:	120vac	230vac	120vac
	Power Capacity: Waveform Type:	350VA / 200Watts Stepped approximation to a sinewave		
<u>Batteries:</u>	Typical backup time at half-load: Type:	5.6 minutes Maintenance-Free sealed lead-acid Suspended electrolyte: Leakproof		
	Typical recharge time:	16 hours**		
<u>Filtering:</u>	Full time multi-pole noise filtering:	5% IEEE surge let-through. Response time meets UL 1449		

PBU		102	302
<u>Input:</u>	Nominal input voltage: Mains Input Voltage range:	120vac 88-139vac	120vac 88-139vac
	Input Frequency:	50/60Hz +/- 1 Hz (auto sensing)	
<u>Output:</u>	Nominal Output voltage:	120vac	120vac
	Power Capacity: Waveform Type:	550VA / 330Watts Stepped approximation to a sinewave	
<u>Batteries:</u>	Typical backup time at half-load: Type:	13.4 minutes Maintenance-Free sealed lead-acid Suspended electrolyte: Leakproof	
	Typical recharge time:	24 hours**	
<u>Filtering:</u>	Full time multi-pole noise filtering:	5% IEEE surge let-through. Response time meets UL 1449	

PBU		104	204
<u>Input:</u>	Nominal input voltage: Mains Input Voltage range:	120vac 88-139vac	230vac 186-268vac
	Input Frequency:	50/60Hz +/- 1 Hz (auto sensing)	
<u>Output:</u>	Nominal Output voltage:	120vac	230vac
	Power Capacity: Waveform Type:	750VA / 450Watts Stepped approximation to a sinewave	
<u>Batteries:</u>	Typical backup time at half-load: Type:	11.8 minutes Maintenance-Free sealed lead-acid Suspended electrolyte: Leakproof	
	Typical recharge time:	16 hours**	
<u>Filtering:</u>	Full time multi-pole noise filtering:	5% IEEE surge let-through. Response time meets UL 1449	

** The time to recharge to 90% of full battery capacity following a discharge to shutdown using a load rated for 1/2 the full load rating of the UPS.

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PROMATION ENGINEERING

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SD08:PBU Version A 05.20.2008



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