

Power Supply Selection for Access Control Systems

Overview

Selecting the correct Altronix power supply is critical for reliable access control system operation. This guide covers the AL400UL, AL600UL, and AL1024UL series, with emphasis on VA rating calculation, load matching, and battery backup sizing.

Altronix Series Comparison

Series	Output VA	Amps @ 12V	Amps @ 24V	Battery Backup
AL400UL	400 VA	33A	16.5A	7-12Ah optional
AL600UL	600 VA	50A	25A	12-18Ah optional
AL1024UL	1024 VA	85A	42.5A	18-24Ah optional

VA Rating Calculation

VA (Volt-Amps) determines maximum load capacity. Calculate total system load:

Step 1: List all devices: magnetic locks, card readers, door contacts, sounder, etc.

Step 2: Identify operating voltage and current draw for each device

Step 3: Sum instantaneous current (for simultaneous draws) and continuous current separately

Step 4: Multiply by voltage: $VA = Voltage \times Total\ Amps$

Step 5: Apply 20% safety margin: $Required\ VA = Calculated\ VA \times 1.2$

Typical Device Power Draws

Device Type	12V Typical	24V Typical	Notes
Magnetic Lock (300lb)	2.5A	1.2A	Continuous duty
Magnetic Lock (600lb)	5A	2.5A	Continuous duty
Card Reader (Wiegand)	0.15A	0.1A	Average draw
Electronic Keypad	0.5A	0.25A	Average draw
Door Contact	0.05A	0.03A	Supervised sensor
Alarm Sounder	1.5A	0.75A	Peak during alarm
Strobe Light	1A	0.5A	Peak during alarm

Power Supply Sizing Example

Scenario: Office building entry with 2 magnetic locks, 2 card readers, door contact, and sounder

Lock 1: 24V, 2.5A continuous

Lock 2: 24V, 2.5A continuous

Reader 1: 24V, 0.1A

Reader 2: 24V, 0.1A

Door Contact: 24V, 0.03A

Sounder (during alarm): 24V, 0.75A

Total Continuous: $2.5 + 2.5 + 0.1 + 0.1 + 0.03 = 5.23A$

Peak (sounder active): $5.23 + 0.75 = 5.98A$ approx 6A

VA @ 24V: $24V \times 6A = 144 VA$

With 20% margin: $144 \times 1.2 = 172.8 VA$

Recommendation: AL400UL is appropriate (provides 16.5A @ 24V = 396 VA)

Supervised vs Unsupervised Outputs

Altronix supplies offer both supervised and unsupervised outputs. Supervised outputs monitor for short circuits and open wires, providing system integrity confirmation. Unsupervised outputs provide basic switching without monitoring. Critical circuits (maglock power, access control) should use supervised outputs; auxiliary circuits (status LEDs, indicators) can use unsupervised outputs.

Battery Backup Sizing

Altronix supplies support optional sealed lead-acid battery backup for access control continuity. Choose battery capacity based on required runtime and continuous load. See [Altronix-Battery-Backup-Sizing-Chart.pdf](#) for detailed calculations.

Installation Best Practices

Location: Mount power supplies in secure, climate-controlled enclosures

Wiring: Use appropriate gauge conductors; verify voltage at device terminals

Fusing: Install fuses on each output circuit per Altronix specifications

Heat Management: Ensure adequate ventilation; avoid enclosed spaces without cooling

Monitoring: Enable low-battery alerts if backup is installed